MASSMUTUAL ASCEND LIFE INSURANCE COMPANY

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INDEX SUMMIT 6 PRO ANNUITY
With Return of Premium Guarantee
PROSPECTUS DATED MAY 1, 2024

The Index Summit 6 ® Pro annuity is an Individual Index-linked Modified Single Premium Deferred Annuity contract issued by MassMutual Ascend Life Insurance Company. It provides that we will pay the Annuity Payout Benefit to you in exchange for your Purchase Payments. It also provides a Death Benefit that will never be less than the Return of Premium Guarantee.

The Contract is a modified single premium deferred annuity. This means we will accept Purchase Payments only during the purchase payment period, which ends two months after the Contract Effective Date.

A glossary of defined terms used herein can be found in the Special Terms section starting on page 5 of this prospectus.

The Contract offers you the opportunity to allocate funds to Indexed Strategies for one-year, two-year, three-year, or six-year Terms.

Indexed Strategies. Indexed Strategies provide returns at the end of a 1-year, 2-year, 3-year, or 6-year period (Term) based, in part, on the rise or fall of an Index, which may be a market index, such as the S&P 500 Index, or the share price of an exchange-traded fund, such as an iShares ETF, by comparing the change in the Index value from the first day of the Term to the last day of the Term.

For this Contract, we currently offer twenty-four Indexed Strategies, which are detailed in the table on page 11. Each of these Indexed Strategies uses one of six Indexes: S&P 500® Index, iShares® MSCI EAFE ETF, iShares® U.S. Real Estate ETF, SPDR Gold Shares ETF, First Trust Barclays Edge Index, and Russell 2000® Index. The returns of each Index, except the First Trust Barclays Edge Index, do not reflect the reinvestment of dividends, which means that the Index return will be less than what would be received by investing in the individual securities that make up the Index or in the ETF. The First Trust Barclays Edge Index deducts fees and costs when calculating Index performance, which also will reduce the Index return. Note: Not all Indexed Strategies are available for Contracts issued in Missouri or Nebraska.

One of three Positive Return Factors is used when calculating any increase in the value of an Indexed Strategy based on the performance of an Index: a Cap, an Upside Participation Rate, or a Trigger Rate. The Positive Return Factors are generally designed to limit the increase in the value of the Indexed Strategies at the end of a Term. A Cap is the maximum positive Index change that is taken into account to determine the Strategy value at the end of the Term and may limit the potential increase in Strategy value. An Upside Participation Rate is your share of any positive Index change taken into account to determine the Strategy value at the end of the Term. When the Upside Participation Rate is less than 100%, it will limit the potential increase in Strategy value. For the two Performance Trigger Strategies, a Trigger Rate is a specified rate credited to the Strategy when the Index change is zero or positive at the end of the Term. For the Dual Performance Trigger Strategy, a Trigger Rate is a specified rate credited to the Strategy when the Index change is zero, positive, or negative up to the Buffer at the end of the Term. A Trigger Rate may be more or less than any rise in the Index at the end of a Term.

One of three Negative Return Factors is used when decreasing the value of an Indexed Strategy based on the performance of an Index: a Downside Participation Rate, a Buffer, or a Floor. The Downside Participation Rate is the portion of any negative Index change the Company will apply to decrease your Strategy value at the end of the Term. The 50% Downside Participation Rate causes a decrease in Strategy value at the end of the Term equal to 50% of the negative Index change. The Buffer is the negative Index change to be disregarded when determining Strategy value at the end of the Term. A 10% Buffer causes the Company to assume the first 10% of any negative Index change, but your Strategy value will decrease by any negative return in excess of -10%. A 20% Buffer causes the Company to assume the first 20% of any negative Index change, but your Strategy value will decrease by any negative return in excess of -20%. The Floor is the maximum amount the Company will decrease your Strategy value at the end of the Term if there is a negative Index change. A -10% Floor limits the loss from any negative Index change to 10% when determining the Strategy value at the end of the Term. A 0% Floor eliminates all loss from any negative Index change when determining the Strategy value at the end of the Term.

Potential Loss. **Every Indexed Strategy includes a risk of potential loss, which may include both your original principal and prior earnings.** At the end of a Term for a 10% Buffer Strategy, you could lose up to 90% of your original principal and prior earnings. At the end of a Term for a 20% Buffer Strategy, you could lose up to 80% of your original principal and prior earnings. At the end of a Term for a -10% Floor Strategy you could lose up to 10% of your original principal and prior earnings. At the end of a Term for a Downside Participation Rate Strategy, you could lose up to 50% of your original principal and prior earnings. If before the end of a Term you take a withdrawal or Surrender the Contract, annuitize the Contract, make a Performance Lock election, or a Death Benefit becomes payable, the Daily Value Percentage calculation may result in losses for a -10% Floor Strategy that exceed the -10% Floor, losses for a 0% Floor Strategy notwithstanding the 0% Floor, losses for a 10% Buffer Strategy that do not receive the benefit of the 10% Buffer, losses for a 20% Buffer Strategy that do not receive the benefit of the 20% Buffer, and losses for a Downside Participation Rate Strategy that exceed the 50% Downside Participation Rate. In addition, the ongoing deduction of the Daily Charge will reduce Indexed Strategy value. **In extreme circumstances, an Indexed Strategy could have no value before the end of a Term due to the Daily Value Percentage, meaning that you would suffer a complete loss of your principal and prior earnings in that Strategy if, before the end of the**

Term, you were to take a withdrawal or Surrender your Contract, annuitize, or elect a Performance Lock, or if we were to pay the Death Benefit. (See below for more information on the Daily Value Percentage.)

Availability of Indexed Strategies. The S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy, the S&P 500 6-year 20% Buffer with Upside Participation Rate Strategy, the Russell 2000 6-year 10% Buffer with Upside Participation Rate Indexed Strategy, and the Russell 2000 6-year 20% Buffer with Upside Participation Rate Indexed Strategy are only available for Terms that begin in the first Contract Year and cannot be renewed at the end of the 6-year Term. The S&P 500 3-year 10% Buffer with Upside Participation Rate Indexed Strategy and the S&P 500 3-year 20% Buffer with Upside Participation Rate Indexed Strategy will only be available for Terms beginning in the first four Contract Years and cannot be renewed after the fourth Contract Year. The S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy will always be available. At the end of a Term, we may in our discretion eliminate any other Indexed Strategy other than the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy. The Upside Participation Rate for the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy may change each Term, but it will never be less than 5%. We have the right to replace the Index associated with an Indexed Strategy under certain circumstances. The S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy or any other Indexed Strategy that may be available in the future may earn a return that is lower than the return your investments would have earned if they had been invested in the other currently available Indexed Strategies or may offer less protection against loss than other currently available Indexed Strategies. A reduction in the number of available Indexed Strategies or a replacement of an underlying Index could materially limit the growth potential of your investment in this Contract, and new Indexed Strategies offered in the future may offer less favorable Positive Return Factors and Negative Return Factors than currently available Indexed Strategies. In the future, we may offer new Indexed Strategies with Downside Participation Rates that are greater than 50%, Buffers that are lower than 10% or Floors that are more negative. An allocation of funds to an Indexed Strategy with a higher Downside Participation Rate, a lower Buffer, or a more negative Floor could materially increase the loss potential related to this Contract. We will not offer a new Buffer Strategy that offers less protection against loss than a 5% Buffer, a Floor strategy that offers less protection against loss than a -20% Floor, or a Downside Participation Rate Strategy that offers less protection against loss than a 75% Downside Participation Rate. For any Cap Strategy, the Cap will never be less than 1%. For any Upside Participation Rate Strategy, the Upside Participation Rate will never be less than 5%. For any Trigger Strategy, the Trigger Rate will never be less than 1%. If you choose to Surrender the Contract because of changes in the number and/or type of available Indexed Strategies, your Surrender may be subject to Early Withdrawal Charges, Daily Value Percentage adjustments, taxes, and tax penalties. If you purchase another retirement contract, it may have different features, fees, and risks than this Contract.

Long Term Investment. The Contract is intended for long-term investment purposes and the Contract and its Indexed Strategies may not be appropriate for investors who plan to take withdrawals (including automated withdrawals and required minimum distributions) during the first six Contract Years or who plan to take withdrawals from Indexed Strategies before the end of a Term.

Investment Base. The value of an Indexed Strategy is calculated using the Investment Base. The Investment Base is the amount applied to an Indexed Strategy at the beginning of a Term, reduced each day by the Daily Charge, and adjusted proportionally for any withdrawals taken during the Term and any related Early Withdrawal Charge. During the Term, the Investment Base remains unchanged except for the Daily Charge and any proportional adjustments for withdrawals. A withdrawal reduces the Investment Base by the amount that is proportional to the reduction in the Strategy value on account of the withdrawal and any related Early Withdrawal Charge. This means the dollar amount of the proportional reduction in the Investment Base will be more than the dollar amount of the withdrawal and the Early Withdrawal Charge if the Strategy value immediately before the withdrawal is less than the Investment Base. At the end of the Term, the applicable Positive Return Factor and Negative Return Factor are applied to the remaining Investment Base to determine the Strategy value for the Term.

Daily Charge. The Daily Charge is calculated as a percentage of the Investment Base. The Investment Base decreases each day during the Term by the amount of the Daily Charge. Except as provided in the next sentence, the Daily Charge is calculated using a daily rate that when compounded for a year is equal to 0.95% per year. The Daily Charge is calculated using a daily rate that when compounded for a year is equal to 0.75% per year if: (1) the Contract is issued before May 7, 2024; or (2) the application for the Contract is signed during the period April 7, 2024 through May 6, 2024, and the Contract is issued during the period May 7, 2024 through June 6, 2024.

Daily Value Percentage. Before the end of a Term, unless you have made a Performance Lock election, the value of an Indexed Strategy is the Investment Base increased or decreased by the Daily Value Percentage. The Daily Value Percentage is based on hypothetical options that represent the projected change in the Index over the full Term, and is equal to the Net Option Price, reduced by the Amortized Option Cost and the Trading Cost. **The Daily Value Percentage is applied to determine Strategy values when you withdraw funds allocated to an Indexed Strategy or Surrender your Contract before the end of a Term. The Daily Value Percentage is also applied if the Death Benefit or Annuity Payout value are determined before the end of a Term.** Please see the Potential Loss paragraph above for more information.

Early Withdrawal Charge. During the first six Contract Years, an Early Withdrawal Charge applies if you Surrender your Contract. It also applies to any withdrawal in excess of the Free Withdrawal Allowance, including automatic withdrawals and withdrawals taken to satisfy a required distribution. The early withdrawal charge is 9% for withdrawals and Surrenders of the Contract in the first Contract Year, and falls each Contract Year during the six-year period. Withdrawals and Surrenders may also be subject to income tax, and withdrawals and Surrenders before age 59$\frac{1}{2}$ may also be subject to an additional 10% penalty tax.

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Risk Factors for this Contract appear on pages 19-30 and A5-A12. Indexed annuity contracts are complex insurance and investment vehicles. You should speak with a financial advisor about the Index Summit 6 Pro annuity and its features, benefits, risks, and charges, and whether the Contract is appropriate for you based upon your financial situation and objectives.

Please read this prospectus before investing and keep it for future reference. It contains important information about your Contract and MassMutual Ascend Life that you ought to know before investing. It describes all material rights and obligations under the Contract. The provisions of the Contract may vary from state to state. All material state variations are identified in the State Variations section of this prospectus.

All guarantees under the Contract are the obligations of MassMutual Ascend Life and are subject to the credit worthiness and claims-paying ability of MassMutual Ascend Life.

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NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED THESE SECURITIES OR PASSED UPON THE ADEQUACY OF THIS PROSPECTUS. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

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The principal underwriter of the Contract is MM Ascend Life Investor Services, LLC. The offering of the Contract is intended to be continuous. The underwriter will use its best efforts to sell the Contract.

This prospectus is not an offering in any state, country, or jurisdiction in which we are not authorized to sell the Contract.

If you purchase a Contract, you may cancel it within 20 days after you receive it. If you purchase a Contract to replace an existing annuity contract or insurance policy, you have 30 days to cancel the Contract. The right to cancel period may be longer in some states. In most states, you will bear the risk of any decreases in Indexed Strategy values before cancellation. The right to cancel is described more fully in the Right to Cancel section of this prospectus.

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SECTION I
INDEX SUMMIT 6 PRO ANNUITY INFORMATION

SPECIAL TERMS

In this prospectus, the following capitalized terms have the meanings set out below.

ACCOUNT VALUE. For each day, the Account Value is the sum of the current values of each Indexed Strategy, plus the current value of the Purchase Payment Account, if any.

ANNUITANT. The natural person or persons on whose life the Annuity Payout Benefit is based.

ANNUITY PAYOUT BENEFIT. A series of periodic payments made under a Payout Option. The terms and conditions are described in the Annuity Payout Benefit section of this prospectus.

ANNUITY PAYOUT INITIATION DATE. The first day of the first payment interval for which payment of an Annuity Payout Benefit is to be made. This is the date we apply your Account Value to the Annuity Payout Benefit and calculate the payment amount.

BENEFICIARY. A person entitled to receive all or part of a Death Benefit that is to be paid under the Contract on account of a death before the Annuity Payout Initiation Date.

BUFFER. For an Indexed Strategy with a Buffer (a "Buffer Strategy"), the Buffer is the decrease in the value of an Index for a Term that is disregarded when determining the loss for the Term. The Buffer is also used to determine the strike price of the out-of-the-money put option that is part of the Daily Value Percentage calculation before the end of the Term. For each Term of the Buffer Strategy that we currently offer with this Contract, the Buffer is either 10% or 20%. In the future, we may offer a new Buffer Strategy with more or less protection against loss than a 10% or 20% Buffer, but we will not offer a new Buffer Strategy with less protection against loss than a 5% Buffer.

CAP. For an Indexed Strategy with a Cap (a "Cap Strategy"), the Cap is the maximum positive Index change over the course of the Term (measured at the start and end of the Term) that is taken into account to determine the Strategy value at the end of the Term. The Cap is also used to determine the strike price of the out-of-the-money call option that is part of the Daily Value Percentage calculation for that Strategy before the end of the Term. We post on our website (www.massmutualascend.com/RILArates) the Cap for each Term of a Cap Strategy at least 10 days before the next Term starts. The Cap for a Term will never be less than 1%.

CONTRACT. The annuity contract (including applicable endorsements and riders) that is a legally binding agreement between you and MassMutual Ascend Life. In this prospectus, "Contracts" refers to all Index Summit 6 Pro Annuity contracts.

CONTRACT ANNIVERSARY. The date in each year that is the anniversary of the Contract Effective Date. That date is set out on your Contract Specifications Page.

CONTRACT EFFECTIVE DATE. The date as of which the initial Purchase Payment is applied to the Contract. That date is set out on your Contract Specifications Page.

CONTRACT SPECIFICATIONS PAGE. The page in your Contract that contains details unique to your Contract.

CONTRACT YEAR. A 12-month period that starts on the Contract Effective Date or on a Contract Anniversary.

DAILY CHARGE. The charge for maintaining your Contract, which is calculated as a percentage of the remaining Investment Base of each Indexed Strategy. The Daily Charge is subtracted daily from the Investment Base. Except as provided in the next sentence, the Daily Charge is calculated using a daily rate that when compounded for a year is equal to 0.95% per year. The Daily Charge is calculated using a daily rate that when compounded for a year is equal to 0.75% per year if: (1) the Contract is issued before May 7, 2024; or (2) the application for the Contract is signed during the period April 7, 2024 through May 6, 2024, and the Contract is issued during the period May 7, 2024 through June 6, 2024.

DAILY CHARGE FACTOR. The daily rate, that when compounded over a Term, will result in an effective annual rate equal to the Daily Charge rate.

DAILY VALUE PERCENTAGE. The Daily Value Percentage is used to determine the value of an Indexed Strategy before the end of a Term. The calculation of Strategy value using the Daily Value Percentage is relevant only if amounts allocated to an Indexed Strategy are not held to the end of the Term due to withdrawals, Surrender of the Contract, payment of the Death Benefit, annuitization, or if you have made a Performance Lock election. A negative Daily Value Percentage adjustment could result in significant loss, even if the Index is performing positively. For each day of a

Term of an Indexed Strategy before the final Market Day of the Term, the Daily Value Percentage is equal to: (1) the Net Option Price for that day; minus (2) the Amortized Option Cost for that day; and minus (3) the Trading Cost for that day.

See the next section (Special Terms Related to Daily Value Percentage) for the definitions of Amortized Option Cost, Net Option Price, and Trading Cost.

DEATH BENEFIT. An amount that becomes payable if you die before the Annuity Payout Initiation Date and before the date that the Contract is Surrendered. The terms and conditions are described in the Death Benefit section of this prospectus.

DOWNSIDE PARTICIPATION RATE. For an Indexed Strategy with a Downside Participation Rate (a "Downside Participation Rate Strategy"), the Downside Participation Rate is your share of any fall in the Index for a Term taken into account to determine the Strategy value at the end of the Term. The Downside Participation Rate is also used to determine the Net Option Price that is part of the Daily Value Percentage calculation before the end of the Term. For every Term of each Downside Participation Rate Strategy that we currently offer with this Contract, the Downside Participation Rate is 50%. In the future, we may offer a new Downside Participation Rate Strategy with more or less protection against loss than a 50% Downside Participation Rate, but we will not offer a new Downside Participation Rate Strategy with less protection against loss than a 75% Downside Participation Rate.

EARLY WITHDRAWAL CHARGE. A charge deducted from the Account Value of your Contract if, during the first six Contract Years, you Surrender your Contract or you take a withdrawal (including systematic withdrawals and required minimum distributions) in excess of the Free Withdrawal Allowance. The Early Withdrawal Charge does not apply to a withdrawal that qualifies for the Free Withdrawal Allowance or the amount, if any, that qualifies for another waiver. The Early Withdrawal Charge does not apply to an Annuity Payout Benefit or Death Benefit.

FLOOR. For an Indexed Strategy with a Floor (a "Floor Strategy"), the Floor is the maximum decrease in the value of an Index for a Term that is taken into account when determining the loss for the Term. The Floor is also used to determine the strike price of the out-of-the-money put option that is part of the Daily Value Percentage calculation before the end of the Term. For each Term of a Floor Strategy that we currently offer with this Contract, the Floor is -10% or 0%. In the future, we may offer a new Floor Strategy that offers more or less protection against loss than a -10% Floor but we will not offer a new Floor Strategy that offers less protection against loss than a -20% Floor.

FREE WITHDRAWAL ALLOWANCE. The total amount that may be taken as a withdrawal or Surrendered during a Contract Year without an Early Withdrawal Charge that might otherwise apply. This amount is described in the Free Withdrawal Allowance section of this prospectus.

INDEX. A stock market index or an exchange-traded fund (ETF) used to calculate the value of an Indexed Strategy. The Index at the start of a Term is its level or price at the Market Close on the first day of that Term. If the first day of that Term is not a Market Day, then the Index at the start of a Term is its level or price at the last Market Close before the first day of the Term. The Index at the end of a Term is its level or price at the final Market Close of that Term.

INDEXED STRATEGY (STRATEGY). A strategy that provides a return based, in part, on the net change in the level or price of an Index for a Term. The Indexed Strategies that are currently available are set out on page 11 of this prospectus.

INVESTMENT BASE. The base amount used to calculate the value of an Indexed Strategy. The Investment Base is the amount applied to an Indexed Strategy at the start of a current Term, adjusted proportionally for any withdrawal during the Term and any related Early Withdrawal Charge. The Investment Base is reduced daily by an amount equal to the Daily Charge.

MARKET CLOSE. The close of the regular or core trading session on the market used to measure a given Index.

MARKET DAY. Each day that all markets that are used to measure the available Indexes are open for regular trading.

MASSMUTUAL ASCEND LIFE ("WE," "US," "OUR," "MMALIC"). MassMutual Ascend Life Insurance Company.

NEGATIVE RETURN FACTOR. The Downside Participation Rate, Floor, or Buffer used to determine values for an Indexed Strategy at the end of the Term.

OWNER ("YOU," "YOURS"). The person(s) who possesses the ownership rights under the Contract. If there is more than one Owner, each Owner will be a joint owner of the Contract and each reference to Owner means joint owners.

PAYOUT OPTION. The form in which an Annuity Payout Benefit or a Death Benefit may be paid. Standard options are described in the Payout Options section of this prospectus.

PERFORMANCE LOCK. An election to lock in the Daily Value Percentage for the remainder of a Term of an Indexed Strategy. A Performance Lock election for a Term is effective on the second Market Close following our receipt of your Request in Good Order. After the second Market Close, the

Indexed Strategy value before the end of the Term and the Indexed Strategy value at the end of the Term is equal to the remaining Investment Base increased or decreased by the locked Daily Value Percentage. The locked Daily Value Percentage is the Daily Value Percentage as determined for that second Market Close. The Indexed Strategy value will still change because of the Daily Charge or if there is another change in the Investment Base. You can make a Performance Lock election once per Term and only for specific Indexed Strategies.

POSITIVE RETURN FACTOR. The Cap, Upside Participation Rate, or Trigger Rate used to determine values for an Indexed Strategy at the end of the Term.

PURCHASE PAYMENT. An amount received by us for the Contract. This amount is determined after deducting any taxes withheld from the payment and after deducting any fee charged by the person remitting payment.

PURCHASE PAYMENT ACCOUNT. An account where a Purchase Payment is held until it is applied to an Indexed Strategy on a Strategy Application Date.

REQUEST IN GOOD ORDER. An election or a request that is:

- complete and satisfactory to us;

- sent to us on our form or in a manner satisfactory to us, which may, at our discretion, be by telephone or electronic means; and

- received at our administrative office.

An election or a request is complete and satisfactory when we have received: (1) all the information and legal documentation that we require to process the election or the request; and (2) instructions that are sufficiently clear that we do not need to exercise any discretion to process the election or the request. If you have any questions, you should contact us or your registered representative before submitting your election or your request.

STRATEGY APPLICATION DATE. The 6th and 20th days of each month.

SURRENDER. The termination of your Contract in exchange for its Surrender Value.

SURRENDER VALUE. For each day, the Surrender Value is the Account Value on that day minus the Early Withdrawal Charge that would apply on a Surrender of the Contract. The Account Value will reflect the applicable Strategy values as calculated on that day, which will reflect the Daily Value Percentage whenever Surrender Value is measured before the end of a Term.

TAX-QUALIFIED CONTRACT. An annuity contract that is intended to qualify for special tax treatment for retirement savings. If your Contract is a Tax-Qualified Contract, the cover page of your Contract includes information about its tax qualification. If your Contract is not a Tax-Qualified Contract, the cover page of your Contract will identify it as a "Nonqualified Annuity."

TERM. The period for which Contract values are allocated to a given Indexed Strategy, and over which values are calculated. Terms are one year long, two years long, three years long, or six years long. Each Term will start and end on a Strategy Application Date. A new Term will start on the date that the preceding Term ends.

TRIGGER RATE. For an Indexed Strategy with a Trigger Rate (a "Trigger Strategy"), the Trigger Rate is the specified rate that is credited to the Strategy value when the Index change (measured at the start and end of the Term) qualifies for the Trigger Rate. In the case of a Performance Trigger Strategy, the Trigger Rate will be credited when the Index change is zero or positive at the end of the Term. In the case of a Dual Performance Trigger Strategy, the Trigger Rate will be credited if the Index change is zero, positive, or negative up to the Buffer at the end of the Term. The Trigger Rate is also used to determine the binary call option that is part of the Daily Value Percentage calculation for that Strategy before the end of the Term. We post on our website (www.massmutualascend.com/RILArates) the Trigger Rates for each Term of a Trigger Strategy at least 10 days before the next Term starts. The Trigger Rate for a Term will never be less than 1%.

UPSIDE PARTICIPATION RATE. For an Indexed Strategy with an Upside Participation Rate (an "Upside Participation Rate Strategy"), the Upside Participation Rate is your share of any rise in the Index for a Term taken into account to determine the Strategy value at the end of the Term. The Upside Participation Rate is also used to determine the Net Option Price that is part of the Daily Value Percentage calculation before the end of the Term. We post on our website (www.massmutualascend.com/RILArates) the Upside Participation Rate for each Term of an Upside Participation Rate Strategy at least 10 days before the next Term starts. The Upside Participation Rate for a Term will never be less than 5%. If the Index return is 10% and the Upside Participation Rate is 5%, then your Indexed Strategy value will only increase by 0.5% (10% times 5%).

SPECIAL TERMS RELATED TO DAILY VALUE PERCENTAGE

AMORTIZED OPTION COST. The Amortized Option Cost is one part of the formula used to calculate the Daily Value Percentage, which is used to determine the value of an Indexed Strategy each day before the final Market Day of a Term. The Amortized Cost for a day is calculated as of the last Market Close on or before that day. If the calculation day is not a Market Day, the Amortized Cost for that day is calculated as of the last market Close before that day. The Amortized Option Cost is a percentage equal to: (1) the initial Net Option Price for an Indexed Strategy for the Term; multiplied by (2) the number of days remaining until the final Market Close of that Term divided by 365 days if that Term is one year long, or by 730 days if that Term is two years long, or by 1,096 days if that Term is three years long, or by 2,192 days if that Term is six years long. The initial Net Option Price is the Net Option Price calculated as of the last Market Close on or before the start of the Term.

NET OPTION PRICE. The Net Option Price is one part of the formula used to calculate the Daily Value Percentage, which is used to determine the value of an Indexed Strategy before the final Market Day of a Term. The Net Option Price for a day is calculated as of the last Market Close on or before that day. If the calculation day is not a Market Day, the Net Option Price for that day is calculated as of the last market Close before that day.

- For Downside Participation Rate Strategies with a Cap, the Net Option Price as of a Market Close is equal to: (1) the ATM Call Option Price calculated as of that Market Close; minus (2) the OTM Call Option Price calculated as of that Market Close; and minus (3) the ATM Put Option Price calculated as of that Market Close multiplied by the Downside Participation Rate.

- For Downside Participation Rate Strategies with an Upside Participation Rate, the Net Option Price as of a Market Close is equal to: (1) the ATM Call Option Price calculated as of that Market Close multiplied by the Upside Participation Rate; minus (2) the ATM Put Option Price calculated as of that Market Close multiplied by the Downside Participation Rate.

- For Buffer Strategies with a Cap, the Net Option Price as of a Market Close is equal to: (1) the ATM Call Option Price calculated as of that Market Close; minus (2) the OTM Call Option Price calculated as of that Market Close; and minus (3) the OTM Put Option Price calculated as of that Market Close.

- For Buffer Strategies with an Upside Participation Rate, the Net Option Price as of a Market Close is equal to: (1) the ATM Call Option Price calculated as of that Market Close multiplied by the Upside Participation Rate; minus (2) the OTM Put Option Price calculated as of that Market Close.

- For Buffer Strategies with a Performance Trigger (other than a Dual Performance Trigger), the Net Option Price as of a Market Close is equal to: (1) the ATM Binary Call Option Price calculated as of the Market Close; minus (2) the OTM Put Option Price calculated as of the Market Close.

- For Buffer Strategies with a Dual Performance Trigger, the Net Option Price as of a Market Close is equal to: (1) the ITM Binary Call Option Price calculated as of the Market Close; minus (2) the OTM Put Option Price calculated as of the Market Close.

- For Floor Strategies with a -10% Floor with a Cap, the Net Option Price as of a Market Close is equal to: (1) the ATM Call Option Price calculated as of that Market Close; minus (2) the OTM Call Option Price calculated as of that Market Close; minus (3) the ATM Put Option Price calculated as of that Market Close; and plus (4) the OTM Put Option Price calculated as of that Market Close.

- For Floor Strategies having a 0% Floor with a Cap, the Net Option Price as of a Market Close is equal to: (1) the ATM Call Option Price calculated as of that Market Close; minus (2) the OTM Call Option Price calculated as of that Market Close.

The option prices in these formulas reflect the possible future change in the Index over the remainder of the Term. The formulas take into account the applicable Positive Return Factor for the Term, the Negative Return Factor, and the Index change required to qualify for the Trigger Rate.

Each option price is stated as a percentage of the Index calculated as of the last Market Close on or before the first day of the Term. The option price is an average of the bid-ask prices calculated for the hypothetical option.

ATM BINARY CALL OPTION PRICE. The calculated price of a hypothetical at-the-money binary call option (or collection of options) that will pay the holder an amount equal to the Trigger Rate multiplied by the Investment Base if the change in the Index for the Term is zero or is positive.

ATM CALL OPTION PRICE. The calculated price of a hypothetical at-the-money call option. The hypothetical at-the-money call option is one that will pay the holder an amount equal to the percentage rise, if any, in the Index from the last Market Close on or before the start of a Term to the final Market Close of that Term.

ATM PUT OPTION PRICE. The calculated price of a hypothetical at-the-money put option. The hypothetical at-the-money put option is one that will pay the holder an amount equal to the percentage fall, if any, in the Index from the last Market Close on or before the start of a Term to the final Market Close of that Term.

ITM BINARY CALL OPTION PRICE. The calculated price of a hypothetical in-the-money binary call option (or collection of options) that will pay the holder an amount equal to the Trigger Rate multiplied by the Investment Base if the change in the Index for the Term is zero, is positive, or is negative up to the Buffer.

OTM CALL OPTION PRICE. The calculated price of a hypothetical out-of-the-money call option. The hypothetical out-of-the-money call option is one that will pay the holder an amount equal to the percentage rise, if any, in the Index from the last Market Close on or before the start of a Term to the final Market Close of that Term, but only if and to the extent that rise exceeds the Cap for that Term.

OTM PUT OPTION PRICE. The calculated price of a hypothetical out-of-the-money put option. The hypothetical out-of-the-money put option is one that will pay the holder an amount equal to the percentage decrease, if any, in the Index from the last Market Close on or before the start of the Term to the final Market Close of the Term, but only to the extent the percentage decrease exceeds the Buffer or Floor for the Term.

TRADING COST. The Trading Cost is one part of the formula used to calculate Daily Value Percentage, which is used to determine the value of an Indexed Strategy each day before the final Market Day of a Term. The Trading Cost is the estimated cost of selling the hypothetical options before the end of a Term. The Trading Cost for a day is a percentage set by us from time to time based on market conditions. The Trading Cost reflects the average market difference between option bid-ask average prices and option bid prices.

SUMMARY

The MassMutual Ascend Life Index Summit 6 Pro annuity is an individual modified single premium deferred indexed annuity contract that may help you accumulate retirement savings. The Contract is intended for long-term investment purposes. The Contract is a legal agreement between you as the Owner and MassMutual Ascend Life as the issuing insurance company. In the Contract, you agree to make one or more Purchase Payments to us, and we agree to pay the Annuity Payout Benefit to you. If there is an applicable death before the Annuity Payout Initiation Date, we also agree to pay a Death Benefit that will never be less than the Return of Premium Guarantee.

Like all deferred annuities, the Contract has two periods. During the period prior to the Annuity Payout Initiation Date, the Contract may accumulate earnings on a tax-deferred basis. During the period that begins on the Annuity Payout Initiation Date, we will make payments under the applicable Payout Option.

The key features of the Contract are described in this Summary. Read this entire prospectus for more detailed information about the Contract.

Benefits *(See "Cash Benefit", "Annuity Payout Benefit", and "Death Benefit" sections on page 66, 70, and 71 for more details)*
- The **Annuity Payout Benefit** is a series of periodic payments made under a Payout Option. This benefit can provide you with income for a fixed period of time or for life. It is based on the Account Value on the Annuity Payout Initiation Date. The earliest Annuity Payout Initiation Date you may select is the first Contract Anniversary. Unless we agree to a later date, the latest Annuity Payout Initiation Date you may select is the Contract Anniversary following your 95th birthday or the 95th birthday of a joint owner, if earlier. If the Owner is not a human being, such as a trust or a corporation, then the Annuity Payout Initiation Date may not be later than the Contract Anniversary following the 95th birthday of the eldest Annuitant, unless we agree to a later date. The latest permitted date may change if an Owner changes.

- The **Cash Benefit** lets you take out all of your Account Value (Surrender) or take out part of it (withdrawal). It is based on the Account Value on the date of the withdrawal or Surrender, reduced by any Early Withdrawal Charge. An Early Withdrawal Charge generally applies if you take money out during the first six Contract Years. You can Surrender your Contract or take a withdrawal before the Annuity Payout Initiation Date.

- The **Death Benefit** is payable to your Beneficiaries if there is an applicable death before the Annuity Payout Initiation Date. It is based on the Death Benefit value. It will never be less than the Return of Premium Guarantee, which will be equal to your Purchase Payments, reduced proportionally for withdrawals, but not including amounts deducted for Early Withdrawal Charges. The Return of Premium Guarantee is not reduced by Daily Charges.

When the Annuity Payout Benefit, the Cash Benefit, or the Death Benefit is determined on a date other than the end of the Term, the benefit will be based on the Daily Value Percentage of each Indexed Strategy (or the locked Daily Value Percentage if you have made a Performance Lock election). The Daily Value Percentage could be negative, which could result in significant loss, even if the Index has risen since the start of the Term.

A withdrawal from an Indexed Strategy before the end of the Term will reduce the Investment Base and the Death Benefit Return of Premium Guarantee by an amount that is proportional to the reduction in the Strategy value. If the Daily Value Percentage is negative, these proportional reductions could be significantly larger than the dollar amount of the withdrawal. A reduction in the Investment Base for a Term will reduce the gain from any future rise in the Index during that Term.

All benefits from the Contract are subject to income tax to the extent that they represent Contract earnings or pre-tax contributions. The taxable portion of Contract benefits may also be subject to an additional 10% penalty tax if received before age 59½.

Purchase Payments and Issue Age *(See "Purchase" section on page 62 for more details)*

The Contract is a modified single premium annuity. This means we will accept Purchase Payments only during the purchase payment period, which ends two months after the Contract Effective Date.

The initial Purchase Payment must be at least $25,000. Each additional Purchase Payment must be at least $10,000. You will need our prior approval if you want to make a Purchase Payment(s) of more than $1,000,000.

An Owner who is a natural person must be age 80 or younger on the Contract Effective Date.

Indexed Strategies *(See "Indexed Strategies" section on page 30 for more details)*

For this Contract, we currently offer twenty-four Indexed Strategies. Each of these Indexed Strategies uses one of six Indexes: S&P 500® Index, iShares® MSCI EAFE ETF, iShares® U.S. Real Estate ETF, SPDR Gold Shares ETF, First Trust Barclays Edge Index, and Russell 2000® Index. Sixteen of these Indexed Strategies have one-year Terms, two have two-year Terms, two have three-year Terms, and four have six-year Terms. The returns of each Index, except the First Trust Barclays Edge Index, do not reflect the reinvestment of dividends, which means that the Index return will be less than what would be received by an investing in the individual securities that make up the Index or in the ETF. The First Trust Barclays Edge

Index deducts fees and costs when calculating Index performance, which will also reduce the Index return. The S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy will always be available. In future Terms, we may stop offering any other Indexed Strategy, we may modify the Positive Return Factor percentage for any Indexed Strategy, and we may offer new Indexed Strategies.

Strategy	Index	Term	Negative Return Factor	Positive Return Factor
S&P 500 1-year 0% Floor with Cap*	S&P 500®	1-year	0% Floor	Cap
S&P 500 1-year -10% Floor with Cap	S&P 500®	1-year	-10% Floor	Cap
S&P 500 1-year 10% Buffer with Cap	S&P 500®	1-year	10% Buffer	Cap
S&P 500 1-year 10% Buffer with Performance Trigger*	S&P 500®	1-year	10% Buffer	Trigger Rate
S&P 500 1-year 10% Buffer with Dual Performance Trigger*	S&P 500®	1-year	10% Buffer	Trigger Rate
S&P 500 1-year 20% Buffer with Cap*	S&P 500®	1-year	20% Buffer	Cap
S&P 500 1-year 20% Buffer with Performance Trigger*	S&P 500®	1-year	20% Buffer	Trigger Rate
S&P 500 1-year 50% Downside Participation Rate with Cap	S&P 500®	1-year	50% Downside Participation Rate	Cap
S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate	S&P 500®	1-year	50% Downside Participation Rate	Upside Participation Rate
S&P 500 2-year 50% Downside Participation Rate with Cap	S&P 500®	2-year	50% Downside Participation Rate	Cap
S&P 500 2-year 50% Downside Participation Rate with Upside Participation Rate	S&P 500®	2-year	50% Downside Participation Rate	Upside Participation Rate
S&P 500 3-year 10% Buffer with Upside Participation Rate*	S&P 500®	3-year	10% Buffer	Upside Participation Rate
S&P 500 3-year 20% Buffer with Upside Participation Rate*	S&P 500®	3-year	20% Buffer	Upside Participation Rate
S&P 500 6-year 10% Buffer with Upside Participation Rate	S&P 500®	6-year	10% Buffer	Upside Participation Rate
S&P 500 6-year 20% Buffer with Upside Participation Rate*	S&P 500®	6-year	20% Buffer	Upside Participation Rate
iShares MSCI EAFE ETF 1-year -10% Floor with Cap	iShares MSCI EAFE ETF	1-year	-10% Floor	Cap
iShares MSCI EAFE ETF 1-year 50% Downside Participation Rate with Upside Participation Rate	iShares MSCI EAFE ETF	1-year	50% Downside Participation Rate	Upside Participation Rate
iShares U.S. Real Estate ETF 1-year -10% Floor with Cap	iShares U.S. Real Estate ETF	1-year	-10% Floor	Cap
iShares U.S. Real Estate ETF 1-year 50% Downside Participation Rate with Upside Participation Rate	iShares U.S. Real Estate ETF	1-year	50% Downside Participation Rate	Upside Participation Rate
SPDR Gold Shares ETF 1-year -10% Floor with Cap	SPDR Gold Shares ETF	1-year	-10% Floor	Cap
First Trust Barclays Edge 1-year 10% Buffer with Upside Participation Rate*	First Trust Barclays Edge	1-year	10% Buffer	Upside Participation Rate
First Trust Barclays Edge 1-year 50% Downside Participation Rate with Upside Participation Rate*	First Trust Barclays Edge	1-year	50% Downside Participation Rate	Upside Participation Rate
Russell 2000 6-year 10% Buffer with Upside Participation Rate*	Russell 2000®	6-year	10% Buffer	Upside Participation Rate
Russell 2000 6-year 20% Buffer with Upside Participation Rate*	Russell 2000®	6-year	20% Buffer	Upside Participation Rate

For any Cap Strategy, the Cap will never be less than 1%. For any Upside Participation Rate Strategy, the Upside Participation Rate will never be less than 5%. For any Trigger Strategy, the Trigger Rate will never be less than 1%. We will not offer a new Floor Strategy that offers less protection

against loss than a -20% Floor, a new Buffer Strategy that offers less protection against loss than a 5% Buffer, or a new Downside Participation Rate Strategy with less protection against loss than a 75% Downside Participation Rate.

A Performance Lock election may be made for any Term or Terms of the S&P 500 Indexed Strategies (excluding the 0% Floor with Cap Indexed Strategy and the three Trigger Strategies) and the First Trust Barclays Edge Indexed Strategies. If you make a Performance Lock election for a given Term of an eligible Strategy, you may not change or revoke that election or make a second election for that same Term of that same Strategy. A Performance Lock election will be based on the Daily Value Percentage at the second Market Close after it is received. The Daily Value Percentage could be negative, which could result in significant loss, even if the Index has risen since the start of the Term. A Performance Lock election means that you will not benefit from any rise in the Index during the balance of the Term and may earn less than you would have if you had not made a Performance Lock election.

*These 12 Strategies are not available for Contracts issued in Missouri or Nebraska until such time as state approval is received.

Contracts that have a Contract Effective Date before May 7, 2023 may have allocated funds to two additional Indexed Strategies. These two Indexed Strategies have been discontinued. They are not available for new or existing Contracts for any new Term that begins after May 7, 2023:

Discontinued Strategy	Index	Term	Negative Return Factor	Positive Return Factor
iShares MSCI EAFE ETF 2-year Term with Participation Rate	MSCI EAFE ETF	2-year	50% Downside Participation Rate	Upside Participation Rate
iShares U.S. Real Estate ETF 2-year Term with Participation Rate	U.S. Real Estate ETF	2-year	50% Downside Participation Rate	Upside Participation Rate

For existing Contracts, at the end of the current Term, any funds in one of these discontinued Indexed Strategies will be transferred to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy unless the owner elects otherwise.

The Contract does not invest in any equity, debt, or other investments. If you buy this Contract, you are not investing directly in an Index, in the stocks included in the S&P 500 Index or the Russell 2000 Index, in the stocks and bonds of the First Trust Barclays Edge Index, in the securities or other assets held by an iShares ETF or SPDR ETF, in any underlying index tracked by an iShares ETF or SPDR ETF, or in the securities or other assets held by such underlying index. **All benefits and guarantees under the Contract are the obligations of MassMutual Ascend Life and are subject to the credit worthiness and claims-paying ability of MassMutual Ascend Life.**

Indexed Strategy Value *(See "Indexed Strategy Value at End of Term" and "Indexed Strategy Value Before End of Term" sections below for more details)*
The value of an Indexed Strategy is determined each day throughout a Term. The method used to calculate the Strategy value depends on whether the value is being calculated at the end of a Term or during a Term, and whether a Performance Lock election has been made.

- Once the last Market Day of the Term has been reached, unless a Performance Lock election has been made, the value of an Indexed Strategy is equal to the remaining Investment Base increased for any rise in the applicable Index over that Term or decreased for any fall in the applicable Index over that Term. Any increase for the Term is limited by the applicable Positive Return Factor percentage for the Term. Any decrease for the Term is limited by the applicable Negative Return Factor percentage.

- On each day before the last Market Day of the Term, unless a Performance Lock election has been made, the value of an Indexed Strategy is equal to the remaining Investment Base increased or decreased by the Daily Value Percentage as of the most recent Market Close.

- If a Performance Lock election has been made, then starting with the second Market Close following receipt of the election and continuing through the end of the Term, the value of the Indexed Strategy is equal to the remaining Investment Base increased or decreased by the Daily Value Percentage locked as of that second Market Close. Because a Performance Lock election is effective on the second Market Close following receipt of the election, you will not be able to determine in advance the locked Daily Value Percentage that will apply to the Indexed Strategy at the time you make a Performance Lock election.

Investment Base *(See "Indexed Strategies" section on page 30 for more details)*

The value of an Indexed Strategy is calculated using the Investment Base. The Investment Base is not your Strategy value, Account Value, Surrender Value, Annuity Payout value, or Death Benefit value, but it is used to calculate those values.

At the start of a Term, the Investment Base of an Indexed Strategy is equal to the amount applied to that Strategy for that Term. The Investment Base decreases each day during a Term by the amount of the Daily Charge.

In addition, a withdrawal reduces the Investment Base by the amount that is proportional to the reduction in the Strategy value on account of the withdrawal and any related Early Withdrawal Charge. For example, if a withdrawal and the related Early Withdrawal Charge are equal to 35% of the Strategy value, then the Investment Base for that Strategy will be reduced by 35%. The reduction in the value of the Indexed Strategy will be based on the Daily Value Percentage of the Indexed Strategy (or the locked Daily Value Percentage if you have made a Performance Lock election). The Daily Value Percentage could be negative, which could result in significant loss, even if the Index has risen since the start of the Term.

This means the dollar amount of the proportional reduction in the Investment Base could be greater than the dollar amount of the withdrawal and the Early Withdrawal Charge.

- If the Daily Value Percentage is positive and the Strategy value immediately before the withdrawal is greater than the Investment Base, then the proportional reduction in the Investment Base will be less than the withdrawal and the related Early Withdrawal Charge.

- If the Daily Value Percentage is negative and the Strategy value immediately before the withdrawal is less than the Investment Base, then the proportional reduction in the Investment Base will be greater than the withdrawal and the related Early Withdrawal Charge.

A reduction in the Investment Base for a Term will reduce the gain or loss from any future changes in the Index during that Term.

Daily Charge *(See "Daily Charge" section on page 68 for more details)*

The Investment Base is reduced daily by an amount equal to the Daily Charge.

Except as provided in the next sentence, the Daily Charge is calculated using a daily rate that when compounded for a year is equal to 0.95% per year. The Daily Charge is calculated using a daily rate that when compounded for a year is equal to 0.75% per year if: (1) the Contract is issued before May 7, 2024; or (2) the application for the Contract is signed during the period April 7, 2024 through May 6, 2024, and the Contract is issued during the period May 7, 2024 through June 6, 2024.The Daily Charge applies whether or not you have made a Performance Lock election.

For an Indexed Strategy, it is calculated as a percentage of the remaining Investment Base and deducted daily.

At the end of a one-year Term during which no withdrawals were made, the sum of the Daily Charges through the Term End Date is equal to the Investment Base on the Term Start Date times the annual rate at which the Daily Charge compounds.

Example. At the beginning of a Term, you allocate $100,000 to an Indexed Strategy. You do not take any withdrawals during that Term.

For a Contract with a Daily Charge rate of 0.75%: Over the course of the Term, the Daily Charge amounts to $750 ($100,000 Investment Base X 0.75% Daily Charge rate), which reduces the Investment Base at the end of the Term to $99,250.

For a Contract with a Daily Charge rate of 0.95%: Over the course of the Term, the Daily Charge amounts to $950 ($100,000 Investment Base X 0.95% Daily Charge rate), which reduces the Investment Base at the end of the Term to $99,050.

Before the end of a Term, the Daily Charge is the Investment Base from the prior day, multiplied by the Daily Charge rate. If no withdrawals are made during the Term, the sum of the Daily Charges from the first day of the Term to any day during the Term is equal to: Investment Base on the Term Start Date – (Investment Base on the Term Start Date x (1 – Daily Charge Factor) raised to a power equal to the number of days elapsed prior to withdrawal).

Examples.

For Contracts with a Daily Charge rate of 0.75%: At the beginning of a Term, you allocate $100,000 to an Indexed Strategy. You do not take any withdrawals during that Term.

	On Day 73 of the Term	On Day 219 of the Term
Investment Base Calculation		
Initial Investment Base	$100,000	$100,000
Accumulated Daily Charges	$150 = ($100,000 – ($100,000 x (1 – 0.0000206251)^{73})	$451 = ($100,000 – ($100,000 x (1 – 0.0000206251)^{219})
Investment Base After Daily Charges	$99,850 = ($100,000 - $150)	$99,549 = ($100,000 - $451)

For Contracts with a Daily Charge rate of 0.95%: At the beginning of a Term, you allocate $100,000 to an Indexed Strategy. You do not take any withdrawals during that Term.

	On Day 73 of the Term	On Day 219 of the Term
Investment Base Calculation		
Initial Investment Base	$100,000	$100,000
Accumulated Daily Charges	$191 = ($100,000 – ($100,000 x $(1 - 0.0000261515)^{73}$)	$571 = ($100,000 – ($100,000 x $(1 - 0.0000261515)^{219}$)
Investment Base After Daily Charges	$99,809 = ($100,000 - $191)	$99,429 = ($100,000 - $571)

Indexed Strategy Value at End of a Term *(See "Indexed Strategy Value at End of Term" section on page 47 for more details)*
At the end of a Term, unless a Performance Lock election has been made, the value of an Indexed Strategy is equal to the remaining Investment Base increased or decreased based on the performance of the applicable Index and application of Positive Return Factors and Negative Return Factors at the end of the Term. If you have made a Performance Lock election, then the normal rules set out here do not apply, and the value at the end of a Term is determined as described under Performance Lock below.

Any increase in the value of an Indexed Strategy at the end of a Term is based on the value of the underlying Index on the final Market Day of the Term. This means that you may experience negative or flat performance for the Term even though the underlying Index rose throughout some or most of the Term.

Any increase for the Term may be limited by a Positive Return Factor. The Cap for a Term is the maximum positive Index change (measured at the beginning and end of the Term) taken into account to determine the Strategy value at the end of the Term. For example, if the Cap is 10% and the Index increases over the Term by 16%, the Cap limits the increase in Strategy value for the Term to 10%. The Upside Participation Rate for a Term is the portion of any positive Index change (measured at the beginning and end of the Term) that is taken into account to determine the Strategy value at the end of the Term. For example, if the Upside Participation Rate is 50% and the Index increases over the Term by 16%, the Upside Participation Rate limits the increase in Strategy value for the Term to 8%. The Trigger Rate for a Performance Trigger Strategy is the specified rate that is credited to the Strategy value when the Index change is zero or positive at the end of the Term. The Trigger Rate for a Dual Performance Trigger Strategy is the specified rate that is credited to the Strategy value when the Index change is zero, positive, or negative up to the Buffer at the end of the Term. For example, if the Trigger Rate for a Performance Trigger Strategy is 11%, the Index change for the Term must be zero or positive to qualify for the Trigger Rate, and the Index increases over the Term by 16%, the increase in Strategy value for the Term is equal to the 11% Trigger Rate.

Any decrease for a Term may be limited by a Negative Return Factor. The Downside Participation Rate is the portion of any decrease in the Index for the Term taken into account to determine the Strategy value at the end of the Term. For example, if the Downside Participation Rate is 50% and the Index decreases for the Term by 20%, the Downside Participation Rate limits the change in Strategy value for the Term to -10%. The Floor is the portion of any net fall in the Index for the Term that is taken into account to determine the Strategy value for a Strategy at the end of the Term. For example, if the Floor is -10% and the Index decreases for the Term by 20%, the Floor limits the change in Strategy value for the Term to -10%. The Buffer is the portion of any net fall in the Index for the Term that is disregarded to determine Strategy value at the end of the Term. For example, if the Buffer is 10% and the Index decreases for the Term by 15%, the Buffer limits the change in Strategy value for the Term to -5%.

Daily Charges are deducted from the Investment Base before adjustments based on Index performance and the application of Positive Return Factors and Negative Return Factors.

Examples. At the beginning of a Term, you allocate $100,000 to an Indexed Strategy. You do not take any withdrawals during that Term. Changes in the Index over a Term would have the following impact on Strategy values at the Term End, depending on the Positive Return Factor or Negative Return Factor that applies:

(a) When the Index rises over a Term of a Cap Strategy, the resulting increase in Strategy value will be smaller than the rise in the Index (up to the Cap) applied to the initial Investment Base. This is because the Daily Charge reduces the Investment Base before the Index rise (up to the Cap) is taken into account.

(b) When the Index rises over a Term of an Upside Participation Rate Strategy, the resulting increase in Strategy value will be smaller than the rise in the Index multiplied by the Upside Participation Rate applied to the Initial Investment Base. This is because the Daily Charge reduces the Investment Base before the Index rise multiplied by the Upside Participation Rate is taken into account.

(c) When the Index change over a Term of a Performance Trigger Strategy qualifies for the Trigger Rate, the resulting increase in Strategy value will be smaller than the Trigger Rate applied to the initial Investment Base. This is because the Daily Charge reduces the Investment Base before the Trigger Rate is applied.

(d)   When the Index falls over a Term of a Floor Strategy, the resulting decrease in Strategy value decrease will be larger than the fall in the Index (up to the Floor) applied to the initial Investment Base. This is because the Daily Charge reduces the Investment Base before the Index fall (up to the Floor) is taken into account.

(e)   When the Index falls over a Term of a Buffer Strategy, the resulting decrease in Strategy Value will be larger than the fall in the Index (subject to the Buffer) applied to the initial Investment Base. If the fall In the Index is covered by the Buffer, the Strategy Value will decrease by an amount equal the Daily Charge. If the fall in the Index exceeds the Buffer, the Strategy value will decrease by the Daily Charge and will also decrease by the fall in the Index over the Buffer. This is because the Daily Charge reduces the Investment Base before the Index fall (subject to the Buffer) is taken into account.

(f)   When the Index falls over a Term of a Downside Participation Rate Strategy, the resulting decrease in Strategy Value decrease will be larger than the fall in the Index multiplied by the Downside Participation Rate applied to the initial Investment Base. This is because the Daily Charge reduces the Investment Base before the Index fall multiplied by the Downside Participation Rate is taken into account.

We set the applicable Positive Return Factor percentage for each Indexed Strategy prior to the start of each Term. This means each Positive Return Factor percentage may fluctuate from Term to Term. An Upside Participation Rate will never be less than 5%. A Cap will never be less than 1%. A Trigger Rate will never be less than 1%. At least 10 days before the next Term starts, we will post the Positive Return Factor percentages that will apply to the Indexed Strategies for that next Term on our website (www.massmutualascend.com/RILArates).

For each Term of each Downside Participation Rate Strategy that we currently offer with this Contact, the Downside Participation Rate is 50%. The Downside Participation Rate for these Indexed Strategies will not change. In a hypothetical worst-case scenario where the Index falls by 100% over the Term and the Downside Participation Rate is 50%, then the Strategy value at the end of the Term will be equal to the Investment Base (reduced by the Daily Charge) decreased by 50%. In the future, we may offer a new Downside Participation Rate Strategy with more or less protection against loss than a 50% Downside Participation Rate, but we will not offer a new Downside Participation Rate Strategy with less protection against loss than a 75% Downside Participation Rate.

For each Term of the Floor Strategies that we currently offer with this Contract, the Floor is either -10% or 0%. The Floor for a Floor Strategy will not change. In a hypothetical worst-case scenario where the Index falls by 100% for the Term and the Floor is -10%, then the Strategy value at the end of the Term will be equal to the Investment Base (reduced by the Daily Charge) decreased by 10%. In the future, we may offer a new Floor Strategy that offers more or less protection against loss than a -10% Floor, but we will not offer a new Floor Strategy that offers less protection against loss than a -20% Floor.

For each Term of each 10% Buffer Strategy that we currently offer with this Contract, the Buffer is 10%, and for each Term of each 20% Buffer Strategy that we currently offer with this Contract, the Buffer is 20%. The Buffer for these Indexed Strategies will not change. In a hypothetical worst-case scenario where the Index falls by 100% over the Term and the Buffer is 10%, then the Strategy value at the end of the Term will be equal to the Investment Base (reduced by the Daily Charge) decreased by 90%. In a hypothetical worst-case scenario where the Index falls by 100% over the Term and the Buffer is 20%, then the Strategy value at the end of the Term will be equal to the Investment Base (reduced by the Daily Charge) decreased by 80%. In the future, we may offer a new Buffer Strategy that offers more or less protection against loss than current Buffers, but we will not offer a new Buffer Strategy that offers less protection against loss than a 5% Buffer.

For each Term of the Trigger Strategies, if the change in the Index does not qualify for the Trigger Rate, then the Strategy value at the end of the Term will be equal to the Investment Base (reduced by the Daily Charge) decreased by any fall in the Index that exceeds the Buffer. If the change in the Index does not qualify for the Trigger Rate, then the Strategy value at the end of the Term will be equal to the Investment Base (reduced by the Daily Charge) decreased by any fall in the Index that exceeds the Buffer.

Indexed Strategy Value Before End of Term *(See "Indexed Strategy Value Before End of Term" section on page 50 for more details)*

Before the end of a Term, unless you have made a Performance Lock election, the value of an Indexed Strategy is equal to the Investment Base (reduced by the Daily Charge) increased or decreased by the Daily Value Percentage. If you have made a Performance Lock election, then the normal rules set out here do not apply, and the value before the end of a Term is determined as described under Performance Lock below.

If you take a withdrawal or Surrender the Contract before the end of a Term, the application of the Daily Value Percentage may cause your losses to exceed the -10% Floor or 0% Floor, or the 50% Downside Participation Rate or you may not receive the benefit of the 10% Buffer or 20% Buffer. In extreme circumstances, the total loss for an Indexed Strategy before the end of a Term could be 100%, meaning that you would suffer a complete loss of your principal and any prior earnings if you were to take a withdrawal or Surrender your Contract.

The Daily Value Percentage is intended to determine the value of an Indexed Strategy prior to the end of a Term using option values related to the positive and negative return factors of the Indexed Strategy. The Daily Value Percentage is equal to the Net Option Price, reduced by the Amortized Option Cost and the Trading Cost.

- The Net Option Price is the calculated price of hypothetical options that represent the projected change in the applicable Index over the full Term. The calculated price takes into account the applicable Positive Return Factor for the Term, the Negative Return Factor, and Index change required to qualify for the Trigger Rate.
- The Amortized Option Cost is the calculated price of those options at the start of the Term amortized over the Term.
- The Trading Cost is the estimated cost of selling those options. It is a percentage set by us from time to time based on market conditions.

For example, if the Investment Base for a Strategy is $100,000 and the Daily Value Percentage is 8%, then the value of your Strategy on that day is equal to $108,000 ($100,000 Investment Base, increased by $100,000 x 8%). If the Investment Base for a Strategy is $100,000 and the Daily Value Percentage is -8%, then the value of your Strategy on that day is equal to $92,000 ($100,000 Investment Base, decreased by $100,000 x -8%). Any strategy value before the end of the Term will almost always be less, perhaps significantly less, than the value suggested by the rise or fall of the Index.

Performance Lock *(See "Indexed Strategy Value After Performance Lock Election" section on page 58 for more details)*

A Performance Lock is an election to lock in the Daily Value Percentage for the remainder of a Term. A Performance Lock election may be made for any Term or Terms of the S&P 500 Indexed Strategies (excluding the 0% Floor Cap Strategy and the three Trigger Strategies) and the First Trust Barclays Edge Indexed Strategies.

You may make a Performance Lock election for a Term of an eligible Strategy by a Request in Good Order. Once we receive your Request in Good Order, you may not change or revoke your Performance Lock election for the given Term of the eligible Strategy or make a second election for that same Term of that same Strategy. However, Daily Charges continue to be assessed even after a Performance Lock election.

A Performance Lock election for a Term is effective on the second Market Close following our receipt of your Request in Good Order. After the second Market Close, the Indexed Strategy value before the end of the Term and the Indexed Strategy value at the end of the Term is equal to the remaining Investment Base (reduced daily by the Daily Charge) increased or decreased by the locked Daily Value Percentage. The locked Daily Value Percentage is the Daily Value Percentage as determined for that second Market Close. The Indexed Strategy value will change if there is a change in the Investment Base due to a withdrawal.

If you make a Performance Lock election, the Daily Value Percentage will be locked for the balance of the Term. This means that you will experience flat performance through the balance of the Term even if the Net Option Value increases, you will not benefit from the continued decline in the Daily Value Percentage, and your ending Strategy value will not be based on the ending Index value on the last day of the Term. As a result, the locked-in Strategy value could be lower than the value you otherwise would have received at the end of the Term. If the Daily Value Percentage is negative at the time of the Performance Lock election, you could be locking in a loss which could be significant.

Because a Performance Lock election is effective on the second Market Close after receipt of your Request in Good Order, you will not be able to determine in advance the locked Daily Value Percentage that will apply to the Indexed Strategy at the time you make a Performance Lock election. The Daily Value Percentage at the time the Performance Lock election becomes effective may be higher or lower than it was at the time you submitted your election.

Your Request in Good Order for a Performance Lock election must be received by the third-to-last Market Close of the Term. You can make a Performance Lock election for an eligible Indexed Strategy once per Term.

If you make a Performance Lock election for an Indexed Strategy with a 2-year, 3-year, or 6-year Term, the Term will always end on the next anniversary of the Term start date even if it otherwise would have continued for one or more additional years. For example, if the Term start date for the S&P 500 6-Year 10% Buffer with Upside Participation Rate Indexed Strategy was June 6, 2024, and you make a Performance Lock election that is effective on or before June 6, 2025, the Term for that Strategy will end on June 6, 2025. See the "Strategy Selections at Term End" section on page 64 for more information about how to select strategies for the next Term.

You are responsible for deciding whether to elect a Performance Lock and we are not responsible for any losses incurred as a result of your decision whether or not to elect a Performance Lock. You may access Daily Value Percentage information for the Indexed Strategies as of the previous day's Market Close by calling 1-800-789-6771 or by accessing your account online at www.massmutualascend.com. A Performance Lock election is not effective until the second Market Close after receipt of your request, so you will not know your Daily Value Percentage on the day you make a Performance Lock election. Before electing a Performance Lock, you should consult with a financial advisor.

Strategy Renewals and Reallocations *(See "Strategy Selections at Term End" section on page 64 for more details)*

At the end of each Term, you may reallocate the ending values of the Indexed Strategies for that Term among the then available Strategies.

- If you reallocate, then we will apply the ending values of the Indexed Strategies to a new Term of the Indexed Strategies that you select.

- If you do not reallocate, then we will apply the ending value of each Indexed Strategy to a new Term of that same Strategy, as long as the same Strategy is available for a new Term.

The S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy and the S&P 500 6-year 20% Buffer with Upside Participation Rate Strategy are only available for a Term that starts in the first Contract Year. At the end of a 6-Year Term for one of these S&P Indexed Strategies, if you do not reallocate, then we will apply the ending value of that 6-Year S&P 500 Indexed Strategy to a new Term of the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy.

The Russell 2000 6-year 10% Buffer with Upside Participation Rate Indexed Strategy and the Russell 2000 6-year 20% Buffer with Upside Participation Rate Indexed Strategy are only available for a Term that starts in the first Contract Year. At the end of a 6-year Term for one of these Russell 2000 Indexed Strategies, if you do not reallocate, then we will apply the ending value of that 6-Year Russell 2000 Indexed Strategy to a Russell 2000 Indexed Strategy with a 1-Year Term, or, if we do not offer a 1-Year Russell 2000 Indexed Strategy, then we will apply the ending value of the 6-Year Russell 2000 Indexed Strategy to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy. Currently, we do not offer a 1-Year Russell 2000 Indexed Strategy. Any Positive Return Factors and Negative Return Factors could be different for a new 1-Year Russell 2000 Indexed Strategy offered in the future than for the Russell 2000 6-year 10% Buffer with Upside Participation Rate Indexed Strategy and the Russell 2000 6-year 20% Buffer with Upside Participation Rate Indexed Strategy.

The S&P 500 3-year 10% Buffer with Upside Participation Rate Strategy and the S&P 500 3-year 20% Buffer with Upside Participation Rate Strategy will not be available for Terms that begin after the fourth Contract Year. At the end of a 3-year Term for one of these S&P 500 Indexed Strategies, if you do not reallocate, then we will apply the ending value of that 3-year S&P Indexed Strategy to a new 3-year Term of that same Strategy if it is available, or if a new Term of that Strategy is not available, then we will apply the ending value of that 3-year S&P 500 Indexed Strategy to a new Term of the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy.

If funds are allocated to any 1-year or 2-year Indexed Strategy that will not be available for the next Term and you do not request a reallocation of those funds, we will apply the ending value of that Indexed Strategy to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy for the new Term.

You cannot reallocate your value among Indexed Strategies during a Term. If you elect a Performance Lock, you will not be able to reallocate the locked value until the end of a Term. If you make a Performance Lock election for an S&P 500 2-year, 3-year, or 6-year Strategy, the Term will always end on the next anniversary of the Term start date even if it otherwise would have continued for one or more additional years. We will send you written notice at least 30 days before the end of a Term to provide you with the opportunity to make a reallocation. However, you will not know the Positive Return Factor percentages applicable to a new Term until 10 days before the end of the current Term. You should consider this information before finalizing your renewal or reallocation decision. Your reallocation election must be received by the last Market Close of a Term.

Access to Your Money through Withdrawals *(See "Cash Benefit" section on page 66 for more details)*

You may take a withdrawal from your Contract at any time prior to the Annuity Payout Initiation Date. During the first six Contract Years, an Early Withdrawal Charge will apply unless (a) your withdrawal qualifies for the Free Withdrawal Allowance or (b) the withdrawal qualifies for a waiver (as explained in the "Early Withdrawal Charge—Early Withdrawal Charge Waiver" section). A withdrawal from an Indexed Strategy will reduce the Account Value by the amount of the withdrawal, including any taxes and any applicable Early Withdrawal Charge. A withdrawal from an Indexed Strategy during a Term will be based on the Daily Value Percentage of the Indexed Strategy (or the locked Daily Value Percentage if you have made a Performance Lock election). The Daily Value Percentage could be negative, which could result in significant loss, even if the Index has risen since the start of the Term. The withdrawal will reduce the Investment Base and the Death Benefit Return of Premium Guarantee by an amount that is proportional to the reduction in the Strategy value. If the Daily Value Percentage is negative, these proportional reductions could be significantly larger than the dollar amount of the withdrawal. A reduction in the Investment Base for a Term will reduce the gain from any future rise in the Index during that Term.

You may designate the Indexed Strategy or Strategies from which a withdrawal will be taken by a Request in Good Order prior to the date of the withdrawal. If you do not make a designation, we will take the withdrawal in the following order:
- first from the Purchase Payment Account;
- and then proportionally from Indexed Strategies having the shortest Terms (meaning the withdrawal will be taken proportionally from Indexed Strategies with 1-year Terms, and then proportionally from Indexed Strategies with 2-year Terms, and then proportionally from Indexed Strategies with 3-year Terms, and finally from Indexed Strategies having 6-year Terms).

A withdrawal will reduce the amount payable upon Surrender, applied to the Annuity Payout Benefit, or payable as the Death Benefit.

The amount withdrawn is subject to income tax to the extent that it represents Contract earnings or pre-tax contributions. The taxable portion of a withdrawal may also be subject to an additional 10% penalty tax if received before age 59½.

Early Withdrawal Charge *(See "Early Withdrawal Charge" section on page 68 for more details)*

During the first six Contract Years, an Early Withdrawal Charge applies if you Surrender your Contract or withdraw an amount in excess of the Free Withdrawal Allowance. The Early Withdrawal Charge is equal to the amount subject to the Early Withdrawal Charge multiplied by the applicable rate set out below.

Contract Year	1	2	3	4	5	6	7+
Early Withdrawal Charge Rate	9%	8%	7%	6%	5%	4%	0%

If you take a withdrawal from your Contract, the amount subject to the Early Withdrawal Charge is the amount you withdraw plus any amount needed to pay the Early Withdrawal Charge. If you Surrender your Contract, the amount subject to the Early Withdrawal Charge is your Account Value.

When you request a withdrawal, you can instruct us to reduce the amount we pay you by the amount of the Early Withdrawal Charge. If you instead instruct us to pay you the specific withdrawal amount, we will reduce your Account Value by both the requested specific withdrawal amount, as well as the amount of the Early Withdrawal Charge. In this case, since you opted not to pay the Early Withdrawal Charge out of your withdrawal proceeds, we treat the Early Withdrawal Charge as an additional requested withdrawal. We will apply the Early Withdrawal Charge rate to both the specified withdrawal amount, as well as any amounts we withdraw to cover your Early Withdrawal Charges. The Early Withdrawal Charge does not apply to a withdrawal that qualifies for the Free Withdrawal Allowance or the amount, if any, that qualifies for another waiver.

For example, if after using your Free Withdrawal Allowance you request that an additional $10,000 be withdrawn from your Account Value when a 9% Early Withdrawal Charge was in effect, a $900 Early Withdrawal Charge would apply (9% of $10,000 withdrawn). You would receive $9,100 ($10,000 - $900), minus any income tax withholding.

Similarly, if you request a net amount of $10,000 from your account in the same circumstances, we would treat the Early Withdrawal Charge amount as an additional requested withdrawal subject to an Early Withdrawal Charge. This means that we will "gross up" your requested withdrawal to cover applicable Early Withdrawal Charges (and any income tax withholding). If we assume that no income tax withholding applies, the withdrawal would be grossed up to $10,989, calculated by dividing the net amount requested by 1 minus the Early Withdrawal Charge rate ($10,000 / (1 – 0.09)). The Early Withdrawal Charge would be $989 (9% of the $10,989 withdrawal), and you would receive $10,000 ($10,989 - $989).

Early Withdrawal Charges will reduce Indexed Strategy values and may result in losses that exceed the Floor or the Downside Participation Rate or reduce the effect of the Buffer.

Free Withdrawal Allowance *(See "Early Withdrawal Charge" section on page 68 for more details)*

The Early Withdrawal Charge does not apply to the Free Withdrawal Allowance.

   • For the first Contract Year, the Free Withdrawal Allowance is an amount equal to 10% of the total Purchase Payments received by us.

   • For each subsequent Contract Year, the Free Withdrawal Allowance is equal to 10% of the Account Value as of the most recent Contract Anniversary.

Payout Options *(See "Payout Options" section on page 73 for more details)*

During the period that begins on the Annuity Payout Initiation Date, we will make payments under the applicable Payout Option.

Your Contract offers different Payout Options. After the first payment is made, you cannot change the Payout Option(s) or any fixed period you selected. The Payout Options are listed below.

   • Fixed Period Payout

- Life Payout

- Life Payout with Payments for at Least a Fixed Period

- Joint and One-Half Survivor Payout

Death Benefit *(See "Death Benefit" section on page 71 for more details)*

A Death Benefit is payable under the Contract if there is an applicable death before the Annuity Payout Initiation Date.

The Death Benefit value is the greater of: (1) the Account Value as of the applicable date; or (2) the Return of Premium Guarantee, which will be equal to your Purchase Payment(s) reduced proportionally for all withdrawals, but not including amounts deducted to pay Early Withdrawal Charges. The Return of Premium Guarantee is not reduced by Daily Charges.

Tax Deferral *(See "Federal Tax Considerations" section on page 82 for more details)*
The Contract is generally tax deferred, which means that you are not taxed on the earnings in your Contract until the money is paid to you. If a non-tax-qualified Contract is owned by a non-natural person, such as a partnership, limited liability company, or corporation, it is subject to special rules and generally will not qualify for tax deferral. These special rules may also apply to a non-tax-qualified Contract owned by certain irrevocable trusts that have charitable or other non-natural beneficiaries.

A tax-qualified retirement plan such as an IRA also provides tax deferral. Buying the Contract within a tax-qualified retirement plan does not give you any extra tax benefits. There should be reasons other than tax deferral for buying the Contract within a tax-qualified retirement plan.

Right to Cancel *(See "Right to Cancel (Free Look)" section on page 78 for more details)*

If you purchase a Contract, you may cancel it within 20 days after you receive it. If you purchase a Contract to replace an existing annuity contract or insurance policy, you have 30 days to cancel the Contract. The right to cancel period may be longer in some states. If you cancel your Contract, you will receive a refund. The amount of the refund will depend on where you live. In some states, the refund amount is equal to the Purchase Payments. In that case, no adjustment will be made for the Daily Value Percentage and no Early Withdrawal Charges will apply to the amount refunded. In other states, the refund amount is equal to the Account Value on the day that we receive a cancellation request. In this case, you would bear the risk of changes in Indexed Strategy values before cancellation because an adjustment will be made for the Daily Value Percentage, but no Early Withdrawal Charges will apply to the amount refunded. Unless required by state law, we do not refund any Daily Charge assessed during the free look period or any Early Withdrawal Charges assessed during the free look period that relate to a withdrawal taken before you cancel the Contract. See the Right to Cancel (Free Look) section for more information about your cancellation rights and the State Variations section of this prospectus for more information about state variations that apply to cancellation rights.

There may be tax consequences if you cancel the Contract. You should seek advice on tax questions based on your particular circumstances from a tax advisor.

RISK FACTORS

You should understand the risks associated with the Contract before you purchase it. You should carefully consider your income needs and risk tolerance to determine whether the Contract or a particular Indexed Strategy is appropriate for you. The level of risk you bear and your Contract's potential investment performance will differ depending on the Indexed Strategies you choose.

Loss of Principal Related to Indexed Strategies

Loss Due to Poor Index Performance

There is a significant risk of loss of principal and prior earnings due to the fall of an Index if you allocate your Account Value to an Indexed Strategy. Such a loss may be substantial. This risk exists because, at the end of that Term, you can lose up to 10% of the money allocated to a -10% Floor Strategy, 90% of the money allocated to a 10% Buffer Strategy, 80% of the money allocated to a 20% Buffer Strategy, or 50% of the money allocated to any other Indexed Strategy. In addition, the Daily Charge will reduce Indexed Strategy value. If you allocate money to one or more Indexed Strategies over multiple Terms, you may lose money each Term, which may result in a cumulative loss that is greater than 50% for an Indexed Strategy with a Downside Participation Rate, greater than 10% for a -10% Floor Strategy, greater than 90% for a 10% Buffer Strategy, or greater than 80% for a 20% Buffer Strategy of your principal and any prior earnings.

The S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy will always be available. At the end of a Term, we may stop offering any other Indexed Strategy. Consequently, any other Indexed Strategy described in this prospectus may not be available after the end of the initial Term. The S&P 500 6-Year 10% Buffer with Upside Participation Rate Indexed Strategy, the S&P 500 6-year 20% Buffer with Upside Participation Rate Strategy, the Russell 2000 6-year 10% Buffer with Upside Participation Rate Indexed Strategy, and the Russell 2000 6-year 20% Buffer with Upside Participation Rate Indexed Strategy will only be available for Terms beginning in the first Contract Year. The S&P 500

3-year 10% Buffer with Upside Participation Rate Strategy and the S&P 500 3-year 20% Buffer with Upside Participation Rate Strategy are not available for Terms that begin after the fourth Contract Year. We have the right to replace the Index associated with an Indexed Strategy under certain circumstances.

In the future, we may offer a new Strategy with a Downside Participation Rate that is more or less than 50%, a Floor that is more or less negative than -10%, or that has a Buffer of more or less than 10%. However, we will not offer a new Buffer Strategy that offers less protection against loss than a 5% Buffer, a Floor Strategy that offers less protection against loss than a -20% Floor, or a Downside Participation Rate Strategy that offers less protection against loss than a 75% Downside Participation Rate.

The risk of loss of principal will be greater if you allocate money to a Strategy with a higher Downside Participation Rate, a lower Floor, or less of a Buffer. In the worst case scenario, if we could eliminate all of the current Indexed Strategies and offer only new Indexed Strategies with higher Downside Participation Rates, more negative Floors, or lesser Buffers subject to the limits noted above, then your risk of loss of principal would increase and you may earn a return that is lower than the return your investments would have earned if they had been invested in the other Indexed Strategies that are currently available. In addition, a reduction in the number of Indexed Strategies that are available may reduce your opportunity to increase your Contract value. If you choose to Surrender the Contract because of changes in the number and/or type of available Indexed Strategies, your Surrender may be subject to withdrawal charges, Daily Value Percentage adjustments, taxes, and tax penalties. If you purchase another retirement contract, it may have different features, fees, and risks than this Contract.

Loss Due to Negative Daily Value Percentage Adjustment

If, before the end of the Term, you were to take a withdrawal or Surrender the Contract, annuitize, or elect a Performance Lock, or if we were to pay the Death Benefit, the Daily Value Percentage calculation may cause the value of a Strategy to be even less than 50% of the money allocated to an Indexed Strategy with a Downside Participation Rate, or even less than 90% of the money allocated to a -10% Floor Strategy, or less than the money allocated to a 0% Floor Strategy, or even less than 10% for money allocated to a 10% Buffer Strategy, or even less than 20% for money allocated to a 20% Buffer Strategy. **In extreme circumstances, the total loss for an Indexed Strategy before the end of a Term could be 100% due to the Daily Value Percentage, meaning that you would suffer a complete loss of your principal and any prior earnings in a Strategy if, before the end of the Term, you were to take a withdrawal or Surrender the Contract, annuitize, or elect a Performance Lock, or if we were to pay the Death Benefit.**

Loss of Principal Related to Daily Charge

There is a risk of loss of principal and related earnings because the Daily Charge reduces your Investment Base, which lowers Strategy values. In addition, any Index increases will not apply to amounts deducted as Daily Charges because Daily Charges are subtracted from the Investment Base prior to calculating Strategy values. The Daily Charge will continue to be assessed against your Investment Base even if you have made a Performance Lock election.

You could realize losses even when the Index rises. This will occur when the amount of increase attributable to an Index rise is smaller than the amount needed to offset the Daily Charge.

For example, if the Investment Base of an Indexed Strategy at the start of a Term is $100,000, no withdrawals are taken during the Term, and the Daily Charge is 0.95% per year, $950 in Daily Charges will be deducted over the course of the Term, and the remaining Investment Base at the end of the Term will be $99,050 ($100,000 – $950). The Strategy value at the end of the Term will be equal to the remaining Investment Base ($99,050) increased or decreased based on the performance of the applicable Index and the applicable Positive Return Factor and Negative Return Factor percentages at the end of the Term. Any positive interest to be credited at the end of the Term will not apply to the $950 applied to pay the Daily Charges because the Daily Charges are subtracted from the Investment Base before calculating the Strategy value.

When the Index falls, the Daily Charge may cause you to realize losses that exceed the Floor or the Downside Participation Rate or reduce the effect of the Buffer.

Loss of Principal Related to Early Withdrawal Charge

There is also a risk of loss of principal and prior earnings if you take a withdrawal from your Contract or Surrender it during the first six Contract Years and an Early Withdrawal Charge applies. This risk exists for each Indexed Strategy. An Early Withdrawal Charge will reduce the value of the Strategy. This reduction may exceed any prior earnings.

Long-Term Nature of Contract

The Contract is a deferred annuity, which means the Annuity Payout Benefit will begin on a future date. We designed the Contract to be a long-term investment that you can use to help build a retirement nest egg and provide income for retirement. The limitations, adjustments and charges included in the Contract reflect its long-term nature.

The Contract and its Indexed Strategies may not be appropriate for investors who plan to take withdrawals (including automated withdrawals and required minimum distributions) during the first six Contract Years, because of the assessment of Early Withdrawal Charges, or who plan to take withdrawals during Indexed Strategy Terms, because of the application of the Daily Value Percentage.

Limits on Strategy Value at End of Term

Any increase in the value of an Indexed Strategy at the end of a Term is based on the value of the underlying Index at the final Market Close of the Term.

If the Index rises for the Term and a Cap applies, then the Strategy value at the end of the Term can never be more than the Investment Base (reduced by the Daily Charge) increased by the Cap for that Term even if the Index has risen by more than the Cap.

If the Index rises for the Term and an Upside Participation Rate applies, then the Strategy value at the end of the Term will be the Investment Base (reduced by the Daily Charge) increased by your share of the rise in the Index. Your share of any rise in the Index is equal to the Upside Participation Rate for that Term multiplied by the rise in the Index.

If the Index rises for the Term of a Trigger Strategy, then the Strategy value at the end of the Term will be the Investment Base (reduced by the Daily Charge) increased by the Trigger Rate for that Term even if the Index has risen by more than the Trigger Rate.

Due to these limitations, in many cases the return on money allocated to an Indexed Strategy with a Cap, or Trigger Rate will not fully reflect the corresponding rise in the Index for the Term and the return on money allocated to an Indexed Strategy with an Upside Participation Rate that is less than 100% will never reflect the entire corresponding rise in the Index for the Term.

Index Changes Over the Course of Term

At the end of a Term, unless you have made a Performance Lock election, we measure the Index change by comparing the Index value on the first day of the Term to the Index value on the last day of the Term. This means that if the Index value is lower on the last day of the Term, you may experience negative or flat performance even if the Index rose through some, or most, of the Term.

The Contract offers you the opportunity to allocate funds to Indexed Strategies for one year, two-year, three-year, or six-year Terms. For Indexed Strategies with two-year Terms, three-year Terms, or six-year Terms, changes in Strategy value as a direct result of Index performance will only be measured on the first day and the last day of a two-year period, three-year period, or a six-year period and not annually.

Limits on Strategy Value Before End of Term

Before the end of a Term, we calculate the value of an Indexed Strategy using a Daily Value Percentage that is not tied directly to the underlying Index. The purpose of this calculation is to shift any potential investment loss on the Company's general account assets that support the indexed option guarantees from the Company to you when paying amounts removed prematurely from an Indexed Strategy. The Daily Value Percentage is applied when you take a withdrawal, or Surrender your Contract, annuitize it, elect a Performance Lock, or if we pay the Death Benefit on a date other than the end of a Term. The Daily Value Percentage includes the prices of hypothetical options. Such option prices will vary from day to day. Any Strategy value before the end of a Term will almost always be less, perhaps significantly less, than the value suggested by the rise or fall of the Index. You will bear the risk that the Daily Value Percentage may decrease the Strategy value before the end of a Term. In extreme circumstances, the total loss for an Indexed Strategy before the end of a Term could be 100%, meaning that you would suffer a complete loss of your principal and any prior earnings if you were to take a withdrawal, Surrender the Contract, annuitize it, or elect a Performance Lock, or if we were to pay the Death Benefit.

The Daily Value Percentage includes deductions for the Amortized Option Cost and the Trading Cost, which means that any Strategy value before the end of a Term will almost always be less, perhaps significantly less, than the value suggested by the rise or fall of the Index. Because the Amortized Option Cost is a decreasing value, its negative impact on Strategy values will be more pronounced at the start of a Term than at the end of that Term. In addition, even if the Index rises, the Strategy value may be less than the Investment Base due to these deductions.

Strategy values are used to calculate the amount locked in upon election of a Performance Lock, amount available for withdrawals, the amount payable upon Surrender, applied to the Annuity Payout Benefit, or payable as the Death Benefit. Accordingly, the Amortized Option Cost and Trading Cost will have a negative effect on such amounts taken before the end of a Term.

For more information on how we determine the prices of hypothetical options, see the Option Prices section of this Prospectus.

No Increases in Value After Performance Lock

If you make a Performance Lock election, the Daily Value Percentage will be locked for the balance of the Term. This means that you will experience flat performance through the balance of the Term even if the Net Option Value increases, you will not benefit from the continued decline in the Daily

Value Percentage, your Strategy value will continue to be reduced to reflect the Daily Charge, and your ending Strategy value will not be based on the ending Index value on the last day of the Term.

You may access Daily Value Percentage information for the Indexed Strategies as of the previous day's Market Close by calling 1-800-789-6771 or by accessing your account online at www.massmutualascend.com. Before electing a Performance Lock, you should consult with a financial advisor.

A Performance Lock election is not effective until the second market close after the receipt of your request so you will not be able to determine the Daily Value Percentage that will be locked in. You bear the risk that the Daily Value Percentage that is locked in will be lower than the Daily Value Percentage you last obtained, and lower than the potential Strategy value you would receive at the end of the Term. If you exercise the Performance Lock feature at a time when the Strategy value has declined, you will lock in any loss, which could be significant.

Limits on Reallocations

You can only reallocate money among Indexed Strategies at the end of a Term. If you want to take money out of an Indexed Strategy during a Term, you must take a withdrawal or Surrender your Contract. If you choose to take a withdrawal or Surrender the Contract, your withdrawal or Surrender could result in significant loss due to Early Withdrawal Charges, Daily Value Percentage adjustments, taxes, and tax penalties. A withdrawal before the end of a Term will proportionally reduce the Investment Base for an Indexed Strategy and the Return of Premium Guarantee for the Death Benefit, and this proportional reduction could be larger than the dollar amount of the withdrawal.

Effect of Surrenders

If you Surrender your Contract at any time during the first six Contract Years and an Early Withdrawal Charge applies, the amount payable will reflect a deduction for the charge. All or some portion of a withdrawal may be subject to federal and state income taxes and, if taken before age 59½, may be subject to a 10% federal penalty tax. If you Surrender your Contract at the end of a Term, the amount payable will reflect any rise or fall of the applicable Indexes over the Term, applicable Positive Return Factor percentages and Negative Return Factor percentages, and any Early Withdrawal Charge. If you Surrender your Contract before the end of a Term, the amount payable will reflect the applicable Daily Value Percentage, which could significantly reduce the amount you receive upon Surrender, and any Early Withdrawal Charge.

Effect of All Withdrawals

If you take a withdrawal at any time, we will reduce your Account Value by an amount equal to that withdrawal. If you take a withdrawal during the first six Contract Years and an Early Withdrawal Charge applies, we will also reduce your Account Value by the amount of the Early Withdrawal Charge. A reduction in the Account Value will reduce the amount payable upon Surrender, applied to the Annuity Payout Benefit, or payable as the Death Benefit. In addition, a withdrawal will proportionally reduce the Return of Premium Guarantee for the Death Benefit and this proportional reduction could be larger than the dollar amount of the withdrawal.

Each withdrawal from an Indexed Strategy, including withdrawals available under the Free Withdrawal Allowance, withdrawals that qualify for a waiver of the Early Withdrawal Charge, withdrawals under an automatic withdrawal program and withdrawals to satisfy a required distribution, will reduce the Strategy value by the dollar amount of the withdrawal and any related Early Withdrawal Charge. If taken from an Indexed Strategy before the end of a Term, the reduction in Strategy value is determined by the Daily Value Percentage on the date of the withdrawal, or on the locked Daily Value Percentage if you have made a Performance Lock election. Unless you have made a Performance Lock election (which, except for withdrawals, freezes the Strategy value until the end of the Term), a withdrawal before the end of the Term should almost always result in a greater reduction in Strategy value than if the withdrawal had happened at the end of the Term under otherwise identical circumstances. The Investment Base used to calculate the Strategy value through the end of that Term will be reduced in proportion to the reduction in the Strategy value. This means the dollar amount of the proportional reduction in the Investment Base will be more, maybe significantly more, than the dollar amount of the withdrawal and the Early Withdrawal Charge if the Strategy value immediately before the withdrawal is less than the Investment Base. A reduction in the Investment Base will limit the effect of any rise or fall in the Index for the remainder of the Term.

All or some portion of a withdrawal may be subject to federal and state income taxes and, if taken before age 59½, may be subject to a 10% federal penalty tax. For a further discussion of the tax treatment of withdrawals and surrenders, please see the Federal Tax Considerations section on page 82.

Early Withdrawal Charges will reduce Indexed Strategy values and may result in losses that exceed the Floor or the Downside Participation Rate or reduce the protection of the Buffer.

Timing and Effect of Withdrawals Before End of Term

Before taking a withdrawal, you should consider the dates on which the Term(s) of your Indexed Strategies end relative to the timing of that withdrawal.

- If you take a withdrawal from an Indexed Strategy before the end of a Term, we will immediately reduce the Investment Base for that Indexed Strategy.

- The reduction will be proportional to the reduction in the Strategy value, which means that the proportional reduction in the Investment Base could be larger than the dollar amount of the withdrawal.

- Reductions to the Investment Base will have a negative effect on any increases in the Indexed Strategy value for the remainder of that Term, but will reduce any decreases in the Indexed Strategy value for the remainder of that Term.

- Once the Investment Base for an Indexed Strategy is reduced due to a withdrawal before the end of a Term, it will not increase at any time during the remainder of that Term.

Each withdrawal from an Indexed Strategy before the end of a Term, including withdrawals available under the Free Withdrawal Allowance, withdrawals that qualify for a waiver of the Early Withdrawal Charge, withdrawals under an automatic withdrawal program and withdrawals to satisfy a required distribution, will proportionally reduce the Investment Base.

In order for you to avoid the application of the Daily Value Percentage in calculating the value of an Indexed Strategy, you need to schedule withdrawals to coincide with Term end dates. The Contract is intended for long-term investment purposes and the Contract and its Indexed Strategies may not be appropriate for investors who plan to take withdrawals (including automated withdrawals and required minimum distributions) during the first six Contract Years, because of the assessment of Early Withdrawal Charges, or who plan to take withdrawals during Indexed Strategy Terms, because of the application of the Daily Value Percentage.

No Ability to Determine Contract Values in Advance

We will process any withdrawal request at the first Market Close after receipt of your Request in Good Order. This means you will not be able to determine in advance the amount of the proportional reduction in the Investment Base due to the withdrawal. Likewise, you will not be able to determine in advance the amount payable upon Surrender, to be applied to the Annuity Payout Benefit or payable as the Death Benefit.

A Performance Lock election is effective on the second Market Close after receipt of your Request in Good Order. This means you will not be able to determine in advance the locked Daily Value Percentage that will be applicable to the Indexed Strategy at the time you make a Performance Lock election. The Daily Value Percentage may be higher or lower at the time the Performance Lock election becomes effective than it was when you submitted your Request in Good Order.

Changes in Positive Return Factors and Trading Cost

We set the Positive Return Factor percentage for each new Term of an Indexed Strategy. The Positive Return Factor percentage for a new Term of an Indexed Strategy may be lower than its Positive Return Factor percentage for the current Term. A Cap may be as low as 1%. A Trigger Rate may be as low as 1%. An Upside Participation Rate may be as low as 5%. You risk the possibility that the Positive Return Factor percentage for a new Term may be lower than you would find acceptable.

You bear the risk of any negative effect on the Daily Value Percentage and Indexed Strategy values of an increase in the Trading Cost.

Unavailable Indexed Strategies

At the end of a Term, we may stop offering any Indexed Strategy other than the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy. Consequently, any other Indexed Strategy you selected may not be available after the end of a Term. In such an event, the Company will amend the prospectus. At least 30 days before the end of each Term, we will send you a written notice with information about the Indexed Strategies that will be available for the next Term.

We may establish minimum and maximum amounts or percentages that may be applied to a given Indexed Strategy. This means that an Indexed Strategy you selected may not be available after the end of a Term because the amount to be applied to that Strategy is less than the minimum we set for the new Term. Likewise, the amount to be applied to an Indexed Strategy may be limited by the maximum we set for the new Term, and the amount over that maximum would be reallocated. At least 30 days before the end of each Term, we will send you a written notice with information about any maximum or minimum that will apply for the next Term. No minimum or maximum shall apply to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy. If funds cannot be applied to a Strategy due to the minimum or maximum we set for the next Term and you do not request a reallocation of those funds, we will apply the funds for the new Term in the same manner as if the given Indexed Strategy were no longer offered.

In these cases, the funds that we allocate to the default Strategy may earn a return that is lower than the return those funds would have earned if they had been applied to the Indexed Strategy you selected.

If you choose to Surrender your Contract because a certain Indexed Strategy is no longer available, you may be subject to an Early Withdrawal Charge. There may be tax consequences if you Surrender your Contract. You should seek advice on tax questions based on your particular circumstances from a tax advisor.

The S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy and the S&P 500 6-year 20% Buffer with Upside Participation Rate Strategy are not available for Terms that begin after the first Contract Year. At the end of a Term for one of these S&P Indexed Strategies, if you do not reallocate, then we will apply the ending value of that Strategy to a new Term of the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy.

The Russell 2000 6-year 10% Buffer with Upside Participation Rate Indexed Strategy and the Russell 2000 6-year 20% Buffer with Upside Participation Rate Indexed Strategy are not available for Terms that begin after the first Contract Year. At the end of a Term for one of these Russell 2000 Indexed Strategies, if you do not reallocate, then we will apply the ending value of that Strategy to a new Term of a Russell 2000 1-Year Indexed Strategy, if one is then available, or if not, then to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy.

The S&P 500 3-year 10% Buffer with Upside Participation Rate Strategy and the S&P 500 3-year 20% Buffer with Upside Participation Rate Strategy are not available for Terms that begin after the fourth Contract Year. At the end of a Term for one of these S&P 500 Indexed Strategies, if you do not reallocate, then we will apply the ending value of that Strategy to a new 3-year Term of that same Strategy if it is available, or if not, then we will apply the ending value of that Strategy to a new Term of the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy.

For all 1-year and 2-year Strategies, if you take no action and do not send us a reallocation request, then any amount that cannot be applied to that Indexed Strategy for the next Term will be applied to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy.

Replacement of an Index

We have the right to replace an Index if it is discontinued, we are no longer able to use it, its calculation changes substantially, or we determine that hedging instruments are difficult to acquire or the cost of hedging becomes excessive. We may do so at the end of a Term or during a Term. If we replace an Index, we will provide notice to you and amend the prospectus. If we replace an Index during a Term, we will calculate any rise or fall in the Index using the old Index up until the replacement date. After the replacement date, we will calculate any rise or fall in the Index using the new Index, but with a modified start of Term value for the new Index. The modified start of Term value for the new Index will reflect the rise or fall in the Index for the old Index from the start of the Term to the replacement date. The performance of the new Index may not be as good as the performance of the old Index. As a result, funds allocated to an Indexed Strategy may earn a return that is lower than the return they would have earned or experience losses greater than the losses they would have experienced if there had been no replacement.

Involuntary Termination of Contract

If your Account Value on any anniversary of the initial Strategy Application Date is below the minimum value of $5,000 for any reason, we may terminate your Contract on that anniversary. If your Contract has Terms that end on the same date because you made only one Purchase Payment, any involuntary termination will occur on that date. If your Contract has Terms that end on different dates because you made more than one Purchase Payment, any involuntary termination will occur on one of those dates, which will be the end of one Term but not the end of the other Terms. In this case, the Surrender Value payable upon termination of your Contract will reflect the Daily Value Percentages used to calculate the values of Indexed Strategies with Terms that are not ending on the termination date.

No Direct Investment in S&P 500 Index

When you allocate money to an Indexed Strategy that uses the S&P 500 Index, you will not be investing in that Index, or in any stock included in that Index. The S&P 500 Index is calculated without taking into account dividends paid on stocks that make up the S&P 500 Index. In addition, because the performance of an S&P 500 Indexed Strategy is linked to the performance of the S&P 500 Index and not the performance of the stocks included in the Index, your return may be less than that of a direct investment in such stocks. In addition, due to the same limitations, your return may be less than that of a direct investment in a fund that tracks the S&P 500 Index.

No Direct Investment in an iShares ETF

When you allocate money to an Indexed Strategy that uses the iShares MSCI EAFE ETF or iShares U.S. Real Estate ETF, you will not be investing in that exchange-traded fund, the securities or other assets held by the fund, in any underlying index tracked by the fund, or in the securities or other assets held by such underlying index. In addition, because the performance of an iShares ETF is linked to the performance of the share price of the ETF, which is determined by trading on the exchange, and not the performance of its investment portfolio, its underlying index or the components of that index, your return may be less than that of a direct investment in the securities or other assets held by the fund or a direct investment in the

components of the fund's underlying index. In addition, due to the same limitations, your return may be less than that of a direct investment in the fund.

No Direct Investment in SPDR Gold Shares ETF
When you allocate money to an Indexed Strategy that uses the SPDR Gold Shares ETF, you will not be investing in that exchange-traded fund or in gold. In addition, because the performance of the SPDR Gold Shares ETF is linked to the performance of the share price of the ETF, which is determined by trading on the exchange, and not the performance of its investment portfolio, its underlying index or the components of that index, your return may be less than that of a direct investment in the securities or other assets held by the fund or a direct investment in the components of the fund's underlying index. In addition, due to the same limitations, your return may be less than that of a direct investment in the fund.

No Direct Investment in First Trust Barclays Edge Index
When you allocate money to an Indexed Strategy that uses the First Trust Barclays Edge Index, you will not be investing in that Index, or in any stock or bonds included in that Index. The First Trust Barclays Edge Index is calculated assuming that dividends paid on stocks that make up the First Trust Barclays Edge Index are reinvested. In addition, because the performance of the First Trust Barclays Edge Indexed Strategy is linked to the performance of the First Trust Barclays Edge Index and not the performance of the stocks and bonds included in the Index, your return may be less than that of a direct investment in such stocks and bonds. In addition, due to the same limitations, your return may be less than that of a direct investment in a fund that tracks the First Trust Barclays Edge Index.

No Direct Investment in Russell 2000 Index

When you allocate money to an Indexed Strategy that uses the Russell 2000 Index, you will not be investing in that Index, or in any stock included in that Index. The Russell 2000 Index is calculated without taking into account dividends paid on stocks that make up the Russell 2000 Index. In addition, because the performance of a Russell 2000 Indexed Strategy is linked to the performance of the Russell 2000 Index and not the performance of the stocks included in the Index, your return may be less than that of a direct investment in such stocks. In addition, due to the same limitations, your return may be less than that of a direct investment in a fund that tracks the Russell 2000 Index.

Divergence of Performance

The performance of an Indexed Strategy will diverge from the performance of the underlying Index because changes in the value of an Indexed Strategy at the end of a Term are subject to Positive Return Factors and Negative Return Factors, or the Index change required to qualify for the Trigger Rate and because changes in the value of an Indexed Strategy before the end of a Term are based on the Daily Value Percentage.

Market Risk Related to Indexes

Money allocated to an Indexed Strategy that uses the S&P 500 Index, Russell 2000 Index, or the First Trust Barclays Edge Index is subject to the risk that the market value of the underlying securities that comprise the applicable Index may decline over a Term. Likewise, money allocated to an Indexed Strategy that uses the iShares MSCI EAFE ETF, the iShares U.S. Real Estate ETF, or the SPDR Gold Shares ETF is subject to the risk that the fund's share price may decline over a Term. The level of the S&P 500 Index, Russell 2000 Index, and the First Trust Barclays Edge Index and the share prices of the SPDR Gold Shares ETF, iShares MSCI EAFE ETF and the iShares U.S. Real Estate ETF may be volatile. Any such market loss in an amount up to the Downside Participation Rate will be reflected in the Indexed Strategy value. For example, with a Downside Participation Rate of 50%, the Indexed Strategy value will be reduced by 50% of a fall in the Index at the end of a Term. This risk applies even if you do not take a withdrawal before the end of a Term. For a 10% Buffer Strategy, the Indexed Strategy value will be reduced by any amount by which the fall in the Index at the end of the Term exceeds the 10% Buffer. For a 20% Buffer Strategy, the Indexed Strategy value will be reduced by any amount by which the fall in the Index at the end of the Term exceeds the 20% Buffer. For a Floor Strategy with a floor of -10%, the Indexed Strategy value will be reduced at the end of the Term by the fall in the Index, not to exceed -10%. This risk also applies even if you do not take a withdrawal before the end of a Term.

Geopolitical conflicts could also create economic disruption, including increased market volatility, and presents economic uncertainty. The full impact and duration of these events are difficult to determine in advance. Any such impact could adversely affect the performance of the securities that comprise the Indexes and may lead to losses on your investment in the Indexed Strategies.

The historical performance of an Index does not guarantee future results.

S&P 500 Index. The S&P 500® Index is designed to reflect the large-cap sector of the U.S. equity market and, due to its composition, it also represents the U.S. equity market in general. Any positive change in the S&P 500 Index over a Term will be lower than the total return on an investment in the stocks that comprise the S&P 500 Index because such total return will reflect dividend payments on those stocks and the S&P 500 Index will not reflect those dividend payments. More information about the S&P 500 Index is set out in the Indexes section of this prospectus.

The S&P 500 Index is subject to multiple principal investment risks, such as those related to its investments in large-capitalization companies. The

S&P 500 Index tracks a subset of the U.S. stock market, which could cause the S&P 500 Index to perform differently from the overall stock market. In general, large-capitalization companies may be unable to respond quickly to new competitive challenges and may not be able to attain the high growth rate of successful smaller companies. In addition, the S&P 500 Index may, at times, become focused in stocks of a particular market sector, which would subject the S&P 500 Index to proportionately higher exposure to the risks of that sector.

iShares MSCI EAFE ETF. The iShares MSCI EAFE ETF is an exchange traded fund that seeks to track the investment results of an index composed of large- and mid-capitalization developed market equities, excluding the U.S. and Canada (MSCI EAFE Index). This underlying index includes stocks from Europe, Australasia, and the Far East. It may include large- or mid-capitalization companies. The share price of the iShares MSCI EAFE ETF is tied to the performance of large- and mid-capitalization developed market equites, excluding the U.S. and Canada. The share price may not replicate the performance of the fund, its underlying index, or the components of that index. More information about the iShares MSCI EAFE ETF is set out in the Indexes section of this prospectus. To learn more about the iShares MSCI EAFE ETF, visit iShares.com and search ticker symbol EFA.

The fund is subject to several principal investment risks, such as those related to its investments in large-capitalization and mid-capitalization foreign companies. In general, large-capitalization companies may be unable to respond quickly to new competitive challenges, and may not be able to attain the high growth rate of successful smaller companies. Generally, the securities of mid-capitalization companies may be more volatile and may involve more risk than the securities of larger companies. Mid-capitalization companies are also more likely to fail than larger companies. Securities issued by non-U.S. companies are subject to the risks related to investments in foreign markets (*e.g.*, increased price volatility; changing currency exchange rates; and greater political, regulatory, and economic uncertainty). Because the fund is an ETF, it is also exposed to the risks associated with the operation of any ETF. The value of its shares, which are valued based on their trading prices in the secondary market, may change rapidly and unpredictably and may trade at premiums or discounts to the fund's net asset value.

The principal investment risks of the fund are described in the fund's prospectus, including the following risks: asset class risk, authorized participant concentration risk, concentration risk, currency risk, cyber security risk, equity securities risk, financials sector risk, geographic risk, index-related risk, issuer risk, large-capitalization companies risk, management risk, market risk, market trading risk, mid-capitalization companies risk, national closed market trading risk, non-U.S. securities risk, operational risk, passive investment risk, reliance on trading partners risk, risk of investing in developed countries, risk of investing in Japan, securities lending risk, structural risk, tracking error risk and valuation risk.

iShares U.S. Real Estate ETF. The iShares U.S. Real Estate ETF is an exchange traded fund that seeks to track the investment results of an index composed of U.S. equities in the real estate sector (Dow Jones U.S. Real Estate Index). This underlying index may include large-, mid- or small-capitalization companies. A significant portion of the underlying index is represented by real estate investment trusts (REITs), but the components are likely to change over time. The share price of the iShares U.S. Real Estate ETF is tied to the performance of the real estate sector. The share price may not replicate the performance of the fund, its underlying index, or the components of that index. More information about the iShares U.S. Real Estate ETF is set out in the Indexes section of this prospectus. To learn more about the iShares U.S. Real Estate ETF, visit iShares.com and search ticker symbol IYR.

The fund is subject to several principal investment risks, such as those related to its investments in large-, mid- and small-capitalization U.S. companies in the real estate sector. In general, large-capitalization companies may be unable to respond quickly to new competitive challenges, and may not be able to attain the high growth rate of successful smaller companies. Generally, the securities of smaller companies (including mid- and small-capitalization companies) may be more volatile and may involve more risk than the securities of larger companies. Smaller companies are also more likely to fail than larger companies. Companies that invest in real estate are highly sensitive to the risks of owning real estate, to general and local economic conditions and developments in the real estate market, and to changes in interest rates. Many companies that invest in real estate utilize leverage (and some may be highly leveraged), which increases investment risk, and could potentially magnify the fund's losses. Because the fund is an ETF, it is also exposed to the risks associated with the operation of any ETF. The value of its shares, which are valued based on their trading prices in the secondary market, may change rapidly and unpredictably and may trade at premiums or discounts to the fund's net asset value.

The principal investment risks of the fund are described in the fund's prospectus, including the following risks: asset class risk, authorized participant concentration risk, concentration risk, cyber security risk, dividend risk, equity securities risk, index-related risk, issuer risk, large-capitalization companies risk, management risk, market risk, market trading risk, mid-capitalization companies risk, operational risk, passive investment risk, real estate investment risk, risk of investing in the United States, securities lending risk and tracking error risk.

SPDR Gold Shares ETF. The SPDR Gold Shares ETF represents units of beneficial interest in, and ownership of, the SPDR Gold Trust, an exchange traded fund that holds gold bullion. The investment objective of the trust is for the shares to reflect the performance of the price of gold bullion, less the trust's expenses. The shares are designed to mirror as closely as possible the price of gold, and the value of the shares relates directly to the value of the gold held by the trust, less its liabilities. The price of gold has fluctuated widely over the past several years and the shares have experienced significant price fluctuations. The value of the gold held by the trust is determined using the London Bullion Market Association (LBMA) Gold Price PM. The Gold Shares trade on the NYSE Arca under the symbol GLD. For more information, visit www.spdrgoldshares.com.

The fund is subject to several principal investment risks related to the price of gold. The price of gold has fluctuated widely over the past several years and the shares have experienced significant price fluctuations. Several factors may affect the price of gold, including:

- Global gold supply and demand, which is influenced by such factors as gold's uses in jewelry, technology, and industrial applications, purchases made by investors in the form of bars, coins, and other gold products, forward selling by gold producers, purchases made by gold producers to unwind gold hedge positions, central bank purchases and sales, and production and cost levels in major gold producing countries such as China, the United States and Australia;
- Global or regional political, economic, or financial events and situations, especially those unexpected in nature;
- Investors' expectations with respect to the rate of inflation;
- Currency exchange rates;
- Interest rates;
- Investment and trading activities of hedge funds and commodity funds; and
- Other economic variables such as income growth, economic output, and monetary policies.

The principal investment risks of the fund are described in the fund's prospectus, including the following risks: price risk, passive investment risk, trading market risk, risk of loss, damage, theft, or restriction on access, and risks related to the fund's ETF structure.

First Trust Barclays Edge Index. The First Trust Barclays Edge Index is designed to combine capital strength and value equity investment methodologies with a mix of US Treasury futures indexes for the potential to provide stable returns over time. The First Trust Barclays Edge Index consists of an equity component that combines stocks from the Capital Strength Index and the Value Line® Dividend Index. The Capital Strength Index starts with the largest 500 companies in the NASDAQ US benchmark index and then reduces the selection universe by screening for companies that meet minimum criteria including cash and/or short-term investments on their balance sheets, low debt-to-market cap ratios and attractive return-on-equity. It then selects the top 50 names from this smaller universe based on low historical volatility. The Value Line Dividend Index starts with the universe of stocks published in its The Value Line Investment Survey publication and then selects those with a Value Line® Safety Rank of 1 or 2, with attractive dividends and market cap of one billion dollars or above. It then equally weights all stocks that meet those conditions (generally, around 160-200 stocks). The First Trust Barclays Edge Index then combines the stocks represented in The Capital Strength Index and the Value Line® Dividend Index with an equal-weight assigned to each underlying index and rebalanced back to equal-weight on a monthly basis. Furthermore, since the index is on an excess return basis (i.e., it returns the index performance in excess of risk-free rates), the risk-free return is deducted from the equity underliers. The risk-free rate used in this calculation is the U.S. Fed Funds Rate published by the Federal Reserve of New York (ticker: FEDL01) for each day divided by 360 as outlined in the Index Rulebook. No such adjustment is needed to the US Treasury futures indexes as these securities returns are naturally on an excess return basis.

The Index uses an optimizer to evaluate its exposure to stocks and US Treasury futures indexes on a daily basis to target a 7% volatility level. This volatility control mechanism aims to target or limit the volatility of the index return over time by adjusting the exposure of the index constituents through a rules-based process called mean-variance optimization. The optimizer defines risk using both shorter- and longer-term measures of historical realized volatility. It then seeks to determine the allocations between the equity and US Treasury futures index that produce the highest expected return for the target volatility level, subject to constraints. Depending on the constraints of the optimizer at the time, the Index may or may not allocate to the US Treasury futures indexes. When the volatility measures are low, the index can have exposure greater than 100%. However, the optimizer is constrained such that the exposure can never be greater than 225%. Likewise, when volatility is high, the index exposure can be less than 100%. In addition, the First Trust Barclays Edge Index generally rebalances based on end-of-day values in the event there is a deviation in the index component weights of 10% or more, on an absolute basis, from the previous index rebalance value.

The performance of the First Trust Barclays Edge Index reflects the deduction of operating costs and rebalancing costs from the valuation of the underlying indexes. These costs, deducted as an annualized percentage on a daily basis, are fixed for the underlying indexes. The operating costs for the First Trust Barclays Edge Index range from 0.20% to 0.60%, and the rebalancing costs for the First Trust Barclays Edge Index range from 0.02% to 0.03%. The operating costs represent an estimate of the costs that would be incurred to buy and sell the index components. The rebalancing costs represent an estimate of the costs that would be incurred each time the Index rebalances due to changes in weightings of the Index components. The deduction of these costs occurs at the First Trust Barclays Edge Index level (i.e., the return on the First Trust Barclays Edge Index is reduced based on the applicable operating and rebalancing costs).

The principal risks of the First Trust Barclays Edge Index include:

DEBT SECURITIES RISK. Investments in debt securities subject the holder to the credit risk of the issuer. Credit risk refers to the possibility that the issuer or other obligor of a security will not be able or willing to make payments of interest and principal when due. Generally, the value of debt securities will change inversely with changes in interest rates. To the extent that interest rates rise, certain underlying obligations may be paid off substantially slower than originally anticipated and the value of those securities may fall sharply. During periods of falling interest rates, the income received by a portfolio may decline. If the principal on a debt security is prepaid before expected, the prepayments of principal may have to be reinvested in obligations paying interest at lower rates. Debt securities generally do not trade on a securities exchange making them generally less liquid and more difficult to value than common stock.

EQUITY SECURITIES RISK. Equity securities prices fluctuate for several reasons, including changes in investors' perceptions of the financial condition of an issuer or the general condition of the relevant equity market, such as market volatility, or when political or economic events affecting

an issuer occur. Common stock prices may be particularly sensitive to rising interest rates, as the cost of capital rises and borrowing costs increase. Equity securities may decline significantly in price over short or extended periods of time, and such declines may occur in the equity market as a whole, or they may occur in only a particular country, company, industry, or sector of the market.

INFLATION RISK. Inflation risk is the risk that the value of assets or income from investments will be less in the future as inflation decreases the value of money. As inflation increases, the present value of a portfolio's assets and distributions may decline.

INTEREST RATE RISK. Interest rate risk is the risk that the value of the debt securities in an underlying portfolio will decline because of rising market interest rates. Interest rate risk is generally lower for shorter term debt securities and higher for longer-term debt securities. A portfolio may be subject to a greater risk of rising interest rates than would normally be the case due to the current period of historically low rates and the effect of potential government fiscal policy initiatives and resulting market reaction to those initiatives. Higher market interest rates may reduce returns for the First Trust Barclays Edge Index. Duration is a reasonably accurate measure of a debt security's price sensitivity to changes in interest rates and a common measure of interest rate risk. Duration measures a debt security's expected life on a present value basis, taking into account the debt security's yield, interest payments and final maturity. In general, duration represents the expected percentage change in the value of a security for an immediate 1% change in interest rates. For example, the price of a debt security with a three-year duration would be expected to drop by approximately 3% in response to a 1% increase in interest rates. Therefore, prices of debt securities with shorter durations tend to be less sensitive to interest rate changes than debt securities with longer durations. As the value of a debt security changes over time, so will its duration.

MARKET RISK. Securities are subject to market fluctuations caused by such factors as economic, political, regulatory or market developments, changes in interest rates and perceived trends in securities prices. In addition, local, regional, or global events such as war, acts of terrorism, spread of infectious diseases or other public health issues, recessions, or other events could have a significant negative impact on the market and investment portfolios. For example, the coronavirus disease 2019 (COVID-19) global pandemic and the aggressive responses taken by many governments, including closing borders, restricting international and domestic travel, and the imposition of prolonged quarantines or similar restrictions, had negative impacts, and in many cases severe impacts, on markets worldwide. As this global pandemic illustrated, such events may affect certain geographic regions, countries, sectors, and industries more significantly than others. These events also adversely affect the prices and liquidity of portfolio securities or other instruments and could result in disruptions in the trading markets.

REIT RISK. REITs typically own and operate income-producing real estate, such as residential or commercial buildings, or real-estate related assets, including mortgages. As a result, investments in REITs are subject to the risks associated with investing in real estate, which may include, but are not limited to: fluctuations in the value of underlying properties; defaults by borrowers or tenants; market saturation; changes in general and local operating expenses; and other economic, political or regulatory occurrences affecting companies in the real estate sector. REITs are also subject to the risk that the real estate market may experience an economic downturn generally, which may have a material effect on the real estate in which the REITs invest and their underlying portfolio securities. REITs may have also a relatively small market capitalization which may result in their shares experiencing less market liquidity and greater price volatility than larger companies. Increases in interest rates typically lower the present value of a REIT's future earnings stream, and may make financing property purchases and improvements more costly. Because the market price of REIT stocks may change based upon investors' collective perceptions of future earnings, the value of a portfolio that holds REITs will generally decline when investors anticipate or experience rising interest rates.

U.S. GOVERNMENT SECURITIES RISK. U.S. government securities are subject to interest rate risk but generally do not involve the credit risks associated with investments in other types of debt securities. As a result, the yields available from U.S. government securities are generally lower than the yields available from other debt securities. U.S. government securities are guaranteed only as to the timely payment of interest and the payment of principal when held to maturity. While securities issued or guaranteed by U.S. federal government agencies (such as Ginnie Mae) are backed by the full faith and credit of the U.S. Department of the Treasury, securities issued by government sponsored entities (such as Fannie Mae and Freddie Mac) are solely the obligation of the issuer and generally do not carry any guarantee from the U.S. government.

VOLATILITY CONTROL RISK. Volatility is a measure of the extent of variation in the returns of an asset over a period of time. The Index may reduce its exposure to one or more markets during periods of volatility in order to mitigate volatility in the value of the Index. During times when the Index reduces its market exposure in response to volatility, the Index will not fully participate in the growth in that market. Reducing market exposure during periods of volatility may mitigate the impact of short-term, significant market fluctuations in the Index's return, but may also cause the Index to not fully participate in recoveries in those markets. There is no guarantee that any volatility control methodology will be successful.

Russell 2000 Index. The Russell 2000® Index measures the performance of the small-cap segment of the US equity universe. The Russell 2000® Index is constructed to provide a comprehensive and unbiased small-cap barometer and is completely reconstituted annually to ensure larger stocks do not distort the performance and characteristics of the true small-cap opportunity set. Any positive change in the Russell 2000® Index over a Term will be lower than the total return on an investment in the stocks that comprise the Russell 2000® Index because such total return will reflect dividend payments on those stocks and the Russell 2000® Index will not reflect those dividend payments.

The Russell 2000® Index includes approximately 2,000 of the smallest companies, based on a combination of their market cap and current index membership, that are included in the Russell 3000® Index. The Russell 3000® Index measures the performance of the largest 3,000 US companies, which represents the vast majority of the investable US equity market.

The Russell 2000 Index is subject to multiple principal investment risks, such as those related to its investments in small-cap companies. Compared to mid- and large-cap companies, small-cap companies may be less stable and more susceptible to adverse developments, and their securities may be more volatile. The Russell 2000 Index tracks a subset of the U.S. stock market, which could cause the Russell 2000 Index to perform differently from the overall stock market. Market conditions could cause the small-cap category to fall out of favor with investors. Stocks of smaller companies may be more volatile than those of larger companies because of, among other things, narrower product lines and more limited financial resources. In addition, there is typically less publicly available information about small capitalization companies, and their stocks may have a more limited trading market than stocks of larger companies.

Market Risk Related to Option Prices

Before the end of a Term, money allocated to an Indexed Strategy is subject to the risk that changes in the related option prices may have a negative effect on the value of the Indexed Strategy. This risk applies only if you take a withdrawal or surrender your Contract before the end of a Term.

Performance Lock Risk

If you make a Performance Lock election, you will no longer participate in the positive or negative performance of the Index over the remainder of the Term. This means the value of the Indexed Strategy cannot increase (but will decrease by the Daily Charge) for the remainder of the Term, even if the Index rises over the remainder of the Term.

A Performance Lock election is effective on the second Market Close after receipt of your Request in Good Order. This means you will not be able to determine in advance the gain or loss applicable to the Indexed Strategy when electing a Performance Lock. The gain or loss may be higher or lower at the time the Performance Lock election goes effective than it was when you submitted your Request in Good Order.

Regulatory Risk

MassMutual Ascend Life is not an investment company. Neither MassMutual Ascend Life nor the separate account that we established in connection with the Contracts is registered as an investment company under the Investment Company Act of 1940. The protections provided to investors by that Act are not applicable to the Contract.

Reliance on Our Claims-Paying Ability

No company other than MassMutual Ascend Life has any legal responsibility to pay amounts owed under the Contract. You should look to the financial strength of MassMutual Ascend Life for its claims-paying ability.

Our general account assets fund the guarantees provided in the Contracts. The assets are subject to our general business operation liabilities and claims of our creditors and may lose value. We established a non-unitized separate account for the purpose of supporting our obligation to adjust the Indexed Strategy values based on the Daily Value Percentage or rise or fall of the Index. The assets in the non-unitized separate account are not chargeable with liabilities arising out of any other business that we conduct but may lose value. The non-unitized separate account differs from the unitized separate accounts that support our variable annuity contracts. As a result, unlike the owner of a traditional variable annuity who has a beneficial interest in, and participates in the performance of, the assets of the related unitized separate account, you do not have any interest in or claim on the assets in the non-unitized separate account and you will not participate in any way in the performance of assets held in that account. Various factors, such as those listed below, could materially affect our business, financial condition, cash flows or future results and, in turn, our financial strength and claims-paying ability. A more complete discussion of these factors appears on pages A5-A12.

- Financial losses including those resulting from the following events:
  - Adverse developments in financial markets and deterioration in global economic conditions
  - Unfavorable interest rate environments
  - Losses on our investment portfolio
  - Loss of market share due to intense competition
  - Ineffectiveness of risk management policies
- Changes in applicable law and regulations
- Inability to obtain or collect on reinsurance
- A downgrade or potential downgrade in our financial strength ratings
- Variations from actual experience and management's estimates and assumptions that could result in inadequate reserves
- Significant variations in the amount of capital we must hold to meet statutory capital requirements

- Legal actions and regulatory proceedings
- Difficulties with technology or data security
- Failure to protect confidentiality of customer information
- Failure to maintain effective and efficient information systems
- Occurrence of catastrophic events, public health crises (e.g., the Covid-19 pandemic) terrorism or military actions

We continue to be subject to significant state solvency regulations that require us to reserve amounts to pay our contractual guarantees. Please see "Management's Discussion and Analysis of Financial Condition and Results of Operations," "Risks Primarily Related to MMALIC's Financial Strength and Claims-Paying Ability," and "Financial Statements", and "Regulation" for additional financial information about the company and the state solvency regulations to which we are subject.

INDEXED STRATEGIES

The Indexed Strategies provide returns that are based, in part, upon changes in an Index. The Indexed Strategies do not earn interest at a fixed rate. Unlike a traditional variable annuity, the values of the Indexed Strategies are not based on the investment performance of underlying portfolios.

Unless you have made a Performance Lock election, any increase in the value of an Indexed Strategy at the end of a Term is determined after Daily Charges have been deducted from the Investment Base, and is based on the change in the applicable Index since the start of that Term and the applicable Positive Return Factor percentage for that Term. At the end of a Term, any decrease in the value of an Indexed Strategy is determined after Daily Charges have been deducted from the Investment Base, and is based on the fall in the applicable Index since the start of that Term and applicable Negative Return Factor percentage.

If you have made a Performance Lock election, any increase or decrease in the value of an Indexed Strategy before the end of a Term is determined after Daily Charges have been deducted from the Investment Base and is based on the calculated price of hypothetical options related to the possible future change in the applicable Index over the Term, the initial cost of those options, and the trading cost related to those options. The calculated price of those options takes into account the Cap or the Trigger Rate for the Term and the Floor, the Buffer, and the Index change required to qualify for the Trigger Rate.

If you have made a Performance Lock election, then beginning at the second Market Close following receipt of your election and continuing through the end of the Term, any increase or decrease in the value of an Indexed Strategy is locked in based on the Daily Value Percentage which is the calculated price of hypothetical options related to the possible future change in the applicable Index over the Term, the initial cost of those options, and the trading cost related to those options, all as determined at that second Market Close. However, the value of the Indexed Strategy will continue to decrease because of the Daily Charges assessed against the Investment Base.

Each Indexed Strategy has a Positive Return Factor percentage for each Term. We will set a new Positive Return Factor percentage for each Indexed Strategy prior to the start of each Term.

The applicable Negative Return Factor percentage for a Strategy will not change from Term to Term. For each Term of each Indexed Strategy with a Downside Participation Rate that we currently offer, the Downside Participation Rate is 50%. For each Term of an Indexed Strategy with a Buffer that we currently offer, the Buffer is 10% or 20%. For each Term of the Indexed Strategies with a Floor that we currently offer, the Floor is either -10% or 0%.

Each Term it is possible for you to lose a portion of the money you allocated to any Indexed Strategy at the end of a Term or if you take a withdrawal before the end of a Term. In extreme circumstances, it is possible for you to lose all of the money you allocated to any Indexed Strategy if you Surrender your Contract before the end of a Term.

Available Indexed Strategies

For this Contract, we currently offer twenty-four Indexed Strategies. Each of these Indexed Strategies uses one of six Indexes: S&P 500® Index, iShares® MSCI EAFE ETF, iShares® U.S. Real Estate ETF, SPDR Gold Shares ETF, First Trust Barclays Edge Index, and Russell 2000® Index. Sixteen of these Indexed Strategies have one-year Terms, two have two-year Terms, two have three-year Terms, and four have six-year Terms. The returns of each Index, except the First Trust Barclays Edge Index, do not reflect the reinvestment of dividends, which means that the Index return will be less than what would be received by an investing in the individual securities that make up the Index. The First Trust Barclays Edge Index deducts fees and costs when calculating Index performance, which also will reduce the Index return. The S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy will always be available. In future Terms, we may stop offering any other Indexed Strategy, we may modify the Positive Return Factor percentage for any Indexed Strategy, and we may offer new Indexed Strategies.

Strategy	Index	Term	Negative Return Factor	Positive Return Factor
S&P 500 1-year 0% Floor with Cap*	S&P 500®	1-year	0% Floor	Cap
S&P 500 1-year -10% Floor with Cap	S&P 500®	1-year	-10% Floor	Cap
S&P 500 1-year 10% Buffer with Cap	S&P 500®	1-year	10% Buffer	Cap
S&P 500 1-year 10% Buffer with Performance Trigger*	S&P 500®	1-year	10% Buffer	Trigger Rate
S&P 500 1-year 10% Buffer with Dual Performance Trigger*	S&P 500®	1-year	10% Buffer	Trigger Rate
S&P 500 1-year 20% Buffer with Cap*	S&P 500®	1-year	20% Buffer	Cap
S&P 500 1-year 20% Buffer with Performance Trigger*	S&P 500®	1-year	20% Buffer	Trigger Rate
S&P 500 1-year 50% Downside Participation Rate with Cap	S&P 500®	1-year	50% Downside Participation Rate	Cap
S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate	S&P 500®	1-year	50% Downside Participation Rate	Upside Participation Rate
S&P 500 2-year 50% Downside Participation Rate with Cap	S&P 500®	2-year	50% Downside Participation Rate	Cap
S&P 500 2-year 50% Downside Participation Rate with Upside Participation Rate	S&P 500®	2-year	50% Downside Participation Rate	Upside Participation Rate
S&P 500 3-year 10% Buffer with Upside Participation Rate*	S&P 500®	3-year	10% Buffer	Upside Participation Rate
S&P 500 3-year 20% Buffer with Upside Participation Rate*	S&P 500®	3-year	20% Buffer	Upside Participation Rate
S&P 500 6-year 10% Buffer with Upside Participation Rate	S&P 500®	6-year	10% Buffer	Upside Participation Rate
S&P 500 6-year 20% Buffer with Upside Participation Rate*	S&P 500®	6-year	20% Buffer	Upside Participation Rate
iShares MSCI EAFE ETF 1-year -10% Floor with Cap	iShares MSCI EAFE ETF	1-year	-10% Floor	Cap
iShares MSCI EAFE ETF 1-year 50% Downside Participation Rate with Upside Participation Rate	iShares MSCI EAFE ETF	1-year	50% Downside Participation Rate	Upside Participation Rate
iShares U.S. Real Estate ETF 1-year -10% Floor with Cap	iShares U.S. Real Estate ETF	1-year	-10% Floor	Cap
iShares U.S. Real Estate ETF 1-year 50% Downside Participation Rate with Upside Participation Rate	iShares U.S. Real Estate ETF	1-year	50% Downside Participation Rate	Upside Participation Rate
SPDR Gold Shares ETF 1-year -10% Floor with Cap	SPDR Gold Shares ETF	1-year	-10% Floor	Cap
First Trust Barclays Edge 1-year 10% Buffer with Upside Participation Rate*	First Trust Barclays Edge	1-year	10% Buffer	Upside Participation Rate
First Trust Barclays Edge 1-year 50% Downside Participation Rate with Upside Participation Rate*	First Trust Barclays Edge	1-year	50% Downside Participation Rate	Upside Participation Rate
Russell 2000 6-year 10% Buffer with Upside Participation Rate*	Russell 2000®	6-year	10% Buffer	Upside Participation Rate
Russell 2000 6-year 20% Buffer with Upside Participation Rate*	Russell 2000®	6-year	20% Buffer	Upside Participation Rate

*These 12 Strategies are not available for Contracts issued in Missouri or Nebraska until such time as state approval is received.

A Performance Lock election may be made for any Term or Terms of the S&P 500 Indexed Strategies (excluding the 0% Floor with Cap Indexed Strategy and the three Trigger Strategies) and the First Trust Barclays Edge Indexed Strategies. If you make a Performance Lock

election for a given Term of an eligible Strategy, you may not change or revoke that election or make a second election for that same Term of that same Strategy.

Contracts issued before May 7, 2023, may have allocated funds to two additional Indexed Strategies. These two Indexed Strategies have been discontinued. They are not available for new or existing Contracts for any new Term that begins after May 7, 2023:

Discontinued Strategy	Index	Term	Negative Return Factor	Positive Return Factor
iShares MSCI EAFE ETF 2-year Term with Participation Rate	MSCI EAFE ETF	2-year	50% Downside Participation Rate	Upside Participation Rate
iShares U.S. Real Estate ETF 2-year Term with Participation Rate	iShares U.S. Real Estate ETF	2-year	50% Downside Participation Rate	Upside Participation Rate

For existing Contracts, at the end of the current Term, any funds in one of these discontinued Indexed Strategies will be transferred to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy unless the Owner elects otherwise.

Possible Changes in Indexed Strategies

The S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy will always be available. At the end of a Term, we may stop offering any other Indexed Strategy. Consequently, any other Indexed Strategy listed above may not be available after the end of the initial Term. We have the right to replace the Index associated with an Indexed Strategy under certain circumstances.

In the future, we may offer new Indexed Strategies. Any new Buffer Strategy will offer protection against loss at least equal to a 5% Buffer. Any new Floor Strategy will offer protection against loss at least equal to a -20% Floor. Any new Downside Participation Rate Strategy will offer protection against loss at least equal to a 75% Downside Participation Rate.

Indexed Strategies that may be available in the future may earn a return that is lower than the return your investments would have earned if they had been invested in the other Indexed Strategies that are currently available. In addition, any reduction in the available number of Indexed Strategies may reduce your opportunity to increase your Contract value.

Considerations in Choosing an Indexed Strategy

When choosing among Indexed Strategies, you should consider the characteristics and risk profiles of the Indexes, which are discussed in the Indexes section of this prospectus. You should also consider Term lengths. It is generally more difficult to predict Index performance over a longer Term. In addition, you cannot reallocate funds among Strategies before the end of a Term, and the only way to exit a Strategy before the end of a Term is to take a withdrawal or Surrender your Contract.

When choosing among Indexed Strategies that use the same Index, you should also consider how the Positive Return Factors may affect the potential return.

- A Cap Strategy provides you with the opportunity to participate in any rise in the Index up to the Cap (after Daily Charges have been deducted from the Investment Base), but you will not participate in any rise in the Index in excess of the Cap.

- An Upside Participation Rate Strategy provides you with the opportunity to share in any rise in the Index without a Cap (after Daily Charges have been deducted from the Investment Base), but your share of any rise is limited by the rate at which you participate in the rise and may be less than 100%.

- A Performance Trigger Strategy provides you with the opportunity to receive the Trigger Rate (after Daily Charges have been deducted from the Investment Base) when the change in the Index over the course of a Term is zero or positive, or in the case of the Dual Performance Trigger Strategy, is zero, positive, or negative up to the Buffer. However, you will not participate in any rise in the Index in excess of the Trigger Rate.

If we assume the Upside Participation Rate is less than 100% and Daily Charges have already been deducted, here is how the performance will compare for similar Indexed Strategies with a Cap, Upside Participation Rate, and Trigger Rate each with a 10% Buffer.

- In any Term where the rise in the Index is less than the Cap, the Cap Strategy will always perform better than the corresponding Upside Participation Rate Strategy.

- In any Term where the rise in the Index is more than the Cap, but less than the Cap divided by the Upside Participation Rate, the Cap Strategy will always perform better than the corresponding Upside Participation Rate Strategy.

- In any Term where the rise in the Index is more than the Cap and equal to the Cap divided by the Upside Participation Rate, the Cap Strategy and Upside Participation rate Strategy will perform the same.

- In any Term where the rise in the Index is more than the Cap, and is more than the Cap divided by the Upside Participation Rate, the Upside Participation Rate Strategy will always perform better than the Cap Strategy.

- Any increase in the value of a Trigger Strategy will equal the Trigger Rate multiplied by the remaining Investment Base. This means that the performance of a Trigger Strategy will only perform better than other Strategies if the Trigger Rate is higher than the returns of the other Strategies after a Cap or Upside Participation Rate has been applied.

- In any Term where the Index falls by more than 10%, the Cap Strategy, Upside Participation Rate Strategy, or Trigger Strategy will produce the same results at the end of the Term because they have the same 10% Buffer. However, before the end of the Term, due to different option pricing, they may have different Daily Value Percentages and returns.

- In any Term where the Index falls by 10% or less, the Dual Performance Trigger Strategy will perform better than the Cap Strategy, Upside Participation Rate Strategy, and Performance Trigger Strategy because the return of the Dual Performance Trigger Strategy will be positive, in an amount equal to the Trigger Rate, while the Cap Strategy, Upside Participation Rate Strategy, and Performance Trigger Strategy will be zero at the end of the Term because they have the same 10% Buffer.

When choosing among Indexed Strategies that use the same Index, you should also consider how Negative Return Factors may affect your potential risk of loss.
- A Buffer Strategy protects you against losses up to the Buffer amount, but you are subject to any loss in excess of the Buffer.
- A Floor Strategy limits your loss to the Floor amount, and you will be protected against any loss beyond the Floor.
- A Downside Participation Rate Strategy means you will share in any fall in the Index but your share of any fall is limited by the Downside Participation Rate percentage.

Examples. These examples are intended to help you understand the interplay between Positive Return Factors for Indexed Strategies with similar Terms in different market environments and how this interplay affects the comparative performance of Indexed Strategies that use the same Index. The example assumes that each strategy has downside protection in the form of a 10% Buffer and does not include the deduction of Daily Charges in the return figures.

		Return at end of Term			
Index rise over Term	16% Cap	75% Upside Participation Rate	11% Trigger Rate for Performance Trigger Strategy	8% Trigger Rate for Dual Performance Trigger Strategy	Explanation
4%	4%	3%	11%	8%	The Cap Strategy has a better return than the Upside Participation Rate Strategy because the 4% rise in the Index is less than the 16% Cap while the Upside Participation Rate captures only 75% of the 4% Index rise. Positive Index changes can only produce positive returns for the Performance Trigger Strategy and the Dual Performance Trigger Strategy that amount to 11% and 8%, respectively.
14%	14%	10.5%	11%	8%	The Cap Strategy has a better return than the Upside Participation Rate Strategy because the 14% rise in the Index is less than the 16% Cap, but more than 10.5% (the 14% rise in the Index multiplied by the 75% Upside Participation Rate). Positive Index changes can only produce positive returns for the Performance Trigger Strategy and the Dual Performance Trigger Strategy that amount to 11% and 8%, respectively
16%	16%	12%	11%	8%	The Cap Strategy has a better return than the Upside Participation Rate Strategy because the 16% rise in the Index is fully captured by the 16% Cap while the Upside Participation Rate captures only 75% of the 16% Index rise. Positive Index changes can only produce positive returns for the Performance Trigger Strategy and the Dual Performance Trigger Strategy that amount to 11% and 8%, respectively.
20%	16%	15%	11%	8%	The Cap Strategy has a better return than the Upside Participation Rate Strategy because the Cap Strategy caps the 20% Index rise at 16% while the Upside Participation Rate captures only 75% of the 20% Index rise. Positive Index changes can only produce positive returns for the Performance Trigger Strategy and the Dual Performance Trigger Strategy that amount to 11% and 8%, respectively.
0%	0%	0%	11%	8%	Performance Trigger Strategies and Dual Performance Trigger Strategies are the only Indexed Strategies that change in value when the Index Change is zero. The Performance Trigger Strategy outperforms the Dual Performance Trigger Strategy in this case because the Trigger Rate is higher for the Performance Trigger Strategy.
-10%	0%	0%	0%	8%	The Dual Performance Trigger Strategy provides a better return than all the other options because a positive Trigger Rate is credited when Index losses do not exceed the Buffer.
-30%	-20%	-20%	-20%	-20%	All Strategies have the same negative return because the Index loss exceeded the Buffer.

See the "Examples: Impact of Withdrawals on Contract Values and Amounts Realized" section below for more information about the interplay between Positive Return Factors for Indexed Strategies with different Terms in different market environments. See the "Indexed Strategy Value at End of Term" section below for more examples for each type of Indexed Strategy.

Term

Each Term of an Indexed Strategy will start and end on a Strategy Application Date. Each Term is either one year long, two years long, three years long, or six years long. A new Term will start at the end of the preceding Term.

If you make only one Purchase Payment or you make all of your Purchase Payments before the initial Strategy Application Date, then each Term of each Indexed Strategy will end on the same date in any given year. If you make a Purchase Payment after the initial Strategy Application Date, then your Purchase Payments will be applied to the Indexed Strategies on different Strategy Application Dates. In this case, an Indexed Strategy may have Terms that end on different dates in any given year.

Examples. These examples show how a Contract with multiple Purchase Payments may have Terms that end on different dates.

- You make your initial Purchase Payment on March 10 and another Purchase Payment on March 17. You allocate both payments to the same Indexed Strategy and both payments are applied on March 20. Each Term of that Indexed Strategy will start and end on March 20.

- You make your initial Purchase Payment on May 2 and another Purchase Payment on June 14. You allocate both payments to the same Indexed Strategy. Your initial Purchase Payment is applied on May 6 and the other Purchase Payment is applied on June 20. That Indexed Strategy will have a Term that starts and ends on May 6 and another Term that starts and ends on June 20.

Investment Base

The value of an Indexed Strategy is calculated using the Investment Base. The Investment Base is not your Account Value, Surrender Value, Annuity Payout value, or Death Benefit value, but it is used to calculate those values.

The Investment Base is the amount applied to the Strategy at the start of the current Term, reduced proportionally for each withdrawal and related Early Withdrawal Charge during the current Term. The Investment Base is reduced daily by an amount equal to the Daily Charge.

A withdrawal and the Related Early Withdrawal Charge reduce the Investment Base by an amount that is proportional to the reduction in the value of the Indexed Strategy due to the withdrawal and the charge. The reduction in the value of the Indexed Strategy will be based on the Daily Value Percentage of the Indexed Strategy (or the locked Daily Value Percentage if you have made a Performance Lock election). The Daily Value Percentage could be negative, which could result in significant loss, even if the Index has risen since the start of the Term.

- If the Daily Value Percentage is positive and the Strategy value immediately before the withdrawal is greater than the Investment Base, then the reduction in the Investment Base will be less than the withdrawal and the related Early Withdrawal Charge.

- If the Daily Value Percentage is negative and the Strategy value immediately before the withdrawal is less than the Investment Base, then the reduction in the Investment Base will be more than the withdrawal and the related Early Withdrawal Charge.

A reduction in the Investment Base for a Term will reduce the gain or loss from any future changes in the Index during that Term.

Here are the formulas that we use to calculate a reduction in the Investment Base for a withdrawal, after Daily Charges have been taken into account.

Withdrawal as a percentage of Strategy value = withdrawal and related charge / Strategy value before withdrawal

Reduction in Investment Base = Investment Base before withdrawal x withdrawal as a percentage of Strategy value

Investment Base after withdrawal = Investment Base before withdrawal—reduction in Investment Base

Indexed Strategy Value

At the end of a Term, unless you have made a Performance Lock election, the value of an Indexed Strategy is equal to:

- the Investment Base at the end of the Term (after Daily Charges have been deducted); plus

- any increase for a rise in the Index over the course of the Term (measured at the start and end of the Term), or for the Dual Performance Trigger Strategy, any fall in the Index that does not exceed the Buffer, adjusted for the applicable Positive Return Factor percentage; or minus

- any decrease for a fall in the Index for the Term (measured at the start and end of the Term) adjusted for the applicable Negative Return Factor percentage.

In this formula, the Investment Base at the end of the Term is equal to the amount applied to the Strategy at the start of that Term, reduced by Daily Charges, and reduced proportionally for each withdrawal and related Early Withdrawal Charge that you took during that Term. After we calculate the Investment Base at the end of the Term, we calculate any increase or decrease for the Index performance over that Term. Any increase for the Term (or for the Dual Performance Trigger Strategy, any fall in the Index that does not exceed the Buffer) is subject to the applicable Positive Return Factor percentage for that Term. Any decrease for the Term is subject to the applicable Negative Return Factor percentage.

Examples. At the end of a Term, the Investment Base in an Indexed Strategy is $5,000 (after Daily Charges have been deducted). You take a $1,000 withdrawal and no Early Withdrawal Charge applies to the withdrawal.

Assume that the Index had increased by 20% at the end of the Term, and either a Cap of 10%, an Upside Participation Rate of 50%, or a Trigger Rate of 10% was in place:

	At Final Market Close of Term
Rise in Index	+20%
Increase as a Percentage	+10% (10% Cap, or 50% Par Rate x 20%, or 10% Trigger Rate)
Dollar Amount of Increase	+$500 ($5,000 x 10%)
Strategy value before Withdrawal	$5,500 ($5,000 + $500)
Withdrawal Amount	$1,000
Strategy value at Term End	$4,500 ($5,500 - $1,000)

If in this example an Early Withdrawal Charge of 5% applied to the entire withdrawal amount and you requested a net amount of $1,000, your withdrawal amount would have been $1,053 ($1,000 / (1 – 0.05)), resulting in a Strategy value at Term end of $4,447 ($5,500 - $1,053).

Assume that the Index had decreased by 20% at the end of the Term, and a Buffer of 10%, a Floor of -10%, or a 50% Downside Participation Rate was in place:

	At Final Market Close of Term
Fall in Index	-20%
Decrease as a Percentage	-10% (20% fall minus 10% Buffer, or 50% Par Rate x -20%, or -10% Floor)
Dollar Amount of Decrease	-$500 ($5,000 x -10%)
Strategy value before Withdrawal	$4,500 ($5,000 - $500)
Withdrawal Amount	$1,000
Strategy value at Term End	$3,500 ($4,500 - $1,000)

If in this example an Early Withdrawal Charge of 5% applied to the entire withdrawal amount and you requested a net amount of $1,000, your withdrawal amount would have been $1,053 ($1,000 / (1 – 0.05)), resulting in a Strategy value at Term End of $3,447 ($4,500 - $1,053).

On each day before the end of a Term, unless you have made a Performance Lock election, the value of an Indexed Strategy is equal to:

- the Investment Base on that day; plus

- any increase for a positive Daily Value Percentage; or minus

- any decrease for a negative Daily Value Percentage.

In this formula, the Investment Base on each day before the end of the Term is equal to the amount applied to the Strategy at the start of that Term, reduced by Daily Charges, and reduced proportionally for each withdrawal and related Early Withdrawal Charge that you took on or before that day.

After we calculate the Investment Base on that day, we calculate any increase for a positive Daily Value Percentage or any decrease for a negative Daily Value Percentage.

A withdrawal and the related Early Withdrawal Charge reduce the value of an Indexed Strategy by an amount equal to the withdrawal and the charge.

Examples. You allocate $5,000 to an Indexed Strategy at the start of a Term. This means the Investment Base at the start of the Term is $5,000. You take a $1,000 withdrawal and no Early Withdrawal Charge applies to the withdrawal.

Assume that the Daily Value Percentage is 5% on the withdrawal date.
- The increase for the Daily Value Percentage is equal to $250 ($5,000 x 5%).
- The Strategy value on the withdrawal date is $5,250 ($5,000 + $250).
- The Strategy value after the withdrawal is $4,250 ($5,250 - $1,000).
- The withdrawal as a percentage of the Strategy value is 19.05% ($1,000 / $5,250).
- The reduction in the Investment Base is $952 ($5,000 x 19.05%).
- The Investment Base after the withdrawal is $4,048 ($5,000 - $952).
- Because the Strategy value on the withdrawal date was more than the Investment Base, the reduction in the Investment Base is only $952, which is less than the $1000 withdrawal.

If in this example an Early Withdrawal Charge of 5% applied to the entire withdrawal amount and you requested a net amount of $1,000:
- The increase for the Daily Value Percentage is equal to $250 ($5,000 x 5%).
- The Strategy value on the withdrawal date is $5,250 ($5,000 + $250).
- The total amount withdrawn is $1,053 ($1,000 / (1 – 0.05)).
- The Strategy value after the withdrawal is $4,197 ($5,250 - $1,053).
- The withdrawal as a percentage of the Strategy value is 20.05% ($1,053 / $5,250).
- The reduction in the Investment Base is $1,003 ($5,000 x 20.05%).
- The Investment Base after the withdrawal is $3,997 ($5,000 - $1,003).
- Because the Strategy value on the withdrawal date was more than the Investment Base, the reduction in the Investment Base was $1,003, which is less than the $1,053 withdrawal.

Assume that the Daily Value Percentage is -10% on the withdrawal date.
- The reduction for the Daily Value Percentage is equal to $500 ($5,000 x -10%).
- The Strategy value on the withdrawal date is $4,500 ($5,000 - $500).
- The Strategy value after the withdrawal is $3,500 ($4,500 - $1,000).
- The withdrawal as a percentage of the Strategy value is 22.22% ($1,000 / $4,500).
- The reduction in the Investment Base is $1,111 ($5,000 x 22.22%).
- The Investment Base after the withdrawal is $3,889 ($5,000 - $1,111).
- Because the Strategy value on the withdrawal date was less than the Investment Base, the reduction in the Investment Base was $1,111, which is greater than the $1,000 withdrawal.

If in this example an Early Withdrawal Charge of 5% applied to the entire withdrawal amount and you requested a net amount of $1,000:
- The reduction for the Daily Value Percentage is equal to $500 ($5,000 x 10%).
- The Strategy value on the withdrawal date is $4,500 ($5,000 - $500).
- The total amount withdrawn is $1,053 ($1,000 / (1 – 0.05)).
- The Strategy value after the withdrawal is $3,447 ($4,500 - $1,053).
- The withdrawal as a percentage of the Strategy value is 23.39% ($1,053 / $4,500).
- The reduction in the Investment Base is $1,170 ($5,000 x 23.39%).
- The Investment Base after the withdrawal is $3,830 ($5,000 - $1,170).
- Because the Strategy value on the withdrawal date was less than the Investment Base, the reduction in the Investment Base was $1,170, which is greater than the $1,053 withdrawal.

Performance Lock

Performance Lock is an election to lock in the Daily Value Percentage for the remainder of a Term of an Indexed Strategy. You can make a Performance Lock election for each Term of an S&P 500 Strategy (excluding the 0% Floor with Cap Indexed Strategy and the three Trigger

Strategies) and for each Term of a First Trust Barclays Edge Strategy. Only one performance lock election may be made for a given Term of a Strategy.

You may make a Performance Lock election by a Request in Good Order. Once we receive your Request in Good Order, a Performance Lock election for a Term cannot be changed or revoked. You may access Daily Value Percentage information for the Indexed Strategies as of the previous day's Market Close by calling 1-800-789-6771 or by accessing your account online at www.massmutualascend.com.
A Performance Lock election for a Term is effective on the second Market Close following our receipt of your Request in Good Order. After the second Market Close, the Strategy value before the end of the Term and the Strategy value at the end of the Term is based on the Daily Value Percentage as locked at that second Market Close. This means that the Daily Value Percentage as of that second Market Close will apply from that date on through the end of the Term.

Because a Performance Lock election is effective on the second Market Close following receipt of the election, you will not be able to determine in advance the locked Daily Value Percentage that will apply to the Indexed Strategy at the time you make a Performance Lock election. The locked Daily Value Percentage could be negative, even if it is positive on the day you request a Performance Lock. The locked Daily Value Percentage could be negative, which could result in significant loss, even if the Index has risen since the start of the Term. When you elect a Performance Lock, your ending Strategy value will not be based on the ending Index value on the last day of the Term, which means you will not benefit from any rise in the Index during the balance of the Term and may earn less than you would have if you had not made a Performance Lock election. If the Daily Value Percentage is negative, you could lock in a loss, and the loss could be significant. Before electing a Performance Lock, you should consult with a financial advisor.

Beginning on that second Market Close and continuing through the end of the Term, the value of an Indexed Strategy is equal to:
• the Investment Base on that day; plus
• any increase for a positive Daily Value Percentage, as locked on that second Market Close; or minus
• any decrease for a negative Daily Value Percentage, as locked on that second Market Close.

After a Performance Lock election is effective, the value of a locked Strategy will decline over the balance of the Term due to Daily Charges. The value of a locked Strategy will also be reduced by the amount of any withdrawal and Early Withdrawal Charges.

A Performance Lock election does not affect the Investment Base, so the Indexed Strategy value will still change if the Investment Base is reduced by a withdrawal.

If you make a Performance Lock election for the S&P 500 6-Year 10% Buffer with Upside Participation Rate Indexed Strategy or the S&P 500 6-year 20% Buffer with Upside Participation Rate Strategy before the last year of the Term, that Term will end on the next anniversary of the Term start date. If you take no action and do not send us a reallocation request by that anniversary, then we will apply the ending value of that Strategy to a new Term of the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy.

If you make a Performance Lock election for the S&P 500 3-year 10% Buffer with Upside Participation Rate Strategy or the S&P 500 3-year 20% Buffer with Upside Participation Rate Strategy before the last year of the Term, that Term will end on the next anniversary of the Term start date. If you take no action and do not send us a reallocation request by that anniversary, then we will apply the ending value of that Strategy to a new Term of that Strategy if it is available, or if it is not available, then to the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy.

If you make a Performance Lock election for the S&P 500 2-year 50% Downside Participation Rate with Cap Indexed Strategy or the S&P 500 2-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy during the first year of the Term, that Term will end on the next anniversary of the Term start date. If you take no action and do not send us a reallocation request by that anniversary, then we will apply the ending value of that Strategy to a new 2-year Term of that Strategy. Any amounts that cannot be applied to that Indexed Strategy for the next Term will be applied to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy.

Examples. You allocate $5,000 to an Indexed Strategy at the start of a 1-year Term. This means the Investment Base at the start of the Term is $5,000. You make a Performance Lock election, and on the second Market Close following receipt of that election the Daily Value Percentage is 5%.

Assume that you take no withdrawals.
• The increase for the locked Daily Value Percentage is equal to $250 ($5,000 x 5%).
• On the second Market Close following receipt of the Performance Lock election, the Strategy value is $5,250 ($5,000 + $250).
• The Strategy value on each following day of the Term remains $5,250 because the Daily Value Percentage is locked. No further changes in the Daily Value Percentage (calculated using the Net Option Value, Amortized Option Cost, or Trading Cost) are taken into account.
• The ending Strategy value is $5,250. The normal calculation based on the percentage change in the Index over the 1-year Term does not apply.

Assume you take a $1,000 withdrawal after the Performance Lock election is effective, and no Early Withdrawal Charge applies to the withdrawal:

- The increase for the locked Daily Value Percentage is equal to $250 ($5,000 x 5%).
- On the second Market Close following receipt of the Performance Lock election, the Strategy value is $5,250 ($5,000 + $250).
- Until the withdrawal, the Strategy value on each following day of the Term remains $5,250 because the Daily Value Percentage is locked. No further changes in the net option value, amortized option cost, or trading cost are taken into account.
- Immediately after the $1,000 withdrawal, the Strategy value is $4,250 ($5,250 - $1,000).
- The withdrawal as a percentage of the Strategy value is 19.05% ($1,000 / $5,250)
- The proportionate reduction in the Investment Base is $952 ($5,000 x 19.05%).
- The Investment Base after the withdrawal is $4,048 ($5,000 - $952).
- Because the Strategy value on the withdrawal date was more than the Investment Base, the reduction in the Investment Base was $952, which is less than the $1,000 withdrawal.
- After the withdrawal, on each following day of the Term, the increase for the locked Daily Value Percentage is equal to $202 ($4,048 x5%).
- After the withdrawal, on each day of the Term, the Strategy value is $4,250 ($4,048 + $202). The Strategy value is the Investment Base after the withdrawal ($4,048) plus the increase for the locked Daily Value Percentage ($202).
- The ending Strategy value is $4,250. The normal calculation based on the percentage change in the Index over the 1-year Term does not apply.

See the Indexed Strategy Value After Performance Lock section below for more examples.

INDEXES

The returns of each Index, except the First Trust Barclays Edge Index, do not reflect the reinvestment of dividends. Any allocation to an Indexed Strategy does not represent an investment in an Index or in any securities or other assets included in an Index.

S&P 500 Index

The S&P 500® Index is designed to reflect the large-cap sector of the U.S. equity market and, due to its composition, it also represents the U.S. equity market in general. It includes 500 leading companies and captures approximately 80% coverage of available market capitalization. The S&P 500 Index does not include dividends declared by any of the companies in this index. Consequently, any positive change in the Index over a Term will be lower than the total return on a direct investment in the stocks that comprise the S&P 500 Index.

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For more information, visit www.US.SPIndices.com.

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The Gold Shares trade on the NYSE Arca under the symbol GLD. For more information, visit www.spdrgoldshares.com.

iShares MSCI EAFE ETF

The iShares MSCI EAFE ETF is an exchange traded fund that seeks to track the investment results of an index composed of large- and mid-capitalization developed market equities, excluding the U.S. and Canada (MSCI EAFE Index). This underlying index includes stocks from Europe, Australasia, and the Far East. It may include large- or mid-capitalization companies. The components of the underlying index, and the degree to which these components represent certain industries and/or countries, are likely to change over time. The fund's adviser uses an indexing strategy that involves investing in a representative sample of securities that collectively has an investment profile similar to that of the underlying index. The fund's performance will be reduced by its expenses and fees.

The fund's shares trade on the NYSE Arca under the symbol EFA.

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The fund's shares trade on the NYSE Arca under the symbol IYR.

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First Trust Barclays Edge Index

The First Trust Barclays Edge Index is designed to combine capital strength and value equity investment methodologies with a mix of US Treasury futures indexes for the potential to provide stable returns over time. The First Trust Barclays Edge Index consists of an equity component that combines stocks from the Capital Strength Index and the Value Line® Dividend Index. The Capital Strength Index starts with the largest 500 companies in the NASDAQ US benchmark index and then reduces the selection universe by screening for companies that meet minimum criteria including cash and/or short-term investments on their balance sheets, low debt-to-market cap ratios and attractive return-on-equity. It then selects the top 50 names from this smaller universe based on low historical volatility. The Value Line Dividend Index starts with the universe of stocks published in its The Value Line Investment Survey publication and then selects those with a Value Line® Safety Rank of 1 or 2, with attractive dividends and market cap of one billion dollars or above. It then equally weights all stocks that meet those conditions (generally, around 160-200 stocks). The First Trust Barclays Edge Index then combines the stocks represented in The Capital Strength Index and the Value Line Dividend Index with an equal-weight assigned to each underlying index and rebalanced back to equal-weight on a monthly basis. Furthermore, since the index is on an excess return basis (i.e., it returns the index performance in excess of risk-free rates), the risk-free return is deducted from the equity underliers. The risk-free rate used in this calculation is the U.S. Fed Funds Rate published by the Federal Reserve of New York (ticker: FEDL01) for each day divided by 360 as outlined in the Index Rulebook. No such adjustment is needed to the US Treasury futures indexes as these securities returns are naturally on an excess return basis.

The Index uses an optimizer to evaluate its exposure to stocks and US Treasury futures indexed on a daily basis to target a 7% volatility level. This volatility control mechanism aims to target or limit the volatility of the index return over time by adjusting the exposure of the index constituents through a rules-based process called mean-variance optimization. The optimizer defines risk using both shorter- and longer-term measures of historical realized volatility. It then seeks to determine the allocations between the equity and US Treasury futures index that produce the highest expected return for the target volatility level, subject to constraints. Depending on the constraints of the optimizer at the time, the Index may or may not allocate to the US Treasury futures indexes. When the volatility measures are low, the index can have exposure greater than 100%. However, the optimizer is constrained such that the exposure can never be greater than 225%. Likewise, when volatility is high, the index exposure can be less than 100%. In addition, the First Trust Barclays Edge Index generally rebalances based on end-of-day values in the event there is a deviation in the index component weights of 10% or more, on an absolute basis, from the previous index rebalance value. Note: The First Trust Barclays Edge Strategies are not available for Contracts issued in Missouri or Nebraska.

For more information visit https://www.ftindexingsolutions.com/

The performance of the First Trust Barclays Edge Index reflects the deduction of operating costs and rebalancing costs from the valuation of the underlying indexes. These costs, deducted as an annualized percentage on a daily basis, are fixed for the underlying indexes. The operating costs for the First Trust Barclays Edge Index range from 0.20% to 0.60%, and the rebalancing costs for the First Trust Barclays Edge Index range from 0.02% to 0.03%. The operating costs represent an estimate of the costs that would be incurred to buy and sell the index components. The rebalancing costs represent an estimate of the costs that would be incurred each time the Index rebalances due to changes in weightings of the

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Index Values

For Indexed Strategies that use the S&P 500 Index, Russell 2000 Index, or the First Trust Barclays Edge Index, the Index is the level of the S&P 500 Index, Russell 2000 Index, or the First Trust Barclays Edge Index for the applicable Market Close. For Indexed Strategies that use the SPDR Gold Shares ETF, the iShares MSCI EAFE ETF or the iShares U.S. Real Estate ETF, the Index is the applicable exchange-traded fund's share price on the NYSE Arca at the applicable Market Close.

We will use consistent sources to obtain the values of an Index. We currently obtain the values for the S&P 500 Index and the SPDR Gold Shares ETF from S&P Dow Jones Indices LLC, the values for the iShares MSCI EAFE ETF and iShares U.S. Real Estate ETF from BlackRock, Inc., the values for the First Trust Barclays Edge Index from Bloomberg Index Services Limited, and the values for the Russell 2000 Index from FTSE Russell. If those sources are no longer available, we will select an alternative published source(s) to obtain such values.

Index Replacement

We may replace an Index if it is discontinued, we are no longer able to use it, its calculation changes substantially, or we determine that hedging instruments are difficult to acquire or the cost of hedging becomes excessive. We may do so at the end of a Term or during a Term. We will notify you in writing at least 30 days before we replace an Index.

We would attempt to choose a replacement Index that is similar to the old Index. To determine if a new Index is similar, we will consider factors such as asset class, index composition, strategy, or methodology inherent to the index and index liquidity.

If we replace an Index during a Term, we will calculate the rise and fall in the Index using the old Index up until the replacement date. After the replacement date, we will calculate the rise and fall in the Index using the new Index, but with a modified start of Term value for the new Index. The modified start of Term value for the new index will reflect the rise or fall in the Index for the old Index from the start of the Term to the replacement date.

If we replace an Index, the Positive Return Factor percentage for the Term and the Negative Return Factor percentage will not change.

Example. These examples are intended to show how we would calculate the Strategy value on any day during a Term if we have replaced an Index during the Term. These examples assume: (1) you allocate $50,000 to an Indexed Strategy with a Cap of 8%; (2) a Daily Charge rate of 0.95% applies; (3) the replacement is made on day 90 of the Term; and (4) no Performance Lock election has been made. To simplify the example, we assume that you take no withdrawals during the Term.

Example 1. This example illustrates a situation where the old Index has risen at the time of its replacement.

Rise or Fall of Index on Replacement Date for Old Index	
Old Index at Term start	1000
Old Index on replacement date	1050
Rise or fall of old Index on replacement date	(1050 - 1000) / 1000 = 5.00%

The 5% rise in the old Index on the replacement date is then used to calculate the modified start of Term value for the new Index.

Modified Start of Term Value for New Index	
Rise in old Index on replacement date	5.00%
New Index on replacement date	1785
Modified start of Term value for new Index	1785 / (100% + 5.00%) = 1700

The modified start of Term value for the new Index is then used to calculate the Indexed Strategy value on any date after the replacement date, including the value at the Term end.

Indexed Strategy Value at Term End	
Investment Base at Term start	$50,000
Accumulated Daily Charges	$475
Investment Base After Daily Charges	$49,525
Modified start of Term value for new Index	1700
Value of new Index at Term end	1853
Rise in new Index	(1853 - 1700) / 1700) = 9.00%
Cap	8.00%
Rise in new Index limited by Cap	8.00%
Increase as a percentage	8.00% x 100% = 8.00%
Dollar amount of increase	$49,525 x 8.00% = $3,962
Strategy value at Term end	$49,525 + $3,962 = $53,487

Example 2. This example illustrates a situation where the old Index has fallen at the time of its replacement.

Change in Index on Replacement Date for Old Index	
Old Index at Term start	1000
Old Index on replacement date	950
Change in old Index on replacement date	(950 - 1000) / 1000 = -5.00%

The 5% fall in the old Index on the replacement date is then used to calculate the modified start of Term value for the new Index.

Modified Start of Term Value for New Index	
Change in old Index on replacement date	-5.00%
New Index on replacement date	1786
Modified start of Term value for new Index	1786 / (100% - 5.00%) = 1880

The modified start of Term value for the new Index is then used to calculate the Indexed Strategy value on any date after the replacement date, including the value at the Term end.

Indexed Strategy Value at Term End	
Investment Base at Term start	$50,000
Accumulated Daily Charges	$475
Investment Base after Daily Charges	$49,525
Modified start of Term value for new Index	1880
Value of new Index at Term end	1598
Change in new Index	(1598 -1800) / 1700) = -15.00%
Floor	-10%
Change in new Index limited by Floor	-10.00%
Change as a percentage	-10.00% x 100% = -10.00%
Dollar amount of change	$49,525 x -10.00% = -$4,953
Strategy value at Term end	$49,525 - $4,953 = $44,572

POSITIVE RETURN FACTORS AND NEGATIVE RETURN FACTORS

We set limits for the increase and reduction in the value of an Indexed Strategy over a Term that apply after Daily Charges are deducted from the Investment Base. We limit increases with a Positive Return Factor. We limit reductions with a Negative Return Factor. For information about the current Positive Return Factors offered for new Contracts, please contact your registered representative or refer to our website (www.massmutualascend.com/RILArates).

Cap. The Cap for an Indexed Strategy is the maximum positive Index change over the course of a Term that is taken into account to determine the Strategy value at the end of that Term. Before the end of a Term, the Cap is reflected in the formulas that we use to calculate the Net Option Price.

- **The Cap will vary among Indexed Strategies.**

- **The Cap for a given Indexed Strategy will vary from Term to Term.**

- **We guarantee that the Cap for a Term of an Indexed Strategy will never be less than 1%.**

- **For each Term, your return on a Cap Strategy will be less than any rise in the Index over that Term because of the deduction of the Daily Charge.**

- **For each Term, your return on a Cap Strategy will be less than the Cap for that Term because of the deduction of the Daily Charge.**

- **Your return on a Cap Strategy could be negative even when the Index rises. This will occur when the amount of increase attributable to an Index rise is smaller than the amount needed to offset the Daily Charge.**

Upside Participation Rate. The Upside Participation Rate for an Indexed Strategy is your share of any positive Index change (measured at the beginning and end of the Term) that is taken into account to determine the Strategy value at the end of that Term. Before the end of a Term, the Upside Participation Rate is reflected in the formulas that we use to calculate Net Option Price.

- **The Upside Participation Rate will vary among Indexed Strategies.**

- **The Upside Participation Rate for a given Indexed Strategy will vary from Term to Term.**

- **We guarantee that the Upside Participation Rate for a Term of an Indexed Strategy will never be less than 5%.**

- **For each Term, your return on an Upside Participation Rate Strategy of less than 100% will be less than any rise in the Index over that Term. In addition, any increase for the Term will be reduced by the Daily Charge.**

- **Your return on an Upside Participation Rate Strategy could be negative even when the Index rises. This will occur when the amount of increase attributable to an Index rise is smaller than the amount needed to offset the Daily Charge.**

Trigger Rate. The Trigger Rate is the specified rate that is credited to the Strategy value when the Index change (measured at the start and end of the Term) qualifies for the Trigger Rate. In the case of a Performance Trigger Strategy, the Trigger Rate will be credited when the Index change is zero or positive at the end of the Term. In the case of a Dual Performance Trigger Strategy, the Trigger Rate will be credited if the Index change is zero, positive, or negative up to the Buffer at the end of the Term. Before the end of a Term, the Trigger Rate and the Index change required to qualify for the Trigger Rate are reflected in the formulas that we use to calculate the Net Option Price*.*

- **The Trigger Rate will vary among Indexed Strategies.**

- **The Trigger Rate for a given Indexed Strategy will vary from Term to Term.**

- **We guarantee that the Trigger Rate for a Term of a Trigger Strategy will never be less than 1%.**

- **For each Term, your return on a Trigger Strategy will be less than the Trigger Rate for that Term because of the deduction of the Daily Charge.**

- **For each Term, the Trigger Rate on a Dual Performance Trigger Strategy will be less than the Trigger Rate for that Term on a Performance Trigger Strategy.**

Positive Return Factors. We set each Index's Positive Return Factor percentage based on the length of the Term, the cost of hedging, Daily Charge rates, interest rates, the Index change required to qualify for the Trigger Rate, and other market factors. On a non-discriminatory basis, we may also take into account the amount of the Purchase Payments received for a Contract. The Positive Return Factor percentages for Contracts with larger Purchase Payments may be higher than the Positive Return Factor percentages for Contracts with smaller Purchase Payments. You may obtain information regarding these Positive Return Factors by calling 1-800-789-6771 or on our website (www.massmutualascend.com/RILArates).

Positive Return Factors for Initial Terms. Each Purchase Payment is applied to an initial Term of a Strategy on the first Strategy Application Date on or after the date that the payment is received. The Positive Return Factor percentages for each Strategy Application Date may vary. The Positive Return Factor percentages for the first Strategy Application Date will be available on our website (www.massmutualascend.com/RILArates) on the date you signed the application (as long as we receive the application for the Contract within eight days after the date you sign it) and before the date of any Purchase Payment to which the Positive Return Factor percentages will apply. If we receive the application for the Contract within eight days after the date you sign it, we will guarantee the Positive Return Factor percentages in effect on the date you signed the application for three Strategy Application Dates from the date of the application.

If we receive the signed application within eight days after the date you sign it, then for any **1-year, 2-year, or 3-year Indexed Strategy**:
- For an initial Term starting on the first Strategy Application Date on or after the application date, the Positive Return Factor percentage will be the Positive Return Factor percentage in effect on the date you signed the application.
- For an initial Term starting on one of the next two Strategy Application Dates, the Positive Return Factor percentage will be the higher of the Positive Return Factor percentage in effect on the date you signed the application or the Positive Return Factor percentage otherwise in effect for that Strategy Application Date.
- For any initial Term starting on a later Strategy Application Date, the Positive Return Factor percentage will be the Positive Return Factor percentage in effect for that Strategy Application Date.

If we receive the signed application within eight days after the date you sign it, then for any **6-year Indexed Strategy**:
- For an initial Term starting on the first Strategy Application Date on or after the application date or one of the next two Strategy Application Dates, the Upside Participation Rate will be the Upside Participation Rate in effect on the date you signed the application.
- For any initial Term starting on a later Strategy Application Date, the Upside Participation Rate will be the Upside Participation Rate in effect for that Strategy Application Date.

If we receive the signed application more than eight days after the date you sign it, then the guarantee does not apply and the Positive Return Factor percentage for each Initial Term will be the Positive Return Factor percentage in effect for that Strategy Application Date.

Example 1: You sign an application for a Contract on May 1 and allocate all of your Purchase Payments to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy. On the date of the application, the Upside Participation Rate for the first Strategy Application Date (May 6) is 80%. We receive the application and the first Purchase Payment from you on May 8 and the second Purchase Payment from you on May 23. The Upside Participation Rates for the next two Strategy Application Dates are 85% (May 20) and 75% (June 6).

In this case, the initial 1-year Term for the first Purchase Payment would begin on May 20 and would have an 85% Participation Rate (the higher of the May 6 rate or the May 20 rate). The initial 1-year Term for the second Purchase Payment would begin on June 6 and would have an 80% Participation Rate (the higher of the May 6 rate or the June 6 rate).

If we had not received your signed application until May 10 (more than eight days after the date you signed the application), then you would not qualify for the rate guarantee, and the initial 1-year Term for the first Purchase Payment received on May 8 would have an 85% Participation Rate

(the May 20 rate effective for Purchase Payments received between May 7 and May 20), and the initial 1-year Term for the second Purchase Payment received on May 23 would have a 75% Participation Rate (the June 6 rate effective for Purchase Payments received between May 21 and June 6).

Example 2: You sign an application for a Contract on May 1 and allocate all of your Purchase Payments to the S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy. On the date of the application, the Upside Participation Rate for the first Strategy Application Date (May 6) is 105%. We receive the application and the first Purchase Payment from you on May 8 and the second Purchase Payment from you on May 23. The Upside Participation Rates for the next two Strategy Application Dates are 110% (May 20) and 95% (June 6).

In this case, the initial 6-year Term for the first Purchase Payment would begin on May 20 and would have a 105% Participation Rate (the May 6 rate), and the initial 6-year Term for the second Purchase Payment would have a 105% Participation Rate (the May 6 rate).

If we had not received your signed application until May 10 (more than eight days after the date you signed the application), then the initial 6-year Term for the first Purchase Payment would have an 110% Participation Rate (the May 20 rate), and the initial 6-year Term for the second Purchase Payment would have a 95% Participation Rate (the June 6 rate).

Positive Return Factors for Subsequent Terms. At least 30 days before the end of each Term, we will send you a written notice with information about the Indexed Strategies that will be available for the next Term, and will indicate the date by which the Positive Return Factor percentages will be posted on our website. The Positive Return Factor percentages for the next Term will be available on our website (www.massmutualascend.com/RILArates) at least 10 days before the start of the Term. You should consider this information before finalizing your renewal or reallocation decision.

Downside Participation Rate. The Downside Participation Rate for an Indexed Strategy is your share of any net fall in the Index for the Term (measured at the start and end of the Term) that is taken into account to determine the Strategy value at the end of that Term. Before the end of a Term, the Downside Participation Rate is reflected in the formulas that we use to calculate the Net Option Price.

For each Term of each Downside Participation Rate Strategy that we currently offer for this Contract, the Downside Participation Rate is 50%. The Downside Participation Rate for an Indexed Strategy that is available on the Contract Effective Date will not change.

When the Index falls over a Term, the resulting Strategy value decrease will be larger than 50% of the Index fall. This is because the Daily Charge reduces the Investment Base before the Index fall is taken into account.

In the future, we may offer a new Strategy with a Downside Participation Rate that offers more or less protection against loss than a 50% Downside Participation Rate, but we will not offer a new Downside Participation Rate Strategy that offers less protection against loss than a 75% Downside Participation Rate.

Floor. The Floor for an Indexed Strategy is the portion of any net fall in the Index for the Term (measured at the start and end of the Term) that is taken into account to determine the Strategy value at the end of that Term. For each Term of each Floor Strategy that we currently offer for this Contract, the Floor is either -10% or 0%. Before the end of a Term, the Floor is reflected in the formulas that we use to calculate the Net Option Price.

The Floor for an Indexed Strategy that is available on the Contract Effective Date will not change.

When the Index falls over a Term, the resulting Floor Strategy value decrease will be larger than the rate of the Index fall unless the rate of the Index fall is equal to (or larger than) the Floor minus the Daily Charge rate. This is because the Daily Charge reduces the Investment Base before the Index fall is taken into account.

In the future, we may offer a new Floor Strategy with a Floor that offers more or less protection against loss than a -10% Floor, but we will not offer a new Floor Strategy that offers less protection against loss than a -20% Floor.

Buffer. The Buffer for an Indexed Strategy is the portion of any net fall in the Index for the Term (measured at the start and end of the Term) that is disregarded when determining the Strategy value at the end of that Term. Before the end of a Term, the Buffer is reflected in the formulas that we use to calculate the Net Option Price.

For each Term of each 10% Buffer Strategy that we currently offer for this Contract, the Buffer is 10%, and for each Term of each 20% Buffer Strategy that we currently offer with this Contract, the Buffer is 20%. The Buffer for an Indexed Strategy that is available on the Contract Effective Date will not change.

When the Index falls over a Term, the resulting Buffer Strategy value decrease will be larger than the rate of the Index fall minus the Buffer. This is because the Daily Charge reduces the Investment Base before the Index fall is taken into account.

In the future, we may offer a new Strategy with a Buffer that offers more or less protection against loss than a 10% Buffer or a 20% Buffer, but we will not offer a new Buffer Strategy that offers less protection against loss than a 5% Buffer.

INDEXED STRATEGY VALUE AT END OF TERM

On or after the final Market Day of a Term, unless you have made a Performance Lock election, the value of an Indexed Strategy is the Investment Base increased based on the performance of the applicable Index (after application of Positive Return Factors) or decreased for any net fall in the applicable Index (after application of Negative Return Factors) over that Term. If you have made a Performance Lock election, then the normal rules set out in this section do not apply, and the value at the end of a Term is determined as described under Indexed Strategy Value After Performance Lock Election section on page 58.

After taking Daily Charges into account, any increase or decrease is based on the rise or fall in the applicable Index since the start of that Term. This rise or fall is expressed as a percentage of the Index at the start of the Term. It is measured from the Index at the last Market Close on or before the first day of that Term to the Index at the final Market Close of the Term.

Example. The Index was 1000 at the last Market Close on or before for first day of a Term.

- If the Index at the final Market Close of the Term is 1065, then the Index has risen by 6.5% ((1065 – 1000) / 1000).

- If the Index at the final Market Close of the Term is 925, then the Index has fallen by 7.5% ((925 – 1000) / 1000).

Downside Participation Rate with Cap Strategy

In the absence of a Performance Lock election, here are the formulas that we use to calculate the Strategy value at the end of a Term of a Downside Participation Rate Strategy with a Cap.

Strategy value at end of Term = Investment Base + dollar amount of increase or decrease

Dollar amount of increase or decrease = Investment Base (after taking Daily Charges into account) x increase or decrease percentage

Increase percentage = any net rise in the Index for the Term, but never more than the Cap

Decrease percentage = any net fall in the Index for the Term x Downside Participation Rate

Example. At the beginning of a Term, you allocate $100,959 to a 50% Downside Participation Rate with Cap Strategy and the Cap for the Term is 14%. Your contract has a Daily Charge rate of 0.95%, so your Investment Base at the end of that Term is $100,000 ($100,959 - $959 in Daily Charges). You have not made a Performance Lock election.

	At Final Market Close of Term	At Final Market Close of Term
Rise or fall in Index	+16%	–16%
Increase or decrease percentage	+14% (16% > 14% Cap)	–8% (50% of –16%)
Dollar amount of increase or decrease	+14,000 ($100,000 x 14%)	–8,000 ($100,000 x –8%)
Strategy value at end of Term	$114,000 ($100,000 + $14,000)	$92,000 ($100,000 - $8,000)

Downside Participation Rate with Upside Participation Rate Strategy

In the absence of a Performance Lock election, here are the formulas that we use to calculate the Strategy value at the end of a Term of a Downside Participation Rate with Upside Participation Rate Strategy.

Strategy value at end of Term = Investment Base + dollar amount of increase or decrease

Dollar amount of increase or decrease = Investment Base (after taking Daily Charges into account) x increase or decrease percentage

Increase percentage = any net rise in the Index for the Term x Upside Participation Rate

Decrease percentage = any net fall in the Index for the Term x Downside Participation Rate

Example. At the beginning of a Term, you allocate $100,959 to a 50% Downside Participation Rate with Upside Participation Rate Strategy and the Upside Participation Rate for the Term is 75%. Your contract has a Daily Charge rate of 0.95%, so your Investment Base at the end of that Term is $100,000 ($100,959 - $959 in Daily Charges). You have not made a Performance Lock election.

	At Final Market Close of Term	At Final Market Close of Term
Rise or fall in Index	+16%	−16%
Increase or decrease percentage	+12% (75% of 16%)	−8% (50% of −16%)
Dollar amount of increase or decrease	+12,000 ($100,000 x 12%)	−8,000 ($100,000 x −8%)
Strategy value at end of Term	$112,000 ($100,000 + $12,000)	$92,000 ($100,000 - $8,000)

Buffer with Upside Participation Rate Strategy

In the absence of a Performance Lock election, here are the formulas that we use to calculate the Strategy value at the end of a Term of a Buffer with Upside Participation Rate Strategy.

Strategy value at end of Term = Investment Base + dollar amount of increase or decrease

Dollar amount of increase or decrease = Investment Base (after taking Daily Charges into account) x increase or decrease percentage

Increase percentage = any net rise in the Index for the Term x Upside Participation Rate

Decrease percentage for the Buffer with Upside Participation Rate Strategy = any net fall in the Index for the Term to the extent it is greater than the Buffer

Example. At the beginning of a Term, you allocate $100,959 to 10% Buffer with Upside Participation Rate Strategy and the Upside Participation Rate for the Term is 130%. Your contract has a Daily Charge rate of 0.95%, so your Investment Base at the end of that Term is $100,000 ($100,959 - $959 in Daily Charges). You have not made a Performance Lock election.

	At Final Market Close of Term	At Final Market Close of Term
Rise or fall in Index	+16%	−16%
Increase or decrease percentage	+16.8% (105% of 16%)	−6% (−16% - -10%)
Dollar amount of increase or decrease	+16,800 ($100,000 x 16.8%)	−6,000 ($100,000 x −6%)
Strategy value at end of Term	$116,800 ($100,000 + $16,800)	$94,000 ($100,000 - $6,000)

Buffer with Cap Strategy

In the absence of a Performance Lock election, here are the formulas that we use to calculate the Strategy value at the end of a Term of 10% Buffer with Cap Strategy.

Strategy value at end of Term = Investment Base + dollar amount of increase or decrease

Dollar amount of increase or decrease = Investment Base (after taking Daily Charges into account) x increase or decrease percentage

Increase percentage = any net rise in the Index for the Term, but never more than the Cap

Decrease percentage = any net fall in the Index for the Term to the extent it is greater than the Buffer

Example. At the beginning of a Term, you allocate $100,959 to 10% Buffer with Cap Strategy and the Cap for the Term is 13%. You do not take any withdrawals during that Term. Your contract has a Daily Charge rate of 0.95%, so your Investment Base at the end of that Term is $100,000 ($100,959 - $959 in Daily Charges). You have not made a Performance Lock election.

	At Final Market Close of Term	At Final Market Close of Term
Rise or fall in Index	+16%	−16%
Increase or decrease percentage	+13% (16% > 13% Cap)	−6% (−16% - -10%)
Dollar amount of increase or decrease	+13,000 ($100,000 x 13%)	−6,000 ($100,000 x −6%)
Strategy value at end of Term	$113,000 ($100,000 + $13,000)	$94,000 ($100, 000 - $6,000)

Floor with Cap Strategy

In the absence of a Performance Lock election, here are the formulas that we use to calculate the Strategy value at the end of a Term of a Floor with Cap Strategy.

Strategy value at end of Term = Investment Base + dollar amount of increase or decrease

Dollar amount of increase or decrease = Investment Base (after taking Daily Charges into account) x increase or decrease percentage

Increase percentage = any net rise in the Index for the Term, but never more than the Cap

Decrease percentage = any net fall in the Index for the Term, but never more than the Floor

Example. At the beginning of a Term, you allocate $100,959 to a -10% Floor with Cap Strategy and the Cap for the Term is 14%. You do not take any withdrawals during that Term. Your contract has a Daily Charge rate of 0.95%, so your Investment Base at the end of that Term is $100,000 ($100,959 - $959 in Daily Charges). You have not made a Performance Lock election.

	At Final Market Close of Term	**At Final Market Close of Term**
Rise or fall in Index	+16%	−16%
Increase or decrease percentage	+14% (16% > 14% Cap)	−10% (−16% < -10%)
Dollar amount of increase or decrease	+14,000 ($100,000 x 14%)	−10,000 ($100,000 x −10%)
Strategy value at end of Term	$114,000 ($100,000 + $14,000)	$90,000 ($100, 000 - $10,000)

Buffer with Performance Trigger Strategy

Here are the formulas that we use to calculate the Strategy value at the end of a Term of a Buffer with Performance Trigger Strategy.

Strategy value at end of Term = Investment Base + dollar amount of increase or decrease

Dollar amount of increase or decrease = Investment Base (after taking Daily Charges into account) x increase or decrease percentage

Increase percentage = the Trigger Rate, applied when Index returns are positive or zero

Decrease percentage = any net fall in the Index for the Term to the extent it is greater than the Buffer

Example. At the beginning of a Term, you allocate $100,959 to a 10% Buffer with Performance Trigger Strategy and the Trigger Rate for the Term is 11%. You do not take any withdrawals during that Term. Your contract has a Daily Charge rate of 0.95%, so your Investment Base at the end of that Term is $100,000 ($100,959 - $959 in Daily Charges).

	At Final Market Close of Term	**At Final Market Close of Term**	**At Final Market Close of Term**	**At Final Market Close of Term**
Rise or fall in Index	+16%	0%	−6%	−16%
Increase or decrease percentage	+11% (11% Trigger Rate)	+11% (11% Trigger Rate)	0% (−6% > -10%)	−6% (−16% < -10%)
Dollar amount of increase or decrease	+11,000 ($100,000 x 11%)	+11,000 ($100,000 x 11%)	0 ($100,000 x 0%)	−6,000 ($100,000 x −6%)
Strategy value at end of Term	$111,000 ($100,000 + $11,000)	$111,000 ($100,000 + $11,000)	$100,000 ($100, 000 - $0)	$94,000 ($100, 000 - $6,000)

Buffer with Dual Performance Trigger Strategy

Here are the formulas that we use to calculate the Strategy value at the end of a Term of a Buffer with Dual Performance Trigger Strategy.

Strategy value at end of Term = Investment Base + dollar amount of increase or decrease

Dollar amount of increase or decrease = Investment Base (after taking Daily Charges into account) x increase or decrease percentage

Increase percentage = the Trigger Rate, applied when Index returns are zero, positive, or negative but do not exceed the Buffer

Decrease percentage = any net fall in the Index for the Term to the extent it is greater than the Buffer

Example. At the beginning of a Term, you allocate $100,959 to a 10% Buffer with Dual Performance Trigger Strategy and the Trigger Rate for the Term is 8%. You do not take any withdrawals during that Term. Your contract has a Daily Charge rate of 0.95%, so your Investment Base at the end of that Term is $100,000 ($100,959 - $959 in Daily Charges).

	At Final Market Close of Term	**At Final Market Close of Term**	**At Final Market Close of Term**	**At Final Market Close of Term**
Rise or fall in Index	+16%	0%	−6%	−16%
Increase or decrease	+8% (8% Trigger Rate)	+8% (8% Trigger Rate)	+8% (8% Trigger Rate)	−6% (−16% < -10%)

percentage				
Dollar amount of increase or decrease	+8,000 ($100,000 x 8%)	+8,000 ($100,000 x 8%)	+8,000 ($100,000 x 8%)	–6,000 ($100,000 x –6%)
Strategy value at end of Term	$108,000 ($100,000 + $8,000)	$108,000 ($100,000 + $8,000)	$108,000 ($100,000 + $8,000)	$94,000 ($100, 000 - $6,000)

INDEXED STRATEGY VALUE BEFORE END OF TERM

Before the final Market Day of a Term, unless you have made a Performance Lock election, the value of an Indexed Strategy is the Investment Base increased or decreased by the Daily Value Percentage. If you have made a Performance Lock election, then the normal rules set out in this section do not apply, and the value after the effective date of the Performance Lock election through the end of the Term is determined as described under Indexed Strategy Value After Performance Lock Election section below.

In the absence of a Performance Lock election, here are the formulas that we use to calculate the Strategy value before the end of a Term.

> Strategy value before end of Term = Investment Base + dollar amount of increase or decrease

> Dollar amount of increase or decrease = Investment Base (after Daily Charges are taken into account) x Daily Value Percentage

> Daily Value Percentage = Net Option Price – Amortized Option Cost – Trading Cost

Net Option Price

The Net Option Price is one part of the formula used to calculate Daily Value Percentage. The Net Option Price is based on the calculated prices of hypothetical options that represent the projected changes in the Index over the full Term. The model we use to price those options is described in the Option Prices section of this prospectus.

Net Option Price for Downside Participation Rate with Cap Strategy

For a Downside Participation Rate with Cap Strategy, three option prices are included in the calculation of the Net Option Price.

- ATM Call Option Price, which represents the possible rise in the Index

- OTM Call Option Price, which is subtracted in order to limit any rise in the Index by the Cap

- ATM Put Option Price, which represents the possible fall in the Index and is multiplied by the Downside Participation Rate in order to reflect your share in any such fall.

The Net Option Price as of a Market Close is a percentage equal to: (1) the ATM Call Option Price for the Market Close; minus (2) the OTM Call Option Price for the Market Close; and (3) minus the ATM Put Option Price for the Market Close multiplied by the Downside Participation Rate.

It is important to note that the Net Option Price will almost always be less than any rise in the Index because, when we calculate the Net Option Price, we subtract the ATM Put Option Price, and the ATM Put Option Price is always above zero because it is always possible for the value of the Index to fall before the end of the Term.

Net Option Price for Downside Participation Rate with Upside Participation Rate Strategy

For a Downside Participation Rate with Upside Participation Rate Strategy, two option prices are included in the calculation of the Net Option Price.

- ATM Call Option Price, which represents the possible rise in the Index and is multiplied by the Upside Participation Rate in order to reflect your share in any such rise

- ATM Put Option Price, which represents the possible fall in the Index and is multiplied by the Downside Participation Rate in order to reflect your share in any such fall.

The Net Option Price as of a Market Close is a percentage equal to: (1) the ATM Call Option Price for the Market Close multiplied by the Upside Participation Rate; minus (2) the ATM Put Option Price for the Market Close multiplied by the Downside Participation Rate

It is important to note that the Net Option Price will almost always be less than any rise in the Index because, when we calculate the Net Option Price, we subtract the ATM Put Option Price, and the ATM Put Option Price is always above zero because it is always possible for the value of the Index to fall before the end of the Term.

Net Option Price for Buffer with Upside Participation Rate Strategy

For a Buffer with Upside Participation Rate Strategy, two option prices are included in the calculation of the Net Option Price.

- ATM Call Option Price, which represents the possible rise in the Index and is multiplied by the Upside Participation Rate in order to reflect your share in any such rise

- OTM Put Option Price, which is subtracted and represents the possible fall in the Index but only to the extent that such fall exceeds the Buffer.

The Net Option Price as of a Market Close is a percentage equal to: (1) the ATM Call Option Price for the Market Close multiplied by the Upside Participation Rate; minus (2) the OTM Put Option Price for the Market Close

It is important to note that the Net Option Price will almost always be less than any rise in the Index because, when we calculate the Net Option Price, we subtract the OTM Put Option Price, and the OTM Put Option Price is always above zero because it is always possible for the value of due the Index to fall before the end of the Term.

Net Option Price for a Floor with Cap Strategy

For a Floor with Cap Strategy, four option prices are included in the calculation of the Net Option Price.

- ATM Call Option Price, which represents the possible rise in the Index

- OTM Call Option Price, which is subtracted in order to limit any rise in the Index by the Cap

- ATM Put Option Price, which is subtracted to represent the possible fall in the Index; and

- OTM Put Option Price, which is added to limit any fall in the Index to the Floor.

The Net Option Price as of a Market Close is a percentage equal to: (1) the ATM Call Option Price for the Market Close; minus (2) the OTM Call Option Price for the Market Close; minus (3) the ATM Put Option Price for the Market Close; and plus (4) the OTM Put Option Price for the Market Close.

It is important to note that the Net Option Price will almost always be less than any rise in the Index because, when we calculate the Net Option Price, we subtract the amount by which the ATM Put Option Price exceeds the OTM Put Option Price, and the ATM Put Option Price always exceeds the OTM Put Option Price because the ATM Put Option Price represents the constant present potential for a fall in the Index before the end of the Term, while the OTM Put Option Price represents the lesser/included potential for a change in the Index of more than the -10% Floor.

Net Option Price for Buffer with Cap Strategy

For a Buffer with Cap Strategy, three option prices are included in the calculation of the Net Option Price.

- ATM Call Option Price, which represents the possible rise in the Index

- OTM Call Option Price, which is subtracted in order to limit any rise in the Index by the Cap

- OTM Put Option Price, which is subtracted and represents the possible fall in the Index but only to the extent that such fall exceeds the Buffer.

The Net Option Price as of a Market Close is a percentage equal to: (1) the ATM Call Option Price for the Market Close; minus (2) the OTM Call Option Price for the Market Close; and minus (3) the OTM Put Option Price for the Market Close.

It is important to note that the Net Option Price will almost always be less than any rise in the Index because, when we calculate the Net Option Price, we subtract the OTM Put Option Price, and the OTM Put Option Price is always above zero because it is always possible for the value of the Index to fall before the end of the Term.

Net Option Price for Buffer with Performance Trigger Strategy

For a Buffer with Performance Trigger Strategy, two option prices are included in the calculation of the Net Option Price.

- ATM Binary Call Option Price, which represents the possibility of a payment equal to the Trigger Rate if the Index rise will be zero or greater

- OTM Put Option Price, which is subtracted and represents the possible fall in the Index but only to the extent that such fall exceeds the Buffer.

The Net Option Price as of a Market Close is a percentage equal to: (1) the value of the ATM Binary Call Option calculated for the Market Close; minus (2) the value of the OTM Put Option calculated for the Market Close.

It is important to note that the Net Option Price will almost always be less than the Trigger Rate because, when we calculate the Net Option Price, we subtract the OTM Put Option Price, and the OTM Put Option Price is always above zero because it is always possible for the value of the Index to fall before the end of the Term.

Net Option Price for Buffer with Dual Performance Trigger Strategy

For a Buffer with Dual Performance Trigger Strategy, two option prices are included in the calculation of the Net Option Price.

- ITM Binary Call Option Price, which represents the possibility of a payment equal to the Trigger Rate if the change in the Index for the Term will be zero, positive, or negative but not exceeding the Buffer

- OTM Put Option Price, which is subtracted and represents the possible fall in the Index but only to the extent that such fall exceeds the Buffer.

The Net Option Price as of a Market Close is a percentage equal to: (1) the value of the ITM Binary Call Option calculated for the Market Close; minus (2) the value of the OTM Put Option calculated for the Market Close.

It is important to note that the Net Option Price will almost always be less than the Trigger Rate because, when we calculate the Net Option Price, we subtract the OTM Put Option Price, and the OTM Put Option Price is always above zero because it is always possible for a fall in the value of the Index to exceed the Buffer before the end of the Term.

Amortized Option Cost

The Amortized Option Cost is one part of the formula used to calculate Daily Value Percentage. The Amortized Option Cost starts with the Net Option Price at the beginning of a Term, which is calculated using the formulas set out above. That Net Option Price is then multiplied by the time remaining in the Term as a percentage of the length of the Term.

The Amortized Option Cost as of a Market Close is a percentage equal to: (1) the Net Option Price for the Strategy at the beginning of the Term; multiplied by (2) the number of days remaining until the final Market Close of the Term divided by 365 for a one-year Term, by 730 for a two-year Term, by 1,096 days if that Term is three years long, or by 2,192 days for a six-year Term.

Trading Cost

The Trading Cost is one part of the formula used to calculate Daily Value Percentage. The Trading Cost as of a Market Close is the estimated cost of selling the hypothetical options before the end of a Term. It is a percentage that reflects the average market difference between option average bid-ask prices and option bid prices. We may change the Trading Cost at any time due to changes in option prices.

Daily Value Percentage Examples

Examples. Here are four examples that show how the Daily Value Percentage formula works for Indexed Strategies with a 1-year Term. In each example, we calculate the Daily Value Percentage for the Market Close on day 90 of a one-year Term. Before the end of a Term, the Strategy value determined using the Daily Value Percentage will almost always be less than the value suggested on that date by the rise or fall of the Index and the end of Term calculation method.

Assumptions

Option Price Assumptions	Price at Start of Term (as a Percentage of Index at Start of Term)	Price at Current Market Close (as a Percentage of Index at Start of Term)
ATM Call Option Price	6.00%	7.47%
OTM Call Option Price	1.15%	1.81%
ATM Put Option Price	5.40%	3.36%
OTM Put Option Price	4.50%	2.80%
Strategy Assumptions		
Investment Base for each Strategy (after taking Daily Charges into account)		$ 100,000
Cap		11%
Upside Participation Rate		75%
Days remaining to last Market Day of Term		275
Trading Cost Assumption	0.15%	

Example 1: 50% Downside Participation Rate with Cap Strategy

Current ATM Call Option Price – Current OTM Call Option Price	5.66%	(7.47% – 1.81%)
Current ATM Put Option Price x Downside Participation Rate	– 1.68%	(50% of 3.36%)
Net Option Price	= 3.98%	
Initial ATM Call Option Price – Initial OTM Call Option Price	4.85%	(6.00% – 1.15%)
Initial ATM Put Option Price x Downside Participation Rate	– 2.70%	(50% of 5.40%)
Net Option Price	= 2.15%	
Amortization Factor for days remaining to final Market Day of Term	x 75.34%	(275 / 365)
Amortized Option Cost	= 1.62%	
Net Option Price	3.98%	
Amortized Option Cost	– 1.62%	
Assumed Trading Cost	– 0.15%	
Daily Value Percentage	= 2.21%	
Dollar amount of increase	$ 2,210	($100,000 x 2.21%)
Value of 50% Downside Participation Rate with Cap Strategy	$ 102,210	($ 100,000 + $2,210)

In the above example, the Strategy value has increased by 2.21% by day 90 even though the Index value has increased by 4% (1000 to 1040) over the same period. This reflects the impact of the method we use to calculate a Strategy value before the end of a term.

By comparison, if the value of the Strategy on day 90 of the Term were to be determined based the end of Term value calculation method, the Strategy value would reflect the full 4% increase in the Index ($100,000 + ($100,000 x 4% increase percentage) = $104,000) because the increase does not exceed the 11% Cap. **We will always calculate the Strategy value before the end of a Term using the Daily Value Percentage illustrated by the above example and not based on the rise or fall of the Index.**

Example 2: 50% Downside Participation Rate with Upside Participation Rate Strategy

Current ATM Call Option Price x Upside Participation Rate	5.60%	(75% of 7.47%)
Current ATM Put Option Price x Downside Participation Rate	– 1.68%	(50% of 3.36%)
Net Option Price	= 3.92%	
Initial ATM Call Option Price x Upside Participation Rate	4.50%	(75% of 6.00%)
Initial ATM Put Option Price x Downside Participation Rate	– 2.70%	(50% of 5.40%)
Net Option Price	= 1.80%	
Amortization Factor for days remaining to final Market Day of Term	x 75.34%	(275 / 365)
Amortized Option Cost	1.36%	
Net Option Price	3.92%	

Amortized Option Cost	–1.36%	
Assumed Trading Cost	– 0.15%	
Daily Value Percentage	= 2.41%	
Increase as a dollar amount	$ 2,410	($100,000 x 2.41%)
Value of 50% Downside Participation Rate with Upside Participation Rate Strategy	$ 102,410	($ 100,000 + $2,410)

In the above example, the Strategy value has increased by 2.41% by day 90 even though the Index value has increased by 4% (1000 to 1040) over the same period. This reflects the impact of the method we use to calculate a Strategy value before the end of a term.

By comparison, if the value of the Strategy on day 90 of the Term were to be determined based the end of Term value calculation method, the Strategy value would reflect 75% of the 4% increase in the Index ($100,000 + ($100,000 x 3% increase percentage) = $103,000). **We will always calculate the Strategy value before the end of a Term using the Daily Value Percentage illustrated by the above example and not based on the rise or fall of the Index.**

Example 3: 10% Buffer with Cap Strategy

Current ATM Call Option Price – Current OTM Call Option Price	5.66%	(7.47% -1.81%)
Current OTM Put Option Price	– 2.80%	
Net Option Price	= 2.86%	
Initial ATM Call Option Price – Initial OTM Call Option Price	4.85%	(6.00% -1.15%)
Initial OTM Put Option Price	– 4.50%	
Net Option Price	= 0.35%	
Amortization Factor for days remaining to final Market Day of Term	x 75.34%	(275 / 365)
Amortized Option Cost	0.26%	
Net Option Price	2.86%	
Amortized Option Cost	– 0.26%	
Assumed Trading Cost	– 0.15%	
Daily Value Percentage	= 2.45%	
Increase as a dollar amount	$2,450	($100,000 x 2.45%)
Value of 10% Buffer with Cap Strategy	$102,450	($100,000 + $2,450)

In the above example, the Strategy value has increased by 2.45% by day 90 even though the Index value has increased by 4% (1000 to 1040) over the same period. This reflects the impact of the method we use to calculate a Strategy value before the end of a Term.

By comparison, if the value of the Strategy on day 90 of the Term were to be determined based the end of Term value calculation method, the Strategy value would reflect the full 4% increase in the Index ($100,000 + ($100,000 x 4% increase percentage) = $104,000) because the increase does not exceed the 11% Cap. **We will always calculate the Strategy value before the end of a Term using the Daily Value Percentage illustrated by the above example and not based on the rise or fall of the Index.**

Example 4: -10% Floor with Cap Strategy

Current ATM Call Option Price – Current OTM Call Option Price	5.66%	(7.47% – 1.81%)
(Current ATM Put Option Price – Current OTM Put Option Price)	-0.56%	(3.36% - 2.80%)
Net Option Price	= 5.10%	
Initial ATM Call Option Price – Initial OTM Call Option Price	4.85%	(6.00% – 1.15%)
- (Initial ATM Put Option Price – Initial OTM Put Option Price)	– 0.90%	(5.40% - 4.50%)
Net Option Price	= 3.95%	
X Amortization Factor for days remaining to final Market Day of Term	x 75.34%	(275 / 365)
Amortized Option Cost	= 2.98%	
Net Option Price	5.10%	
Amortized Option Cost	– 2.98%	
Assumed Trading Cost	– 0.15%	

Daily Value Percentage	= 1.97%	

Dollar amount of increase	$1,970	($100,000 x 1.970%)
Value of -10% Floor with Cap Strategy	$101,970	($100,000 + $1,970)

In the above example, the Strategy value increased by 1.97% by day 90 even though the Index value has increased by 4% (1000 to 1040) over the same period. This reflects the impact of the method we use to calculate a Strategy value before the end of a Term.

By comparison, if the value of the Strategy on day 90 of the Term were to be determined based the end of Term value calculation method, the Strategy value would reflect the full 4% increase in the index ($100,000 + ($100,000 x 4% increase percentage) = $104,000) because the increase does not exceed the 11% Cap. **We will always calculate the Strategy value before the end of a Term using the Daily Value Percentage illustrated by the above example and not based on the rise or fall of the Index.**

Examples. Here is an example that shows how the Daily Value Percentage formula works with a six-year 10% Buffer with Upside Participation Rate Strategy. In this example, we calculate the Daily Value Percentage for the Market Close on day 2010 of a six-year Term. Before the end of a Term, the Strategy value determined using the Daily Value Percentage will almost always be less than the value suggested on that date by the rise or fall of the Index and the end of Term calculation method.

Assumptions for Example 5

Option Price Assumptions	Price at Start of Term (as a Percentage of Index at Start of Term)	Price at Current Market Close (as a Percentage of Index at Start oof Term)	
ATM Call Option Price	20.59%	18.04%	
OTM Put Option Price	15.47%	16.35%	
Strategy Assumptions			
Investment Base for each Strategy (after taking Daily Charges into account)		$ 100,000	
Upside Participation Rate for six-year Term		130%	
Days remaining to last Market Day of six-year Term		182	
Trading Cost Assumption	2.03%		
Index at Start of Term			1000
Index at Current Market Close			1200

Example 5: 10% Buffer with Upside Participation Rate Strategy

Current ATM Call Option Price x Upside Participation Rate	23.45%	(130% of 18.04%)
Current OTM Put Option Price	− 16.35%	
Net Option Price	= 7.10%	
Initial ATM Call Option Price x Upside Participation Rate	26.77%	(130% of 20.59%)
Initial OTM Put Option Price	− 15.47%	
Net Option Price	= 11.30%	
Amortization Factor for days remaining to final Market Day of Term	x 8.30%	(182 / 2192)
Amortized Option Cost	0.94%	
Net Option Price	7.10%	
Amortized Option Cost	−0.94%	
Assumed Trading Cost	− 2.03%	
Daily Value Percentage	= 4.13%	
Increase as a dollar amount	$4,130	($100,000 x 4.13%)
Value of 10% Buffer with Upside Participation Rate Strategy	$104,130	($100,000 + $4,130)

In the above example, the Strategy value increased by 4.13% by day 2,010 even though the Index value has increased by 20% (1000 to 1200) over the same period. This reflects the impact of the method we use to calculate a Strategy value before the end of a Term.

By comparison, if the value of the Strategy on day 2,010 of the Term were to be determined based the end of Term value calculation method, the Strategy value would reflect 130% of the 20% increase in the Index ($100,000 + ($100,000 x 26% increase percentage) = $126,000). **We will always calculate the Strategy value before the end of a Term using the Daily Value Percentage illustrated by the above example and not by the rise or fall of the Index.**

Examples. Here is an example that shows how the Daily Value Percentage formula works with a 10% Buffer with Performance Trigger Strategy. In this example, we calculate the Daily Value Percentage for the Market Close on day 146 of a one-year Term. Before the end of a Term, the Strategy value determined using the Daily Value Percentage will almost always be less than the value suggested on that date by the rise or fall of the Index and the end of Term calculation method.

Assumptions for Example 6

Option Price Assumptions	Price at Start of Term (as a Percentage of Index at Start of Term)	Price at Current Market Close (as a Percentage of Index at Start of Term)
ATM Binary Call Option Price	5.97%	10.04%
OTM Put Option Price	1.48%	0.03%
Strategy Assumptions		
Investment Base for each Strategy (after taking Daily Charges into account)		$ 100,000
Trigger Rate		11%
Days remaining to last Market Day of Term		219
Trading Cost Assumption	0.15%	
Index at Start of Term	1000	
Index at Current Market Close	1200	

Example 6: 10% Buffer with Performance Trigger Strategy

Current ATM Binary Call Option Price	10.04%
Current OTM Put Option Price	– 0.03%
Net Option Price	=10.01%
Initial ATM Binary Call Option Price	5.97%
Initial OTM Put Option Price	– 1.48%
Net Option Price	=4.49%
Amortization Factor for days remaining to final Market Day of Term	X 60%
Amortized Option Cost	2.69%
Net Option Price	10.01%
Amortized Option Cost	–2.69%
Assumed Trading Cost	– 0.15%
Daily Value Percentage	= 7.17%
Increase as a dollar amount	$7,170 ($100,000 x 7.17%)
Value of 10% Buffer with Performance Trigger Strategy	$107,170 ($100,000 + $7,170)

In the above example, the Strategy value increased by 7.17% by day 146 even though the Index value has increased by 20% (1000 to 1200) over the same period. This reflects the impact of the method we use to calculate a Strategy value before the end of a Term.

By comparison, if the value of the Strategy on day 146 of the Term were to be determined based the end of Term value calculation method, the Strategy value would reflect an increase of 11% matching the Trigger Rate ($100,000 + ($100,000 x 11% increase percentage) = $111,000). **We will**

always calculate the Strategy value before the end of a term using the Daily Value Percentage illustrated by the above example and not by the rise or fall of the Index.

Example. Here is an example that shows how the Daily Value Percentage formula works with a 10% Buffer with Dual Performance Trigger Strategy. In this example, we calculate the Daily Value Percentage for the Market Close on day 146 of a one-year Term. Before the end of a Term, the Strategy value determined using the Daily Value Percentage will almost always be less than the value suggested on that date by the rise or fall of the Index and the end of Term calculation method.

Assumptions for Example 7

Option Price Assumptions	Price at Start of Term (as a Percentage of Index at Start of Term)	Price at Current Market Close (as a Percentage of Index at Start of Term)
ITM Binary Call Option Price	6.03%	7.68%
OTM Put Option Price	1.48%	0.03%
Strategy Assumptions		
Investment Base for each Strategy (after taking Daily Charges into account)		$ 100,000
Trigger Rate		8%
Days remaining to last Market Day of Term		219
Trading Cost Assumption	0.15%	
Index at Start of Term	1000	
Index at Current Market Close	1200	

Example 7: 10% Buffer with Dual Performance Trigger Strategy

Current ITM Binary Call Option Price	7.68%
Current OTM Put Option Price	– 0.03%
Net Option Price	= 7.65%
Initial ITM Binary Call Option Price	6.03%
Initial OTM Put Option Price	– 1.48%
Net Option Price	=4.55%
Amortization Factor for days remaining to final Market Day of Term	x 60%
Amortized Option Cost	2.73%
Net Option Price	7.65%
Amortized Option Cost	–2.73%
Assumed Trading Cost	– 0.15%
Daily Value Percentage	= 4.77%
Increase as a dollar amount	$4,770	($100,000 x 4.77%)
Value of 10% Buffer with Dual Performance Trigger Strategy	$104,770	($100,000 + $4,770)

In the above example, the Strategy value increased by 4.77% by day 146 even though the Index value has increased by 20% (1000 to 1200) over the same period. This reflects the impact of the method we use to calculate a Strategy value before the end of a Term.

By comparison, if the value of the Strategy on day 146 of the Term were to be determined based the end of Term value calculation method, the Strategy value would reflect an increase of 8% matching the Trigger Rate ($100,000 + ($100,000 x 8% increase percentage) = $108,000). **We will always calculate the Strategy value before the end of a term using the Daily Value Percentage illustrated by the above example and not by the rise or fall of the Index.**

Maximum Loss Before the End of a Term
If you Surrender your Contract or take a withdrawal before the end of a Term, there is no set maximum loss because the Indexed Strategy value is determined using the Daily Value Percentage. The loss on a Floor Strategy may exceed the Floor, the loss on a Downside Participation Rate Strategy may exceed the 50% Downside Participation Rate, a 10% Buffer Strategy may not receive the benefit of the 10% Buffer, a 20% Buffer

Strategy may not receive the benefit of the 20% Buffer, because the use of the Daily Value Percentage means that the Amortized Option Cost and Trading Cost are subtracted from the Strategy value. The Amortized Option Cost and Trading Cost are determined each time the Daily Value Percentage is calculated. As a result, in extreme circumstances, the total loss for an Indexed Strategy could be 100%, meaning that you would suffer a complete loss of your principal and any prior earnings.

INDEXED STRATEGY VALUE AFTER PERFORMANCE LOCK ELECTION

For an S&P 500 Strategy (excluding the 0% Floor with Cap Indexed Strategy, or the three Trigger Strategies) or a First Trust Barclays Edge Strategy, you may make a Performance Lock election. If you do so, then the normal rules described in the Indexed Strategy Value at End of Term section and the Indexed Strategy Value Before End of Term section do not apply. Instead, beginning on the second Market Close following the receipt of the Performance Lock election, the Daily Value Percentage used to calculate the Strategy value through the end of the Term is locked in. However, the Daily Charge will continue to be assessed against the Investment Base.

Your Request in Good Order for a Performance Lock election must be received by the third-to-last Market Close of the Term.

If you make a Performance Lock election, here are the formulas that we use to calculate the Strategy value through the end of the Term.

Strategy value before or at end of Term = Investment Base + dollar amount of increase or decrease

Dollar amount of increase or decrease = Investment Base x locked Daily Value Percentage

Locked Daily Value Percentage = Net Option Price – Amortized Option Cost – Trading Cost, all as determined at the second Market Close following receipt of the Performance Lock election

Performance Lock Examples

Examples. Here are four examples that show how the Performance Lock election works for S&P 500 or First Trust Barclays Edge Strategies. In each example, we assume that Performance Lock election is effective on day 90 of the Term.

Assumptions

Option Price Assumptions	Price at Start of Term (as a Percentage of Index at Start of Term)	Price on Lock Effective Date (as a Percentage of Index at Start of Term)
ATM Call Option Price	6.00%	7.47%
OTM Call Option Price	1.15%	1.81%
ATM Put Option Price	5.40%	3.36%
OTM Put Option Price	4.50%	2.80%

Strategy Assumptions	
Initial Investment Base for each Strategy (after taking Daily Charges into account)	$100,000
Cap for one-year Term	11%

Example 1: 50% Downside Participation Rate with Cap Strategy

Lock effective date ATM Call Option Price – OTM Call Option Price	5.66%	(7.47% – 1.81%)
(Lock effective date ATM Put Option Price x Downside Participation Rate)	– 1.68%	(50% of 3.36%)
Net Option Price on Lock effective date	= 3.98%	
Initial ATM Call Option Price – Initial OTM Call Option Price	4.85%	(6.00% – 1.15%)
(Initial ATM Put Option Price x Downside Participation Rate)	– 2.70%	(50% of 5.40%)

Net Option Price	= 2.15%	
Amortization Factor for days remaining from Lock effective date to final Market Day of Term	x 75.34%	(275 / 365)
Amortized Option Cost on Lock effective date	= 1.62%	
Net Option Price	3.98%	
Amortized Option Cost	− 1.62%	
Assumed Trading Cost	− 0.15%	
Locked Daily Value Percentage	= 2.21%	
Dollar amount of increase at Term end	$2,210	($100,000 x 2.21%)
Value of 50% Downside Participation Rate with Cap Strategy at Term end	$102,210	($100,000 + $2,210)

Example 2: 50% Downside Participation Rate with Upside Participation Rate Strategy

Lock effective date ATM Call Option Price x Upside Participation Rate	5.60%	(75% of 7.47%)
(Lock effective date ATM Put Option Price x Downside Participation Rate)	− 1.68%	(50% of 3.36%)
Net Option Price on Lock Effective Date	= 3.92%	
Initial ATM Call Option Price x Upside Participation Rate	4.50%	(75% of 6.00%)
(Initial ATM Put Option Price x Downside Participation Rate)	− 2.70%	(50% of 5.40%)
Net Option Price	= 1.80%	
Amortization Factor for days remaining to final Market Day of Term	x 75.34%	(275 / 365)
Amortized Option Cost on Lock effective date	1.36%	
Net Option Price	3.92%	
Amortized Option Cost	−1.36%	
Assumed Trading Cost	− 0.15%	
Locked Daily Value Percentage	= 2.41%	
Increase as a dollar amount as Term end	$2,410	($100,000 x 2.41%)
Value of 50% Downside Participation Rate with Upside Participation Rate Strategy at Term end	$102,410	($100,000 + $2,410)

Example 3: 10% Buffer with Cap Strategy

Lock effective date ATM Call Option Price – OTM Call Option Price	5.66%	(7.47%-1.81%)
Lock effective date OTM Put Option Price	−2.80%	
Net Option Price on Lock effective date	= 2.86%	
Initial ATM Call Option Price – Initial OTM Call Option Price	4.85%	(6.00%-1.15%)
Initial OTM Put Option Price	− 4.50%	
Net Option Price	= 0.35%	
Amortization Factor for days remaining from Lock effective date to final Market Day of Term	x 75.34%	(275 / 365)
Amortized Option Cost on Lock effective date	0.26%	
Net Option Price	2.86%	
Amortized Option Cost	−0.26%	
Assumed Trading Cost	− 0.15%	
Locked Daily Value Percentage	= 2.45%	
Dollar amount of increase at Term end	$2,450	($100,000 x 2.45%)
Value of 10% Buffer with Cap Strategy at Term end	$102,450	($100,000 + $2,450)

Example 4: -10% Floor with Cap Strategy

Lock effective date ATM Call Option Price – OTM Call Option Price	5.66%	(7.47% – 1.81%)
(Lock effective date ATM Put Option Price – OTM Put Option Price)	– 0.56%	(3.36% – 2.80%)
Net Option Price on Lock effective date	= 5.10%	
Initial ATM Call Option Price – Initial OTM Call Option Price	4.85%	(6.00% – 1.15%)
- (Initial ATM Put Option Price – Initial OTM Put Option Price)	– 0.90%	(5.40% - 4.50%)
Net Option Price	= 3.95%	
Amortization Factor for days remaining from Lock effective date to final Market Day of Term	x 75.34%	(275 / 365)
Amortized Option Cost on Lock effective date	= 2.98%	
Net Option Price	5.10%	
Amortized Option Cost	– 2.98%	
Assumed Trading Cost	– 0.15%	
Locked Daily Value Percentage	= 1.97%	
Dollar amount of increase at Term end	$1,970	($100,000 x 1.970%)
Value of -10% Floor with Cap Strategy at Term end	$101,970	($100,000 + $1,970)

Examples. Here is an example that shows how the Performance Lock election works with a six-year 10% Buffer with Upside Participation Rate Strategy. In this example, we assume that the Performance Lock election is effective on day 2010 of a six-year Term.

Assumptions for Example 5

	Price at Start of Term (as a Percentage of Index at Start of Term)	Price on Lock Effective Date (as a Percentage of Index at Start of Term)
Option Price Assumptions		
ATM Call Option Price	20.59%	18.04%
OTM Put Option Price	15.47%	16.35%
Strategy Assumptions		
Investment Base for each Strategy (after taking Daily Charges into account)		$ 100,000
Upside Participation Rate for six-year Term		130%
Days remaining to last Market Day of six-year Term		182
Trading Cost Assumption	2.03%	

Example 5: 10% Buffer with Upside Participation Rate Indexed Strategy

Lock Effective Date ATM Call Option Price x Upside Participation Rate	23.45%	(130% of 18.04%)
Lock Effective Date OTM Put Option Price	– 16.35%	
Net Option Price on Lock effective date	= 7.10%	
Initial ATM Call Option Price x Upside Participation Rate	26.77%	(130% of 20.59%)
Initial OTM Put Option Price	– 15.47%	
Net Option Price	= 11.30%	
Amortization Factor for days remaining from Lock effective date to final Market Day of Term	x 8.30%	(182 / 2192)
Amortized Option Cost on Lock effective date	0.94%	
Net Option Price	7.10%	
Amortized Option Cost	–0.94%	
Assumed Trading Cost	– 2.03%	

Locked Daily Value Percentage	= 4.13%	
Increase as a dollar amount at Term end	$4,130	($100,000 x 4.13%)
Value of 10% Buffer with Upside Participation Rate Strategy at Term end	$104,130	($100,000 + $4,130)

Example. Here is an example that shows how the Performance Lock election works for an S&P 500 1-Year 10% Buffer with Performance Trigger Indexed Strategy. In this example, we assume that the Performance Lock election is effective on day 146 of a one-year Term.

Assumptions for Example 6

	Price at Start of Term (as a Percentage of Index at Start of Term)	Price on Lock Effective Date (as a Percentage of Index at Start of Term)	
Option Price Assumptions			
ATM Binary Call Option Price	5.97%	10.04%	
OTM Put Option Price	1.48%	0.03%	
Strategy Assumptions			
Investment Base for each Strategy (after taking Daily Charges into account)			$ 100,000
Trigger Rate			11%
Days remaining from Lock Effective Date to last Market Day of Term			219
Trading Cost Assumption	0.15%		
Index at Start of Term	1000		
Index at Current Market Close	1200		

Example 6: 10% Buffer with Performance Trigger Strategy

Lock Effective Date ATM Binary Call Option Price	10.04%	
Lock Effective Date OTM Put Option Price	– 0.03%	
Net Option Price on Lock Effective Date	=10.01%	
Initial ATM Binary Call Option Price	5.97%	
Initial OTM Put Option Price	– 1.48%	
Net Option Price	=4.49%	
Amortization Factor for days remaining from Lock Effective Date to final Market Day of Term	X 60%	
Amortized Option Cost on Lock Effective Date	2.69%	
Net Option Price	10.01%	
Amortized Option Cost	–2.69%	
Assumed Trading Cost	– 0.15%	
Locked Daily Value Percentage	= 7.17%	
Increase as a dollar amount	$7,170	($100,000 x 7.17%)
Value of 10% Buffer with Performance Trigger Strategy	$107,170	($100,000 + $7,170)

Example. Here is an example that shows how the Performance Lock election works for an S&P 500 1-Year 10% Buffer with Dual Performance Trigger Indexed Strategy. In this example, we assume that the Performance Lock election is effective on day 146 of a one-year Term.

Assumptions for Example 7

	Price at Start of Term (as a Percentage of Index at Start of Term)	Price on Lock Effective Date (as a Percentage of Index at Start of Term)
Option Price Assumptions		
ITM Binary Call Option Price	6.03%	7.68%
OTM Put Option Price	1.48%	0.03%

Option Price Assumptions	Price at Start of Term (as a Percentage of Index at Start of Term)	Price on Lock Effective Date (as a Percentage of Index at Start of Term)
Strategy Assumptions		
Investment Base for each Strategy (after taking Daily Charges into account)		$ 100,000
Trigger Rate		8%
Days remaining from Lock Effective Date to last Market Day of Term		219
Trading Cost Assumption	0.15%	
Index at Start of Term	1000	
Index at Current Market Close	1200	

Example 7: 10% Buffer with Dual Performance Trigger Strategy

Lock Effective Date ITM Binary Call Option Price	7.68%	
Lock Effective Date OTM Put Option Price	− 0.03%	
Net Option Price on Lock Effective Date	= 7.65%	
Initial ITM Binary Call Option Price	6.03%	
Initial OTM Put Option Price	− 1.48%	
Net Option Price	=4.55%	
Amortization Factor for days remaining from Lock Effective Date to final Market Day of Term	x 60%	
Amortized Option Cost on Lock Effective Date	2.73%	
Net Option Price	7.65%	
Amortized Option Cost	−2.73%	
Assumed Trading Cost	− 0.15%	
Locked Daily Value Percentage	= 4.77%	
Increase as a dollar amount	$4,770	($100,000 x 4.77%)
Value of 10% Buffer with Dual Performance Trigger Strategy	$104,770	($100,000 + $4,770)

PURCHASE

You may purchase a Contract only through a registered representative of a broker-dealer that has a selling agreement with our affiliated underwriter, MM Ascend Life Investor Services, LLC.

Any Owner or Annuitant must be age 80 or younger on the Contract Effective Date. To determine eligibility, we will use the person's age on his/her last birthday. We may make exceptions with respect to the maximum issue age in our discretion.

The Contract is not available in all states. To find out if it is available in the state where you live, ask your registered representative. The Contract may not be available for purchase during certain periods. There are a number of reasons why the Contract periodically may not be available, including that we want to limit the volume of sales of the Contract. You may wish to speak to your registered representative about how this may affect your purchase. For example, in order to purchase the Contract, you may be required to submit your application prior to a specific date. In that case, if there is a delay because your application is incomplete or otherwise not in good order, you might not be able to purchase the Contract. Your broker-dealer may impose conditions on the purchase of the Contract, such as a lower maximum issue age, than we or other selling firms impose. In addition, Selling Broker-Dealers may not make certain indexed strategies available. If you have any questions, you should contact your Selling Agent or his or her Selling Broker Dealer. We reserve the right to reject any application at our discretion. We also reserve the right to discontinue the sale of the Contracts at any time.

Purchase Payments

The Contract is a modified single premium annuity contract. This means you may make one or more Purchase Payments during the purchase payment period. The purchase payment period begins on the Contract Effective Date. It will end two months after the Contract Effective Date.

We must receive your initial Purchase Payment on or before the Contract Effective Date. We must receive each additional Purchase Payment on or before the last day of the purchase payment period. We will not accept any Purchase Payment that we receive after the date that the Contract is cancelled or Surrendered or after a death for which a Death Benefit is payable.

The initial Purchase Payment must be at least $25,000. Each additional Purchase Payment must be at least $10,000. You will need our prior approval if you want to make a Purchase Payment(s) of more than $1,000,000.

We reserve the right to refuse a Purchase Payment made in the form of a personal check in excess of $100,000. We may accept a Purchase Payment over $100,000 made in other forms, such as EFT/wire transfers, or certified checks or other checks written by financial institutions. We will not accept a Purchase Payment(s) made with cash, money orders, or traveler's checks.

Exchanges, Transfers, or Rollovers

If you own an annuity or tax-qualified account, you may be able to exchange it for an Index Summit 6 Pro annuity, directly transfer it to an Index Summit 6 Pro annuity, or roll it over to an Index Summit 6 Pro annuity without paying taxes. Before you do, compare the benefits, features, and costs of each annuity or account. You may pay an early withdrawal charge under the old annuity or account. You may pay an early withdrawal charge if you later take withdrawals from your Index Summit 6 Pro annuity. Please note that some financial professionals may have a financial incentive to offer this Contract in place of the one the investor already owns. Ask your registered representative whether an exchange, transfer, or rollover would be advantageous, based on the features, benefits, and charges of the Index Summit 6 Pro annuity.

If you purchase your Contract with an exchange, transfer, or rollover, a delay in processing the exchange, transfer, or rollover may delay the issuance of your new Contract or prevent the application of additional Purchase Payments to your new Contract.

You should only exchange your existing contract for this Contract if you determine after comparing the features, fees, and risks of both contracts that it is preferable for you to purchase this Contract rather than continuing to own your existing contract.

Application of Purchase Payments

Each Purchase Payment will be held in the Purchase Payment Account until it is applied to an Indexed Strategy on a Strategy Application Date. On each Strategy Application Date, we will apply the then current balance of the Purchase Payment Account to the Indexed Strategies you selected. We will credit interest daily on amounts held in the Purchase Payment Account at the annual effective rate set out in your Contract. This rate will be at least 1%.

In certain states, we are required to give back your Purchase Payment(s) if you decide to cancel your Contract during the free look period. If we are required by law to refund your Purchase Payment(s), we reserve the right to hold your Purchase Payment(s) in the Purchase Payment Account until the first Strategy Application Date on or after the end of the free look period. For those States, if you cancel your Contract before that Strategy Application Date, we will refund your Purchase Payment(s) but you will forfeit any interest credited to the Purchase Payment Account or other increase in Account Value.

Purchase Payment Account Value

On any day, the value of the Purchase Payment Account is equal to:

- Purchase Payments received by us plus interest earned daily; minus

- the premium tax or other tax that may apply to the Purchase Payments; and minus

- each withdrawal and related Early Withdrawal Charge taken from the Purchase Payment Account since the last Strategy Application Date.

Unforeseen Processing Delays

We are exposed to risks related to natural and man-made disasters and catastrophes, such as (but not limited to) storms, fires, floods, earthquakes, public health crises, malicious acts, and terrorist acts, any of which could adversely affect our ability to conduct business. A natural or man-made disaster or catastrophe, including a pandemic (such as the COVID-19 pandemic), could affect the ability or willingness of our employees or the employees of our service providers to perform their job responsibilities. While many of our employees and the employees of our service providers are able to work remotely, those remote work arrangements may result in our business operations being less efficient than under normal circumstances and could lead to delays in our processing of contract-related transactions, including orders from contract owners. Catastrophic events may negatively affect the computer and other systems on which we rely, impact our ability to calculate values under your Contract, or have other possible negative impacts. There can be no assurance that our service providers will be able to successfully avoid negative impacts associated with natural and man-made disasters and catastrophes.

A processing delay will not affect the effective date as of which we process transactions, including orders from contract owners, the date that a Term begins or ends, or the values used to process the transaction.

INITIAL STRATEGY SELECTIONS

You make your initial selection of Indexed Strategies in your purchase application. Your initial selection is set out on your Contract Specifications Page.

Your initial selection will also apply to each subsequent Purchase Payment. If you wish to change your selection for a specific Purchase Payment, we must receive a Request in Good Order that identifies the Indexed Strategies you are selecting for that Purchase Payment before the Strategy Application Date that applies to that Purchase Payment.

When you select an Indexed Strategy, you must also indicate the percentage of the Purchase Payment that you wish to allocate to that Indexed Strategy. All allocations must be in whole percentages that total 100%. We reserve the right to round amounts up or down to make whole percentages, and to reduce or increase amounts proportionally in order to total 100%.

Currently there are no limitations on the amounts that may be applied to an Indexed Strategy.

The S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy, the S&P 500 6-year 20% Buffer with Upside Participation Rate Strategy, the Russell 2000 6-year 10% Buffer with Upside Participation Rate Indexed Strategy, and the Russell 2000 6-year 20% Buffer with Upside Participation Rate Indexed Strategy are only available for Terms that begin in the first Contract Year.

The S&P 500 3-year 10% Buffer with Upside Participation Rate Indexed Strategy and the S&P 500 3-year 20% Buffer with Upside Participation Rate Indexed Strategy will only be available for Terms that begin in the first four Contract Years.

We may establish minimum and maximum amounts or percentages that may be applied to a given Indexed Strategy for any future Term in our discretion. We will notify you of any such minimum or maximum. No minimum or maximum amounts or percentages shall apply to the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy. Selling Broker-Dealers may separately establish minimum and maximum amounts or percentages that they will allow to be allocated to a given Indexed Strategy for the initial Terms, and they may choose not to discuss or offer certain strategies for the initial Terms. We may limit the availability of a Strategy for a Term that would extend beyond the Annuity Payout Initiation Date. All Strategies may not be available in all states.

STRATEGY SELECTIONS AT TERM END

At the end of a Term, you may choose to reallocate your money among the Indexed Strategies or you may choose to take no action. If you do not send us a reallocation request, your current allocations will automatically continue in the new Term as long as the same Index Strategies are available.

Reallocations

At the end of a Term, you may reallocate the ending values of the Indexed Strategies for that Term among the available Strategies. You can only reallocate amounts from one Indexed Strategy to another at the end of the Term for which such amount is being held. You cannot make a reallocation at any other time.

We will send you written notice at least 30 days before the end of a Term to provide you with the opportunity to make a reallocation. We must receive your Request in Good Order for a reallocation on or before the last day of the Term. For example, if the end of a Term falls on a weekend, we must receive your request on the last Market Day before that weekend.

Continuing Allocations

You do not need to take any action if you want to continue your current allocations and all of your strategies are available for the next Term. If you do not send us a reallocation request, then we will automatically apply the ending value of each Indexed Strategy to a new Term of that same Strategy.

Unavailable Strategies / Default Allocations

Other than the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy, an Indexed Strategy may be unavailable for the next Term because we are no longer offering that Strategy, or we have set a minimum or maximum for that Strategy. No minimum or maximum shall apply to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy.

When an Indexed Strategy is unavailable for the next Term, you may choose to reallocate the funds held in that Strategy.

For all 1-year and 2-year Strategies, if you take no action and do not send us a reallocation request, then any amount that cannot be applied to that Indexed Strategy for the next Term will be applied to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy.

The S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy and the S&P 500 6-year 20% Buffer with Upside Participation Rate Strategy are not available for Terms that begin after the first Contract Year. At the end of a Term for one of these S&P Indexed Strategies, if you do not reallocate, then we will apply the ending value of that Strategy to a new Term of the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy.

The Russell 2000 6-year 10% Buffer with Upside Participation Rate Indexed Strategy and the Russell 2000 6-year 20% Buffer with Upside Participation Rate Indexed Strategy are not available for Terms that begin after the first Contract Year. At the end of a Term for one of these Russell 2000 Indexed Strategies, if you do not reallocate, then we will apply the ending value of that Strategy to a new Term of a Russell 2000 1-Year Indexed Strategy, if one is then available, or if not, then to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy.

The S&P 500 3-year 10% Buffer with Upside Participation Rate Strategy and the S&P 500 3-year 20% Buffer with Upside Participation Rate Strategy are not available for Terms that begin after the fourth Contract Year. At the end of a Term for one of these S&P 500 Indexed Strategies, if you do not reallocate, then we will apply the ending value of that Strategy to a new 3-year Term of that same Strategy if it is available, or if not, then we will apply the ending value of that Strategy to a new Term of the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy.

At the end of a Term of a Strategy, to the extent any amount cannot be applied to a given Indexed Strategy for the next Term because that Strategy is no longer available or the amount is under the minimum or over the maximum for that Strategy for the new Term, we will use the procedures listed above to apply the amount to the appropriate default Strategy unless you send us a request to reallocate that amount. For example, if a given 1-year Indexed Strategy with an ending value of $73,000 is no longer available, we will apply the $73,000 to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy for the next Term unless you send us a request to reallocate that $73,000. This default applies to amounts allocated to any 1-year or 2-year Indexed Strategy for which the Company has not received reallocation instructions and which cannot be reallocated to the same strategy for the next Term.

If the amount to be applied exceeds the maximum, then only the excess amount will be applied to the appropriate default Strategy. For example, if the maximum amount for a 1-year Indexed Strategy is $50,000 and the amount to be applied is $54,000, then we will apply the excess $4,000 to the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy for the next Term unless you send us a request to reallocate that $4,000.

We must receive your Request in Good Order for a reallocation on or before the last day of the Term. For example, if the end of a Term falls on a weekend, we must receive your request on the last Market Day before that weekend.

Surrender or Withdrawal at Term End

At the end of a Term, you may choose to Surrender your Contract or to take a withdrawal from your Contract. You may do so for any reason, including dissatisfaction with the available Indexed Strategies. An Early Withdrawal Charge may apply. In addition, there may be tax consequences if you Surrender your Contract or take a withdrawal. You should seek advice on tax questions based on your particular circumstances from a tax advisor.

Contract values calculated at the end of a Term will reflect the applicable Strategy values and any Early Withdrawal Charge that applies upon Surrender or to your withdrawal. The value of an Indexed Strategy at the end of the Term will not reflect any Daily Value Percentage because it is calculated based on the rise or fall of the applicable Index for the Term.

Limitations

Reallocations must be in whole percentages that total 100%. We reserve the right to round amounts up or down to make whole percentages, and to reduce or increase amounts proportionally in order to total 100%.

Any reallocation or continuing allocation will be subject to Strategy availability, minimums, and maximums. Currently there are no limitations on the amounts that may be applied to any single Indexed Strategy. We may establish minimum and maximum amounts or percentages that may be applied to a given Indexed Strategy for any future Term in our discretion. We will notify you of any such minimum or maximum.

The new Term of each Strategy is subject to the Positive Return Factor percentage in effect for that Strategy for that new Term. For example, the Upside Participation Rate for an Indexed Strategy for a new Term may be different than the Upside Participation Rate for that Indexed Strategy for the Term that is ending. The applicable Negative Return Factor will not change from Term to Term.

Availability of Strategies

We will send you a written notice at least 30 days before the end of each Term with information about the Strategies that will be available for the next Term. At least 10 days before the next Term starts, we will post the Positive Return Factor percentages that will apply for the next Term on our website (www.massmutualascend.com/RILArates).

The S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Indexed Strategy will always be available. We are not obligated to offer any other particular Indexed Strategy. At the end of a Term, we can add or stop offering any other Indexed Strategy at our discretion. We reserve the right to limit the availability of a Strategy for a Term that would extend beyond the Annuity Payout Initiation Date. All Indexed Strategies may not be available in all states.

If we intend to add or stop offering an Indexed Strategy at the end of a Term, we will send you a notification at least 30 days before the end of the Term to provide you with the opportunity to make a reallocation. If funds are held in an Indexed Strategy that will no longer be available after the end of a Term, the funds will remain in that Strategy until the end of that Term.

CASH BENEFIT

Surrender

You may Surrender your Contract at any time before the earlier of: (1) the Annuity Payout Initiation Date; or (2) a death for which a Death Benefit is payable. The right to Surrender may be restricted if your Contract is purchased under an employer plan subject to IRC Section 401 (pension, profit sharing, and 401(k) plans), IRC Section 403(b) (tax-sheltered annuity plans), or IRC Section 457(b) (governmental deferred compensation plans).

The amount paid upon Surrender is the Surrender Value. If you Surrender your Contract on a day that is not the end of a Term, the Surrender Value is based on the Daily Value Percentage of each Indexed Strategy (or the locked Daily Value Percentage if you have made a Performance Lock election). The Daily Value Percentage could be negative, which could result in significant loss, even if the Index has risen since the start of the Term.

The amount paid on Surrender is subject to income tax to the extent that it represents Contract earnings or pre-tax contributions. The taxable portion of the amount paid on Surrender may also be subject to an additional 10% penalty tax if received before age 59½.

A Surrender must be made by a Request in Good Order. If you Surrender your Contract, the Contract terminates.

Withdrawals

You may take a withdrawal from your Contract at any time before the earliest of: (1) the Annuity Payout Initiation Date; (2) a death for which a Death Benefit is payable; or (3) the date that this Contract is Surrendered. The right to withdraw may be restricted if your Contract is purchased under an employer plan subject to IRC Section 401 (pension, profit sharing, and 401(k) plans), IRC Section 403(b) (tax-sheltered annuity plans), or IRC Section 457(b) (governmental deferred compensation plans).

A withdrawal must be made by a Request in Good Order. The amount of any withdrawal must be at least $500. If the withdrawal would reduce the Account Value to less than the minimum value of $5,000, we will treat the withdrawal request as a request to withdraw the maximum amount that may be taken without reducing your Account Value to less than $5,000.

We will withdraw funds from your Account Value as of the date on which we receive your Request in Good Order or any later specified effective date. You may designate the Indexed Strategy or Strategies from which a withdrawal will be taken by a Request in Good Order prior to the date of the withdrawal. If you do not make a designation, we will take the withdrawal from the Indexed Strategies in the following order:

- first from the Purchase Payment Account; and

- then proportionally from Indexed Strategies having the shortest Term (meaning the withdrawal will be taken proportionally from Indexed Strategies with 1-year Terms, and then proportionally from Indexed Strategies with 2-year Terms, and then proportionally from Indexed Strategies with 3-year Terms, and finally from Indexed Strategies having 6-year Terms).

Note: For Contracts issued in Missouri, amounts taken from Indexed Strategies will be proportional without regard to Term length.

Effect of Withdrawals

A withdrawal reduces the Account Value, which in turn reduces the amount payable upon Surrender, applied to the Annuity Payout Benefit, or payable as the Death Benefit.

If an Early Withdrawal Charge applies to your withdrawal, your Account Value will be reduced by the amount you receive plus the amount needed to pay the Early Withdrawal Charge.

A withdrawal from an Indexed Strategy other than at the end of a Term will be based on the Daily Value Percentage of the Indexed Strategy (or the locked Daily Value Percentage if you have made a Performance Lock election). The Daily Value Percentage could be negative, which could result in significant loss, even if the Index has risen since the start of the Term. The withdrawal from an Indexed Strategy before the end of a Term will reduce the Investment Base and the Death Benefit Return of Premium Guarantee by an amount that is proportional to the reduction in the Strategy value If the Daily Value Percentage is negative, these proportional reductions could be significantly larger than the dollar amount of the withdrawal. A reduction in the Investment Base for a Term will reduce the gain from any future rise in the Index during that Term.

The amount withdrawn is subject to income tax to the extent that it represents Contract earnings or pre-tax contributions. The taxable portion of a withdrawal may also be subject to an additional 10% penalty tax if received before age 59½.

Automatic Withdrawals

You may elect to automatically withdraw money from your Contract under any automatic withdrawal program that we offer. Your Account Value must be at least $10,000 in order to make an automatic withdrawal election. The minimum amount of each automatic withdrawal payment is $100. Automatic withdrawals will be taken from the Purchase Payment Account and Indexed Strategies of your Contract in the same order as any other withdrawal.

The Contract is intended for long-term investment purposes and the Contract and its Indexed Strategies may not be appropriate for investors who plan to take withdrawals (including automated withdrawals and required minimum distributions) during the first six Contract Years, because of the assessment of Early Withdrawal Charges, or who plan to take withdrawals during Indexed Strategy Terms, because of the application of the Daily Value Percentage.

Subject to the terms and conditions of the automatic withdrawal program, you may begin or discontinue automatic withdrawals at any time. You must give us at least 30 days' notice to change any automatic withdrawal instructions that are currently in place. Any request to begin, discontinue or change automatic withdrawals must be a Request in Good Order. We reserve the right to discontinue offering automatic withdrawals at any time.

Currently, we do not charge a fee to participate in an automatic withdrawal program. However, we reserve the right to impose an annual fee in such amount as we may then determine to be reasonable for participation in the automatic withdrawal program. If imposed, the fee will not exceed $30 annually.

Before electing an automatic withdrawal, you should consult with a financial advisor.

- Automatic withdrawals during a Term of an Indexed Strategy will systematically reduce the Investment Base, which will reduce any subsequent increase in the Strategy value due to a positive Daily Value Percentage during that Term or a rise in the applicable Index at the end of that Term. Such reductions could be significant.

- Automatic withdrawals will reduce the amount available under the Free Withdrawal Allowance described below.

- Unless a waiver applies, an Early Withdrawal Charge may apply to an automatic withdrawal during the Early Withdrawal Charge period.

- If taken from an Indexed Strategy before the end of a Term, the value of an Indexed Strategy on an automated withdrawal date will reflect the Daily Value Percentage on that date. Any Strategy value before the end of a Term will almost always be less, perhaps significantly less, than the value suggested by the rise or fall of the Index. In extreme circumstances, the total loss for an Indexed Strategy before the end of a Term could be 100% due to the Daily Value Percentage, meaning that you would suffer a complete loss of your principal and any prior earnings in a Strategy.

- Automatic withdrawals could result in significant loss due to taxes and tax penalties and reduce your ability to take full advantage of any positive Index performance at the end of a Term.

Exchanges, Transfers, and Rollovers

An amount paid on a withdrawal or Surrender may be paid to or for another annuity or tax-qualified account in a tax-free exchange, transfer, or rollover to the extent allowed by federal tax law.

FEES AND CHARGES

AMORTIZED OPTION COST AND TRADING COST USED TO CALCULATE DAILY VALUE PERCENTAGE

The Daily Value Percentage is used to determine the value of an Indexed Strategy before the end of a Term, and a locked Daily Value Percentage is used to determine the value of an Indexed Strategy for the balance of a Term if you have made a Performance Lock election. The Daily Value Percentage is calculated by subtracting the Amortized Option Cost and Trading Cost from the Net Option Price. The Amortized Option Cost and Trading Cost are charges for unwinding the investment before the end of a Term. These charges reduce the Indexed Strategy value. When the Contract is Surrendered or a withdrawal is taken before the end of a Term, or when you make a Performance Lock election, the reduction in Indexed Strategy value due to the Amortized Option Cost and Trading Cost may cause a loss to exceed the -10% Floor or 50% Downside Participation Rate, and may eliminate the benefit of the 10% Buffer or 20% Buffer. The Amortized Option Cost and Trading Cost are determined each time the Daily Value Percentage is calculated or when a Performance Lock election is made. As a result, in extreme circumstances, the total loss for an Indexed Strategy could be 100%, meaning that you would suffer a complete loss of your principal and any prior earnings. For more information on the Amortized Option Cost and Trading Cost, please see the Indexed Strategy Value Before End of Term section beginning on page 50.

Daily Charge

We impose a Daily Charge on each Indexed Strategy to reimburse us for contract sales expenses, including commissions and other distribution, promotion, and acquisition expenses, and to help us maximize Positive Return Factor percentages.

Except as provided in the next sentence, the Daily Charge is calculated using a daily rate that when compounded for a year is equal to 0.95% per year. The Daily Charge is calculated using a daily rate that when compounded for a year is equal to 0.75% per year if: (1) the Contract is issued before May 7, 2024; or (2) the application for the Contract is signed during the period April 7, 2024 through May 6, 2024, and the Contract is issued during the period May 7, 2024 through June 6, 2024. The Daily Charge is calculated as a percentage of the remaining Investment Base of the Indexed Strategy and deducted daily.

EARLY WITHDRAWAL CHARGE

We impose an Early Withdrawal Charge to reimburse us for contract sales expenses, including commissions and other distribution, promotion, and acquisition expenses, and to allow us to invest assets for a longer duration, which supports higher Positive Return Factor percentages.

The Early Withdrawal Charge applies if, during the first six Contract Years, you take a withdrawal from your Contract or Surrender it. After that, the Early Withdrawal Charge does not apply.

During the first six Contract Years, the Early Withdrawal Charge applies to each withdrawal, including withdrawals under an automatic withdrawal program and withdrawals taken to satisfy a required distribution. The Early Withdrawal Charge does not apply to Death Benefit payments or Annuity Payout Benefit payments.

An Early Withdrawal Charge reduces your Account Value.

The Early Withdrawal Charge is equal to the amount that is subject to the charge multiplied by the Early Withdrawal Charge rate.

- **If you take a withdrawal from your Contract, the amount subject to the charge is the amount you withdraw, which includes any amount needed to pay the Early Withdrawal Charge.** This means that at your direction either we will subtract the Early Withdrawal Charge from amount paid to you or we will increase the amount withdrawn as needed to cover the charge.

- If you Surrender your Contract, the amount subject to the charge is your Account Value.

- The amount subject to the charge will not include the Free Withdrawal Allowance or the amount, if any, that qualifies for a waiver as described below.

The Early Withdrawal Charge rate depends on how long you own your Contract. The rate schedule is set out below.

Contract Year	1	2	3	4	5	6	7+
Early Withdrawal Charge Rate	9%	8%	7%	6%	5%	4%	0%

Example for Surrender. You Surrender your Contract in Contract Year 6 when your Account Value is $100,000. You have already used your Free Withdrawal Allowance for the year and no other exception applies. We take an Early Withdrawal Charge of $4,000 ($100,000 x 4%) and you receive $96,000.

Example for Withdrawal. You request a withdrawal of $12,000 from your Contract in Contract Year 6 and instruct us to pay you the entire $12,000. You have already used your Free Withdrawal Allowance for the year and no other exception applies. We use the following formula to calculate the Early Withdrawal Charge.

(Requested withdrawal x EWC rate) / (1.00 - EWC rate) = Early Withdrawal Charge
($12,000 x 4%) / (1.00 - 0.04) = $480 / 0.96 = $500

We take the Early Withdrawal Charge of $500, you receive $12,000, and your Account Value is reduced by $12,500.

Note. If the amount subject to the Early Withdrawal Charge included only the amount you withdrew, the charge would have been $480. Because the amount subject to the Early Withdrawal charge also included the amount needed to pay the charge, the actual charge is $500.

Free Withdrawal Allowance

The Free Withdrawal Allowance lets you withdraw some money from your Contract without the imposition of the Early Withdrawal Charge. For the first Contract Year, the Free Withdrawal Allowance is an amount equal to 10% of the total Purchase Payments received by us. For each subsequent Contract Year, the Free Withdrawal Allowance is equal to 10% of the Account Value as of the most recent Contract Anniversary. The Free Withdrawal Allowance is non-cumulative and you may not carry over any unused portion to other Contract Years.

For qualified annuities, the Free Withdrawal Allowance will be large enough to cover your required minimum distribution to age 93. However, if you have used your Free Withdrawal Allowance to facilitate a transfer or rollover, then an Early Withdrawal Charge may apply to a required minimum distribution.

Example. Your Account Value as of the end of Contract Year 3 is $200,000. Your Free Withdrawal Allowance for Contract Year 4 is $20,000 (10% of $200,000). If you take a withdrawal of $50,000 at the beginning of Contract Year 4, the Early Withdrawal Charge will not apply to the first $20,000 of the withdrawal, but will apply to the remaining $30,000 plus the amount needed to pay the Early Withdrawal Charge. If you take another withdrawal later in Contract Year 4, the Early Withdrawal Charge applies to the entire withdrawal plus the amount needed to pay the Early Withdrawal Charge.

If you Surrender your Contract during the first six Contract Years, the amount subject to the Early Withdrawal Charge upon Surrender will not include the current or any prior Free Withdrawal Allowance.

Early Withdrawal Charge Waivers

Extended Care Waiver. (Rider form R1462316NW-Waiver of Early Withdrawal Charges for Extended Care Rider). We will waive the Early Withdrawal Charge that would otherwise apply if you make a Request in Good Order and:

- your Contract is modified by the Extended Care Waiver Rider;
- you are confined in a long-term care facility or hospital and the confinement is prescribed by a physician and is medically necessary;
- the first day of the confinement is at least one year after the Contract Effective Date; and
- the confinement has continued for a period of at least 90 consecutive days.

You must provide us with satisfactory proof that you meet these conditions before the date of the withdrawal or Surrender. There is no charge for this rider, but it may not be available in all states. (See the State Variations section on page 125 for information about availability in your state.) You do not need to take any action to add this waiver rider.

Terminal Illness Waiver. (Rider form R1462416NW-Waiver of Early Withdrawal Charges Upon Terminal Illness Rider). We will waive the Early Withdrawal Charge that would otherwise apply if you make a Request in Good Order and:

- your Contract is modified by the Waiver of Early Withdrawal Charges upon Terminal Illness Rider;
- you are diagnosed with a terminal illness by a physician and, as a result of the terminal illness, you have a life expectancy of less than 12 months from the date of diagnosis; and
- the diagnosis is rendered by a physician more than one year after the Contract Effective Date.

You must provide us with satisfactory proof that you meet these conditions before the date of the withdrawal or Surrender. There is no charge for this rider, but it may not be available in all states. (See the State Variations section below for information about availability in your state.) You do not need to take any action to add this waiver rider.

Automatic Withdrawal Program Charges

Currently, we do not charge a fee to participate in an automatic withdrawal program. However, we reserve the right to impose an annual fee in such amount as we may then determine to be reasonable for participation in the automatic withdrawal program. If imposed, the fee will not exceed $30 annually.

State Limitations. In some states, our ability to waive fees or charges may be limited by applicable laws, regulations, or administrative positions.

ANNUITY PAYOUT BENEFIT

Under the Contract you may receive regular Annuity Payout Benefit payments for the duration of the period that you select. Once Annuity Payout Benefit payments start, you can no longer Surrender the Contract or take a withdrawal, no Death Benefit will be payable under your Contract, your Beneficiary designations will no longer apply, and the Indexed Strategies will no longer be available. The amount payable after death, if any, is governed by the Payout Option you select.

The Annuity Payout Benefit is payable if the Annuity Payout Initiation Date is reached before the earlier of: (1) a death for which a Death Benefit is payable; or (2) the date that this Contract is Surrendered.

Annuity Payout Benefit payments are subject to income tax to the extent that they represent Contract earnings or pre-tax contributions. The taxable portion of Annuity Payout Benefits may also be subject to an additional 10% penalty tax if received before age 59½.

Annuity Payout Initiation Date

The Annuity Payout Initiation Date is the first day of the first payment interval for which payment of the Annuity Payout Benefit is to be made. Annuity Payout Benefit payments are made at the end of each payment interval. This means that for annual payments, the first payment will be made one year after the Annuity Payout Initiation Date.

You may select the Annuity Payout Initiation Date by a Request in Good Order. We must receive your request before the last Market Close on or before the Annuity Payout Initiation Date you selected and at least 30 days before the first Annuity Payout Benefit payment is to be made.

- The earliest Annuity Payout Initiation you may select is the first Contract Anniversary.
- Unless we agree to a later date, the latest Annuity Payout Initiation Date you may select is the Contract Anniversary following your 95th birthday or the 95th birthday, of a joint owner, if earlier. If the Owner is not a human being such as a trust or a corporation, then the Annuity Payout Initiation Date may not be later than the Contract Anniversary following the 95th birthday of the eldest Annuitant, unless we agree to a later date.

The earliest permitted date and the latest permitted date for the Annuity Payout Initiation Date are set out on your Contract Specifications Page. The latest permitted date may change if an Owner changes.

If you do not select an Annuity Payout Initiation Date by the latest permitted date, we may select it for you. We will notify you in writing at least 45 days before the date we select. We will give you an opportunity to select an earlier date.

Annuity Payout Amount

The amount of each payment under the Annuity Payout Benefit is determined on the Annuity Payout Initiation Date based on the Annuity Payout value on that date, the Payout Option that applies, and the payment interval.

The Annuity Payout value is the amount that can be applied to the Annuity Payout Benefit is equal to: (1) the Account Value on the Annuity Payout Initiation Date; minus (2) premium tax or other taxes not previously deducted. If the Annuity Payout value is determined on a date other than the end of the Term, the Annuity Payout value will be based on the Daily Value Percentage or the locked Daily Value Percentage if you have made a Performance Lock election. The Daily Value Percentage could be negative, which could result in significant loss, even if the Index has risen since the start of the Term. Please see the Indexed Strategy Value Before End of Term section on page 50 or the Indexed Strategy Value After Performance Lock Election on page 58 for more information.

Form of Annuity Payout Benefit

You may elect to have the Annuity Payout Benefit paid in any form of Payout Option that is available under your Contract. The available Payout Options are described in the Payout Options section on page 73. You may elect a Payout Option by a Request in Good Order. We must receive your request before the last Market Close on or before the Annuity Payout Initiation Date and at least 30 days before the first Annuity Payout Benefit payment is to be made.

If we have selected the Annuity Payout Initiation Date and you have not elected a Payout Option, the Annuity Payout Benefit is paid in the form of annual payments as a Life Payout with Payments for at Least a Fixed Period. That fixed period will be 10 years or, if fewer, the maximum number of whole years permitted by any tax qualification endorsement.

Payee for Annuity Payout Benefit

Payment of the Annuity Payout Benefit generally is made to the surviving Owner(s) as the payee(s). In place of that, the surviving Owner(s) may elect for payment to be made as a tax-free exchange, transfer, or rollover, or for payment to be made to the Annuitant. That election must be made by a Request in Good Order that we receive at least 30 days before the payment date.

Payments that become due after the death of the payee are made to:

- the surviving Owner(s); or if none
- then to the surviving contingent payee(s) designated by the surviving Owner(s); or if none;
- the estate of the last payee who received payments.

The portion of any Annuity Payout Benefit remaining after the death of an Owner or Annuitant must be paid at least as rapidly as payments were being made at the time of such death.

You may designate a contingent payee by a Request in Good Order. If you designate your spouse as a contingent payee and your marriage ends before your death, then we will treat your former spouse as having predeceased you except in the following situations: (1) if a court order provides that the former spouse's rights as a contingent payee are to continue; or (2) if the former spouse remains or becomes an Owner.

DEATH BENEFIT

A Death Benefit is payable under your Contract if you die before the Annuity Payout Initiation Date and before the Contract is Surrendered. If your spouse becomes a successor owner of the Contract, no Death Benefit will be payable on account of your death.

When the Owner is a non-natural person, a Death Benefit is payable under the Contract if the Annuitant dies before the Annuity Payout Initiation Date and before the Contract is Surrendered. For this purpose, a non-natural person is a trust, custodial account, corporation, limited liability company, partnership, or other entity.

Only one Death Benefit will be paid under the Contract. If a Death Benefit becomes payable, it will be in place of all other benefits under the Contract, and all other rights under this Contract will terminate except for rights related to the Death Benefit.

A Death Benefit payment is subject to income tax to the extent that it represents Contract earnings or pre-tax contributions.

Death Benefit Payout Date

- If the Death Benefit is to be paid as a lump sum, then it will be paid as soon as practicable after receipt of proof of death and a Request in Good Order for a lump sum payment.
- If the Death Benefit is to be paid under a Payout Option, then we will apply the Death Benefit value to a Payout Option as soon as practicable after receipt of proof of death and a Request in Good Order. That application date will be the first day of the first payment interval for which a payment is to be made. Death Benefit payments under a Payout Option are made at the end of each payment interval. This means that, for annual payments, the first payment will be made one year after that application date.

Death Benefit Amount

- If the Death Benefit is paid in a lump sum, then it is equal to the Death Benefit value, increased by any additional post-death interest as required by law.
- If the Death Benefit will be paid as a series of periodic payments under a Payout Option, then the amount of each payment under the Death Benefit is determined on the date that the Death Benefit value is applied to the Payout Option. The amount or each payment will be based on the Death Benefit value (increased by any additional post-death interest as required by law to the date it is applied to the Payout Option), the Payout Option that applies, and the payment interval.

Death Benefit Value

The Death Benefit value is the greater of:

• the Account Value determined as of the date that the Death Benefit value is determined; or

• the Return of Premium Guarantee.

In either case, the Death Benefit value is reduced by premium tax or other taxes not previously deducted.

The Account Value will reflect the applicable Strategy values as calculated on the date the Death Benefit is determined. If the Death Benefit value is determined on a date other than the end of the Term, the Death Benefit value will be based on the Daily Value Percentage, or on the locked Daily Value Percentage if you have made a Performance Lock election. The Daily Value Percentage could be negative, which could result in significant loss, even if the Index has risen since the start of the Term. Please see the Indexed Strategy Value Before End of Term section on page 50 or the Indexed Strategy Value After Performance Lock Election on page 58 for more information.

Return of Premium Guarantee

The Return of Premium Guarantee is equal to your Purchase Payments (the "Purchase Payment base"), reduced proportionally for all withdrawals, but not including amounts applied to pay Early Withdrawal Charges. The Return of Premium Guarantee is not reduced by Daily Charges.

The reduction in your Purchase Payment base for withdrawals will be in the same proportion that your Account Value was reduced on the date of the withdrawal. A proportional reduction in your Purchase Payment base could be larger than the dollar amount of your withdrawal.

Example. Here is an example of how we calculate a proportional reduction of your Purchase Payment base. In this example, we assume you take an $8,000 withdrawal and the Purchase Payment base is larger than the Account Value at the time of the withdrawal. To simplify the example, we also assume no Early Withdrawal Charge, no premium tax is deducted, and no additional post-death interest is added.

	Before Withdrawal	**After** Withdrawal	Explanation
Account Value	$ 100,000	$ 92,000	Your withdrawal reduces your Account Value by $8,000 (which is an 8% reduction in your Account Value). $8,000 / $100,000 = 8%
Purchase Payment base for Death Benefit	$ 120,000	$ 110,400	After the withdrawal, the Purchase Payment base for the Death Benefit is also reduced by 8% or $9,600. $120,000 x 8% = $9,600

Determination Date

The date that the Death Benefit value is determined is the earlier of: (1) the first anniversary of the date of death; or (2) the date that we have received both proof of death and Requests in Good Order with instructions as to the form of Death Benefit from all Beneficiaries. Thus, in many cases where there are multiple Beneficiaries, the date that the Death Benefit value is determined will be the date when the last Beneficiary submits the necessary Request in Good Order or the first anniversary of death. Until then, the Contract values remain in the Indexed Strategies will renew into new Terms of the same Strategies if the end of a Term is reached, and the Indexed Strategy values may fluctuate. This risk is borne by the Beneficiaries. If all Beneficiaries have not submitted the necessary Request in Good Order by the first anniversary of death, then the Death Benefit value as determined on that first anniversary will thereafter earn interest at a fixed rate at least equal to the rate required by state law.

Proof of Death. Before making payment of a Death Benefit, or any other payment or transfer of ownership rights that depends on the death of a specified person, we will require proof of death. We may delay making any payment until it is received. For this purpose, proof of death is:

• a certified copy of a death certificate showing the cause and manner of death;

• a certified copy of a decree that is made by a court of competent jurisdiction as to the finding of death; or

• other proof that is satisfactory to us.

Form of Death Benefit

You may elect to have the Death Benefit paid in one lump sum or in any form of Payout Option that is available under your Contract. The available Payout Options are described in the Payout Options section below. There is no additional charge associated with this election. Any election is subject to the Death Benefit Distribution Rules described below.

If you do not elect a different Payout Option, the Death Benefit is paid in the form of annual payments for a fixed period of two years.

You may make an election by a Request in Good Order. We must receive your request on or before the date of death for which a Death Benefit is payable. If you do not make such an election, the Beneficiary may make that election after the date of death. The Beneficiary's election must be made by a Request in Good Order that is received by us no later than the date that the Death Benefit value is applied to a Payout Option and at least 30 days before the date of the first payment to be made.

Additional Rules for Payout Options. A Payout Option that is contingent on life is based on the life of the Beneficiary or, in some cases, the life of a person to whom the Beneficiary is obligated. We will pay the Death Benefit as a lump sum rather than as payments under a Payout Option if: (1) the Death Benefit is less than $2,000; or (2) as of the date that the Death Benefit value is to be applied to a Payout Option, the Death Benefit Distribution Rules do not allow a two-year payout.

Payee of Death Benefit Payments

Death Benefit payments generally are made to the Beneficiary as the payee.

In place of that, the Beneficiary may elect to have payments made:

- as a tax-free exchange, transfer, or rollover to or for an annuity or tax-qualified account as permitted by federal tax law; or
- in cases where the Beneficiary is an estate, trust, custodial account, corporation, limited liability company, partnership, or other entity, to a person to whom the Beneficiary is obligated to make corresponding payments.

Payments that become due after the death of the Beneficiary are made to:

- the contingent payee designated as part of a Death Benefit Payout Option elected by you; or if none
- then to a contingent payee designated by the Beneficiary; or if none
- the estate of the last payee who received payments.

Such payments are subject to the Death Benefit Distribution Rules described below.

You may designate a contingent payee by a Request in Good Order. A Beneficiary may make or change a payee or contingent payee, except a Beneficiary may not change a designation made as part of a Payout Option election made by you for the Death Benefit. If the Beneficiary designates his or her spouse as a contingent payee and their marriage ends before the Beneficiary's death, then we will treat the former spouse as having predeceased the Beneficiary except to the extent a court order provides that the former spouse's rights as a contingent payee are to continue.

Death Benefit Distribution Rules

The Death Benefit Distribution Rules are summarized below.

- For a Tax Qualified Contract. The Death Benefit must be paid in accordance with the tax qualification endorsement.
- For a Nonqualified Contract. The Death Benefit must be paid either: (1) in full within five years of the date of death; or (2) over the life of the Beneficiary or over a period certain not exceeding the Beneficiary's life expectancy, with payments at least annually, and with the first payment made within one year of the date of death.

PAYOUT OPTIONS

The standard Payout Options are described below. The standard Payout Options will always be available, subject to tax law limitations. We will make payments in any other form of Payout Option requested by you that is acceptable to us at the time of any election. More than one Payout Option may be elected if the requirements for each Payout Option elected are satisfied. All elected Payout Options must comply with pertinent laws and regulations.

Payments under each standard Payout Option are made at the end of a payment interval. For example, if the Annuity Payout Initiation Date is October 31, 2029 and you select annual payments, then the first payment will be paid as of October 31, 2030.

Fixed Period Payout

- *For the Annuity Payout Benefit*

  We will make periodic payments to you, or to the Annuitant, if you direct, for the fixed period of time that you select. For a nonqualified contract, fixed periods shorter than 10 years are not available. For a tax-qualified contract, the only fixed period available is 10 years.

  - If the payee dies before the end of the fixed period, then we will make periodic payments to the surviving owner(s), or if none, then to the surviving contingent payee(s), or if none, then to the estate of the last payee who received payments.

- In all cases, payments will stop at the end of the fixed period.
- *For the Death Benefit*

  We will make periodic payments to the Beneficiary for the fixed period of time that you or the Beneficiary selects. The fixed period cannot exceed the life expectancy of the Beneficiary. For a tax-qualified contract, the fixed period also cannot exceed 10 years.
  - If the Beneficiary dies before the end of the fixed period, then we will make periodic payments to the contingent payee designated as part of any Death Benefit Payout Option that you have elected. If no such contingent payee is surviving, then such payments will be made to a contingent payee designated by the Beneficiary. If there is no contingent payee surviving, then such payments will be made to the estate of the last payee who received payments.
  - In all cases, payments will stop at the end of the fixed period.

Life Payout

- *For the Annuity Payout Benefit*

  We will make periodic payments to you, or to the Annuitant, if you direct, for as long as the Annuitant lives. Payments will stop on the death of the Annuitant. This means that, even if we have made only one payment when the Annuitant dies, payments will stop.
  If the Annuitant dies after the Annuity Payout Initiation Date but before the first payment, a Life Payout will not provide any benefit at all. In that case, we will reverse the Annuity Benefit Payout election and treat the Contract as if the Annuity Payout Initiation Date had not yet been reached.
  - If the Owner is living, this treatment will generally allow the Owner to choose between continuing the Contract as a deferred annuity or electing a new Annuity Payout Initiation Date and another Payout Option.
  - If the Annuitant's death before the Annuity Payout Initiation Date would give rise to a Death Benefit, then the Death Benefit will be available.
  For a tax-qualified contract, a Life Payout is not available to all Beneficiaries.
- *For the Death Benefit*

  We will make periodic payments to the Beneficiary for as long as the Beneficiary lives. Payments will stop on the death of the Beneficiary. This means that, even if we have made only one payment when the Beneficiary dies, payments will stop. For a tax-qualified contract, a Life Payout is not available to all Beneficiaries.
  If the Beneficiary dies after the Death Benefit is applied to the Payout Option but before the first payment, a Life Payout will not provide any benefit at all. In that case, we will reverse the Payout Option election and allow the Beneficiary's estate to choose a new Payout Option or to take the Death Benefit as a lump sum.

Life Payout with Payments for at Least a Fixed Period

- *For the Annuity Payout Benefit*

  We will make periodic payments to you, or to the Annuitant, if you direct, for as long as the Annuitant lives. For a tax-qualified contract, fixed periods longer than 10 years are not available.
  - If the Annuitant dies after the end of the fixed period you selected, then payments will stop on the death of the Annuitant.
  - If the Annuitant dies before the end of the fixed period you selected, then we will make periodic payments to the surviving owner(s), or if none, then to the surviving contingent payee(s), or if none, then to the estate of the last payee who received payments. In this case, payments will stop at the end of the fixed period you selected.
- *For the Death Benefit*

  We will make periodic payments to the Beneficiary for as long as the Beneficiary lives. The fixed period cannot exceed the life expectancy of the Beneficiary. For a tax-qualified contract, a Life Payout with Payments for at Least a Fixed Period is not available to all Beneficiaries, and the fixed period also cannot exceed 10 years.
  - If the Beneficiary dies after the end of the fixed period selected, then payments will stop on the death of the Beneficiary.
  - If the Beneficiary dies before the end of the fixed period you or the Beneficiary selected, then we will make periodic payments to the contingent payee designated as part of any Death Benefit Payout Option that you have elected. If no such contingent payee is surviving, then such payments will be made to a contingent payee designated by the Beneficiary. If there is no contingent payee surviving, then such payments will be made to the estate of the last payee who received payments. In this case, payments will stop at the end of the fixed period you or the Beneficiary selected.

Joint and One-Half Survivor Payout

- *For the Annuity Payout Benefit*

    We will make periodic payments to you, or to the primary Annuitant, if you direct, for as long as the primary Annuitant lives.

    - If the primary Annuitant dies and the secondary Annuitant does **not** survive the primary Annuitant, then payments will stop on the death of the primary Annuitant. This means that, even if we have made only one payment when the primary Annuitant dies, payments will stop unless the secondary Annuitant survives.
    - If the primary Annuitant dies and the secondary Annuitant is surviving, then we will make one-half of the periodic payment to you, or the secondary Annuitant, if you direct, for the rest of the secondary Annuitant's life. In this case, payments will stop on the death of the secondary Annuitant.

    If the Annuitant dies after the Annuity Payout Initiation Date but before the first payment, a Joint and One-Half Survivor Payout will never provide the full payment amount. In that case, if the secondary Annuitant agrees, we will reverse the Annuity Benefit Payout election and treat the Contract as if the Annuity Payout Initiation Date had not been reached.

    - If the Owner is living, this treatment will generally allow the Owner to choose between continuing the Contract as a deferred annuity or electing a new Annuity Payout Initiation Date and another Payout Option.
    - If the Annuitant's death before the Annuity Benefit Payout Initiation Date would give rise to a Death Benefit, then the Death Benefit will be available.

- *For the Death Benefit*

    We will make periodic payments to the Beneficiary for as long as the Beneficiary lives.

    - If the Beneficiary dies and the contingent payee does not survive the Beneficiary, then payments will stop on the death of the Beneficiary. This means that, even if we have made only one payment when the Beneficiary dies, payments will stop unless the contingent payee survives.

    - If the Beneficiary dies and the contingent payee designated as part of the Death Benefit Payout Option election is surviving, then we will make one-half of the periodic payment to the contingent payee for the rest of the contingent payee's life. In this case, payments will stop on the death of the contingent payee.

    If the Beneficiary dies after the Death Benefit is applied to the Payout Option but before the first payment, a Joint and One-Half Survivor Payout will never provide the full payment amount. In that case, if the contingent payee agrees, we will reverse the Payout Option election and allow the Beneficiary's estate to choose a new Payout Option or to take the Death Benefit as a lump sum.

    For a tax-qualified Contract, a Joint and One-Half Survivor Payout is only available in certain cases where the Beneficiary is the surviving spouse of the owner.

Payments under a Payout Option

Payments under a Payout Option are calculated and paid as fixed dollar payments. The stream of payments is an obligation of the general account of MassMutual Ascend Life. Fixed dollar payments will remain level for the duration of the payment period. Once payments begin under a Payout Option, the Payout Option may not be changed. Once the Contract value is applied to a Payout Option, the periodic payments cannot be accelerated or converted into a lump sum payment unless we agree.

We will use the 2012 Individual Annuity Reserving Table with projection scale G2 for blended lives (60% female/40% male) with interest at 1% per year, compounded annually, to compute all guaranteed Payout Option factors, values, and benefits under the Contract. For purposes of calculating payments based on the age of a person, we will use his or her age as of his or her last birthday.

Considerations in Selecting a Payout Option

Payments under a Payout Option are affected by various factors, including the length of the payment period, the life expectancy of the person on whose life payments are based, and the frequency of the payment interval (monthly, quarterly, semi-annually, or annually).

- Generally, the longer the period over which payments are made or the more frequently the payments are made, the lower the amount of each payment because more payments will be made.

- For Life Payout Options, the longer the life expectancy of the Annuitant or Beneficiary, the lower the amount of each payment because more payments are expected to be paid.

Non-Human Payees under a Payout Option

Except as stated below, the primary payee under a Payout Option must be a human being. All payments during his or her life must be made by check payable to the primary payee or by electronic transfer to a bank account owned by the primary payee.

Exceptions. Below are some exceptions to the general rule that the primary payee must be a human being. We may make other exceptions in our discretion.

- A nonhuman that is the Owner of the Contract may be the primary payee. For example, if the Owner is a trust, that trust may be the primary payee.

- Payments may be made payable to another insurance company or financial institution as a tax-free exchange, transfer, or rollover to or for another annuity or tax-qualified account as allowed by federal tax law.

PROCESSING PURCHASE PAYMENTS AND REQUESTS

Processing Purchase Payments

- If we receive a Purchase Payment on a Market Day before the Market Close, we will apply it to your Contract on that Market Day.

- If we receive a Purchase Payment on a Market Day after the Market Close or on a day that is not a Market Day, then we will apply it to your Contract on the next Market Day.

An amount applied to a Contract will be held in the Purchase Payment Account until it is applied to an Indexed Strategy or Strategies on a Strategy Application Date pursuant to your instructions. We cannot apply an amount held in the Purchase Payment Account to an Indexed Strategy or Strategies if we do not have complete instructions from you.

If you have any questions, you should contact us or your registered representative before sending a Purchase Payment.

Processing Requests

- Requests may be made by mail at P.O. Box 5423, Cincinnati OH 45201-5423.

- Requests by fax may be made at 800-807-9777.

- Requests for reallocations among Indexed Strategies may be made by telephone at 1-800-789-6771 between 8:00 AM and 4:00 PM Eastern Time Monday through Friday. We may also permit reallocation requests to be made at our website (www. massmutualascend.com). Some selling firms may restrict the ability of their registered representatives to convey reallocation requests by telephone or Internet on your behalf.

To obtain one of our forms (for example, a Strategy Selection form or a Withdrawal Request form) or to obtain more information about how to make a request, call us at 1-800-789-6771 or send us a fax at 800-807-9777. You can also request forms or information by mail at MassMutual Ascend Life Insurance Company, P.O. Box 5423, Cincinnati OH 45201-5423. You may also obtain forms on our website (www. massmutualascend.com).

We cannot process a request unless it is a Request in Good Order. A request may be rejected or delayed if it is not a Request in Good Order.

- If we receive a Request in Good Order on a Market Day before the Market Close, we will process it using values determined for the Market Close on that Market Day.

- If we receive a Request in Good Order after the Market Close or on a day that is not a Market Day, then we will treat that request as received at the start of the next Market Day.

If you have any questions, you should contact us or your registered representative before submitting the request.

Exception. If a withdrawal under an automatic withdrawal program is scheduled for a date that is not a Market Day, then we will process the withdrawal on the scheduled date using values at the most recent Market Close. For example, if the automatic withdrawal is scheduled for a date that falls on Sunday and there was a Market Close at 4:00 PM on the previous Friday, then we will process the withdrawal on Sunday using values determined at 4:00 PM on that Friday.

Market Days and Market Close

A Market Day is each day that all markets that are used to measure available Indexed Strategies are open for regular trading.

- Saturdays, Sundays, holidays, and any other day that the New York Stock Exchange and the NYSE Arca are closed are not Market Days.

- The NYSE and the NYSE Arca observe the following holidays: New Year's Day, Martin Luther King, Jr. Day, President's Day, Good Friday, Memorial Day, Juneteenth, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

A Market Close is the close of the regular or core trading session on the market used to measure a given Indexed Strategy.

- Regular trading hours on the NYSE and core trading sessions on the NYSE Arca usually end at 4:00 PM Eastern Time

- Trading hours on the NYSE and core trading sessions on the NYSE Arca end at 1:00 PM Eastern Time on the day before the Fourth of July and the Friday after Thanksgiving and Christmas Eve.

Regular trading or a core trading session may end at a different time on a Market Day under certain circumstances when and as permitted under applicable rules. Such circumstances generally cannot be predicted in advance.

Specific information about NYSE and NYSE Arca holidays and trading hours in any given calendar year is available at https://www.nyse.com/markets/hours-calendars.

Receipt of Purchase Payments, Applications and Requests

For purposes of processing, we deem Purchase Payments and applications, Requests in Good Order, and other instructions (paperwork) mailed to our post office box as received by us at our administrative office when the Purchase Payment or the paperwork reaches the applicable processing department located at 191 Rosa Parks Street, Cincinnati OH 45202.

Risks and Limitations Related to Requests by Telephone or Internet

We will use reasonable procedures such as requiring certain identifying information, tape recording the telephone instructions, and providing written confirmation of the transaction, in order to confirm that instructions communicated by telephone, fax, Internet or other means are genuine. Any telephone, fax or Internet instructions reasonably believed by us to be genuine will be your responsibility, including losses arising from any errors in the communication of instructions. As a result of this policy, you will bear the risk of loss. We are not responsible for the validity of any request or action.

Telephone and computer systems may not always be available. Any telephone or computer system, whether it is yours, your service provider's, your agent's, or ours, can experience outages or slowdowns for a variety of reasons. These outages or slowdowns may delay or prevent our processing of your request. Although we have taken precautions to help our systems handle heavy use, we cannot promise complete reliability under all circumstances. If you experience technical difficulties or problems, you should consider making your request by mail.

If you purchase your contract and subsequently move or travel to a country for which we restrict website access due to Office of Foreign Assets Control (OFAC) sanctions, other US government regulations, or high computer hacker risk, you will only be able to submit transaction requests via telephone, U.S. postal service, or private carriers. The list of countries for which we currently block website access is as follows: Iran, Russia, North Korea, Ukraine, China, Syrian Arab Republic, Tunisia, Belarus, Turkey, South Korea, Venezuela, Palestinian Territory, and Vietnam. We will update this list from time to time, as needed.

Suspension of Payments or Transfers

We may be required to suspend or delay payments, withdrawals, and reallocations when we cannot obtain an Index value because:

- the New York Stock Exchange or NYSE Arca is closed (other than customary weekend and holiday closings);

- trading on the New York Stock Exchange or NYSE Arca is restricted; or

- an emergency exists such that it is not reasonably practicable to determine fairly the value of the Index.

In this case, we will make payments and process withdrawals and reallocations as soon as practicable after we are able to obtain the Index value.

We may suspend or delay payments, withdrawals, and reallocations when we are permitted to do so under a regulatory order. In this case, we will make payments and process withdrawals and reallocations when the order is no longer in effect.

Restrictions on Financial Transactions

Federal laws designed to counter terrorism and prevent money laundering might, in certain circumstances, require us to block an Owner's ability to make certain transactions. This means that we may be required to refuse to accept any request for withdrawals, Surrenders, Annuity Payout Benefit payments or Death Benefit payments, until instructions are received from the appropriate regulator. We may also be required to provide additional information about you and your Contract to government regulators.

RIGHT TO CANCEL (FREE LOOK)

If you change your mind about owning the Contract, you may cancel it within 20 days after you receive it. If you purchase this Contract to replace an existing annuity contract or life insurance policy, you have 30 days after you receive it. This is known as a "free look." The right to cancel period may be longer in some states.

To cancel your Contract, you must submit your request to cancel to the producer who sold it or send it to us at P.O. Box 5423, Cincinnati, OH 45201-5423. If sent to us by mail, it is effective on the date postmarked with proper address and postage paid. Your request to cancel must be in writing and signed by you.

If you cancel your Contract, you will receive a refund. The amount of the refund will depend on where you live. When you cancel the Contract within this free look period, we will not assess an Early Withdrawal Charge.

- If you live in a state where we are required to refund your Purchase Payment(s), you will receive a refund equal to your Purchase Payment(s), but you will forfeit any interest credited to the Purchase Payment Account or other increase in the Account Value. We reserve the right to hold your Purchase Payment(s) in the Purchase Payment Account until the first Strategy Application Date on or after the end of the free look period.

- If you live in a state where we are required to refund the Account Value of your Contract, you will receive the Account Value on the day that we receive your cancellation Request in Good Order. If the Account Value includes the value of an Indexed Strategy, that Strategy value will reflect the applicable Daily Value Percentage. The amount you receive may be more or less than your Purchase Payment(s) depending upon any interest earned by your Contract and the value of your Indexed Strategies. This means that you bear the risk of any decline in the Account Value of your Contract before we receive your cancellation request.

No Early Withdrawal Charges will apply to the amount refunded. Unless required by state law, we do not refund any Daily Charge assessed during the free look period or any Early Withdrawal Charges assessed during the free look period that relate to a withdrawal taken before you cancel the Contract.

The State Variations section of this prospectus contains a summary of the state law provisions related to the free look period and the required refund amount.

There may be tax consequences if you cancel the Contract. You should seek advice on tax questions based on your particular circumstances from a tax advisor.

ANNUAL STATEMENT AND CONFIRMATIONS

At least once each calendar year, we will send you a statement that will show: (1) your Account Value; (2) all transactions regarding your Contract during the year; and (3) any interest credited to your Contract and/or any other changes in Strategy value credited to your Contract.

We will also send you written confirmations of Purchase Payments, Indexed Strategy allocations and renewals, withdrawals, and other financial transactions under your Contract. Statements and confirmations will be sent to your last known address on our records.

You should promptly report any inaccuracy or discrepancy in a statement or confirmation. To report an inaccuracy or discrepancy, contact us at P.O. Box 5423, Cincinnati, OH 45201-5423, or call us at 1-800-789-6771. To protect your rights, you should consider reconfirming any oral communications by sending a written statement to P.O. Box 5423, Cincinnati, OH 45201-5423.

ELECTRONIC DELIVERY

You may elect to receive electronic delivery of the Contract prospectus and other Contract related documents. Contact us at our website at www. Massmutualascend.com for more information and to enroll.

ABANDONED PROPERTY REQUIREMENTS

Every state has unclaimed property laws. These laws generally declare annuity contracts to be abandoned after a period of inactivity of three to five years from: (1) the latest permitted Annuity Payout Initiation Date; or (2) the date of death for which a Death Benefit is due and payable. For example, if the payment of a death benefit is due, but the beneficiary does not come forward to claim the death benefit in a timely manner, the unclaimed property laws will apply.

If a Death Benefit, Annuity Payout Benefit payments or other contract proceeds are unclaimed, we will pay them to the abandoned property division or unclaimed property office of the applicable state. (Escheatment is the formal, legal name for this process.) For example, on an unclaimed Death Benefit, depending on the circumstances, the proceeds are paid: (1) to the state where the beneficiary last resided, as shown on our books and records; (2) to the state where the contract owner last resided, as shown on our books and records; or (3) to Ohio, which is our state of domicile. The state will hold the proceeds without interest until a valid claim is made by the person entitled to the proceeds.

To prevent escheatment of the Death Benefit, Annuity Payout Benefit payments, or other proceeds from your Contract, it is important:

- to update your contact information, such as your address, phone number, and email address, if and as it changes; and

- to update your Beneficiary and other designations, including complete names, complete addresses, phone numbers, and social security numbers, if and as they change.

Please contact us at P.O. Box 5423, Cincinnati, OH 45201-5423, or call us at 1-800-789-6771, to make such updates.

State unclaimed property laws do not apply to annuity contracts that are held under an employer retirement plan that is subject to the Employee Retirement Income Security Act of 1974 (ERISA).

OWNER

The Owner on the Contract Effective Date is set out on your Contract Specifications Page. The Owner possesses all of the ownership rights under a Contract, such as making allocations among the Indexed Strategies, electing a Payout Option, and designating a Beneficiary.

If an Owner is a trust, custodial account, corporation, limited liability company, partnership, or other entity, then the age of the eldest Annuitant is treated as the age of the Owner for all purposes of this Contract.

Joint Owners

- *For a Nonqualified Contract*. Two persons may jointly own the Contract. In this case, the term "Owner" includes the joint Owner and you must exercise all rights of ownership by joint action.

- *For a Tax Qualified Contract*. No joint owner is permitted.

Change of Owner

- *For a Nonqualified Contract.* You may change the Owner only with our written consent. A change of Owner cancels all prior Beneficiary designations. It does not cancel a designation of an Annuitant or a Payout Option election.

- *For a Tax Qualified Contract*. You cannot change the Owner except to the limited extent permitted by the tax qualification endorsement.

A change of Owner must be made by a Request in Good Order. A change of Owner may have adverse tax consequences.

Assignment

- *For a Nonqualified Contract*. You may pledge, charge, encumber or assign you interest in this Contract only with our written consent. If we grant our consent, you may assign all or any part of your rights under this Contract except your rights to designate or change a Beneficiary or an Annuitant, to change Owners, or to elect a Payout Option.

- *For a Tax Qualified Contract*. You cannot pledge, charge, encumber or in any way assign your interest in this Contract except to the limited extent permitted by the tax qualification endorsement.

An assignment must be requested by a Request in Good Order. We are not responsible for the validity of any assignment. An assignment may have adverse tax consequences.

If we have consented to an assignment, the rights of a person holding the assignment, including the right to any payment under this Contract, come before the rights of an Owner, Annuitant, Beneficiary, or other payee. An assignment may be ended only the person holding it or as provided by law.

Successor Owner

Your spouse becomes the successor owner of the Contract and succeeds to all rights of ownership if all of the following requirements are met:

- a Death Benefit is payable on account of your death;

- the sole Beneficiary under the Contract is your spouse or a revocable trust or custodial account created by your spouse;

- either you make that election by a Request in Good Order before your death or your spouse makes that election by a Request in Good Order before the Death Benefit Payment Date; and
- you were not a successor owner of the Contract.

A successor owner election cancels all prior Beneficiary designations. It does not cancel a designation of an Annuitant or a Payout Option election.

In some states, state law extends this successor owner right to a civil union partner or other person who is not your spouse as defined by federal tax law. In that case, distributions after your death must be made as required by the Death Benefit Distributions Rules described in the Death Benefit section on page 71.

Community Property

If you live in a community property state and have a spouse at any time while you own this Contract, the laws of that state may vary your ownership rights.

ANNUITANT

The Annuitant is the natural person on whose life Annuity Payout Benefit payments are based. The Annuitant on the Contract Effective Date is set out on your Contract Specifications Page.

- *For a Nonqualified Contract*. The Annuitant cannot be changed at any time that the Contract is owned by a trust, custodial account, corporation, limited liability company, partnership, or other entity. Otherwise, you may change a designation of Annuitant at any time before the Annuity Payout Initiation Date.

- *For a Tax Qualified Contract*. The Annuitant must be the natural person covered under the retirement arrangement for whose benefit the Contract is held.

A change of Annuitant must be made by a Request in Good Order. A change of Annuitant does not cancel a designation of a Beneficiary or a Payout Option election.

If an Annuitant dies before the Annuity Payout Initiation Date and no Death Benefit is payable, then in the absence of a new designation, the Annuitant will be:

- the surviving joint Annuitant(s); or if none
- the Owner(s).

BENEFICIARY

A Beneficiary is a person entitled to receive all or part of a Death Benefit that is to be paid under this Contract on account of a death before the Annuity Payout Initiation Date.

- If a Death Benefit becomes payable on account of your death or the death of a joint Owner, then the surviving Owner is the Beneficiary no matter what other designation you may have made.

- In all other cases, you may designate one or more Beneficiaries as provided in the Designation of Beneficiary provision of the Contract.

- If no designated Beneficiary is surviving, then the Beneficiary is your estate.

- If the sole Beneficiary under the Contract is your spouse or a revocable trust or custodial account created by your spouse and all other requirements for successor ownership are met, then your spouse may become the successor owner of the Contract in lieu of receiving the Death Benefit.

A designation of Beneficiary must be made by a Request in Good Order. We must receive the request on or before the date of death for which a Death Benefit is payable.

- You may designate two or more persons jointly as the Beneficiaries. Unless you state otherwise, joint Beneficiaries that are surviving are entitled to equal shares.

- You may designate one or more persons as contingent Beneficiary. Unless you state otherwise, a contingent Beneficiary is entitled to a benefit only if there is no primary Beneficiary who that is surviving.

Survivorship Required

In order to be entitled to receive a Death Benefit, a Beneficiary must survive for at least 30 days after the death for which the Death Benefit is payable.

If you designate your spouse as a Beneficiary and your marriage ends before your death, we will treat your former spouse as having predeceased you unless:

- a court order provides that the former spouse's rights as a beneficiary are to continue; or
- the former spouse remains or becomes an Owner.

OTHER CONTRACT PROVISIONS

Amendment of the Contract

We reserve the right to amend the Contract to comply with applicable Federal or state laws or regulations. We will notify you in writing of any such amendments.

Misstatement

We may require proof of the age of the Annuitant, Owner and/or the Beneficiary before making any payments under the Contract that are measured by such person's life. If the age of the measuring life has been misstated, the amount payable will be the amount that would have been provided at the correct age. If payments based on the correct age would have been higher, we will pay the underpaid amount with interest. If payments would be lower, we may deduct the overpaid amount, with interest, from succeeding payments.

Involuntary Termination

If the Account Value on any anniversary of the initial Strategy Application Date is less than the minimum required value of $5,000 due to poor market performance or withdrawals from the Contract, we may terminate your Contract on that anniversary.

- If you make only one Purchase Payment, each Term will end on an anniversary of the initial Strategy Application Date. In this case, any involuntary termination will occur on a date that is the end of a Term.
- If you make multiple Purchase Payments, Terms may end on different dates. In this case, any involuntary termination will occur on a date that is the end of a Term, but it will occur before the end of other Terms. In this case, the Surrender Value payable upon termination of your Contract will reflect the Daily Value Percentages used to calculate the value of Indexed Strategies with Terms that are not ending on the termination date.

The examples below show the relationship between the date of an involuntary termination and the end of a Term.

Example A. You make one Purchase Payment that is applied to the Indexed Strategies on June 20, 2024. Terms will start and end on June 20 and the anniversary of the initial Strategy Application Date will be June 20. If your Account Value is less than $5,000 on June 20, 2026, we may terminate your Contract on that anniversary date.

Example B. You make two Purchase Payments. One Purchase Payment is applied to the Indexed Strategies on May 6, 2024 and the other Purchase Payment is applied to the Indexed Strategies on June 20, 2024. Terms will start and end on May 6 and on June 20. The anniversary of the initial Strategy Application Date will be May 6.

- If your Account Value is less than $5,000 on June 20, 2026, we may not terminate your Contract because June 20 is not an anniversary of the initial Strategy Application Date.
- If your Account Value is less than $5,000 on May 6, 2028, we may terminate your Contract on that anniversary date even though the other Term will not end until June 20, 2028.

If we terminate your Contract, we will pay you the Surrender Value determined as of the date that we terminate your Contract. The Surrender Value will reflect the applicable Indexed Strategy values as calculated on the day that we terminate your Contract.

Loans

Loans are not available under the Contract.

FEDERAL TAX CONSIDERATIONS

This section provides a general description of federal income tax considerations relating to the Contracts. The purchase, holding and transfer of a Contract may have federal estate and gift tax consequences in addition to income tax consequences. Estate and gift taxation is not discussed in this prospectus. State taxation will vary, depending on the state in which you reside, and is not discussed in this prospectus.

The tax information provided in this prospectus is not intended or written to be used as legal or tax advice. It is written solely to provide general information related to the sale and holding of the Contracts. You should seek advice on legal or tax questions based on your particular circumstances from an attorney or tax advisor.

Tax Deferral on Annuities

Internal Revenue Code ("IRC") Section 72 governs taxation of annuities in general. The income earned on a Contract is generally not included in income until it is withdrawn from the Contract. In other words, a Contract is a tax-deferred investment. **The advantages of tax deferral are lost if you Surrender or take withdrawals from the Contract, unless the Surrender or withdrawal is part of a rollover, transfer, or exchange.** Tax deferral is not available for a Contract when an Owner is not a natural person unless the Contract is part of a tax-qualified retirement plan or the Owner is a mere agent for a natural person. For a nonqualified deferred compensation plan, this rule means that the employer as Owner of the Contract will generally be taxed currently on any increase in the Surrender Value, although the plan itself may provide a tax deferral to the participating employee.

Under certain circumstances, based on a rule known as the "Investor Control Doctrine," the IRS has stated that the holder of an annuity contract could be treated as the owner (for tax purposes) of the assets of a separate account that supports the annuity contract. If you were treated as the owner of an interest in the separate account, then you would be taxed on the income, gain, and loss arising out of your interest in the separate account. Although the IRS has not provided definitive guidance on the application of this rule to indexed annuity contracts, we do not believe that this rule applies to the Contract because you have no specific, fractional, or unitized interest in the separate account assets, we are not obligated to invest the separate account in any particular assets, the investment return and market value of the separate account assets is not allocated in an identical manner to any Contract, the Contract values are determined based on gains and losses regardless of the performance of the separate account assets, and the derivatives that we may hold in the separate account are not publicly traded.

Tax-Qualified Retirement Plans

Annuities may also qualify for tax-deferred treatment, or serve as a funding vehicle, under tax-qualified retirement plans that are governed by other IRC provisions. These provisions include IRC Section 401 (pension, profit sharing, and 401(k) plans), IRC Section 403(b) (tax-sheltered annuities), IRC Sections 408 and 408A (individual retirement annuities), and IRC Section 457(b) (governmental deferred compensation plans). Tax-deferral is generally also available under these tax-qualified retirement plans through the use of a trust or custodial account without the use of an annuity.

The tax law rules governing tax-qualified retirement plans and the treatment of amounts held and distributed under such plans are complex. If the Contract is to be used in connection with a tax-qualified retirement plan, including an individual retirement annuity ("IRA") under a Simplified Employee Pension (SEP) Plan, you should seek competent legal and tax advice regarding the suitability of the Contract for your particular situation.

Contributions to a tax-qualified Contract are typically made with pre-tax dollars, while contributions to other Contracts are typically made from after-tax dollars, though there are exceptions in either case. Tax-qualified Contracts may also be subject to restrictions on withdrawals that do not apply to other Contracts. These restrictions may be imposed to meet the requirements of the IRC or of an employer plan.

Following is a brief description of the types of tax-qualified retirement plans for which the Contracts are available.

Individual Retirement Annuities. IRC Sections 219 and 408 permit certain individuals or their employers to contribute to an individual retirement arrangement known as an "Individual Retirement Annuity" or "IRA". Under applicable limitations, an individual may claim a tax deduction for certain contributions to an IRA. Contributions made to an IRA for an employee under a Simplified Employee Pension (SEP) Plan or Savings Incentive Match Plan for Employees (SIMPLE) established by an employer are not includable in the gross income of the employee until distributed from the IRA. Distributions from an IRA are taxable to the extent that they represent contributions for which a tax deduction was claimed, contributions made under a SEP plan or SIMPLE, or income earned within the IRA.

Roth IRAs. IRC Section 408A permits certain individuals to contribute to a Roth IRA. Contributions to a Roth IRA are not tax deductible. Tax-free distributions of contributions may be made at any time. Distributions of earnings are tax-free following the five-year period beginning with the first

year for which a Roth IRA contribution was made if the Owner has attained age 59 1/2, become disabled, or died, or for qualified first-time homebuyer expenses.

Tax-Sheltered Annuities. IRC Section 403(b) of permits public schools and charitable, religious, educational, and scientific organizations described in IRC Section 501(c)(3) to establish "tax-sheltered annuity" or "TSA" plans for their employees. TSA contributions and Contract earnings are generally not included in the gross income of the employee until distributed from the TSA. Amounts attributable to contributions made under a salary reduction agreement cannot be distributed until the employee attains age 59 1/2, severs employment, becomes disabled, incurs a hardship, is eligible for a qualified reservist distribution, or dies. The IRC and the plan may impose additional restrictions on distributions.

Pension, Profit-Sharing, and 401(k) Plans. IRC Section 401 permits employers to establish various types of retirement plans for employees, and permits self-employed individuals to establish such plans for themselves and their employees. These plans may use annuity contracts to fund plan benefits. Generally, contributions are deductible to the employer in the year made, and contributions and earnings are generally not included in the gross income of the employee until distributed from the plan. The IRC and the plan may impose restrictions on distributions. Purchasers of a Contract for use with such plans should seek competent advice regarding the suitability of the Contract under the particular plan.

Governmental Eligible Deferred Compensation Plans. State and local government employers may purchase annuity contracts to fund eligible deferred compensation plans for their employees, as described in IRC Section 457(b). Contributions and earnings are generally not included in the gross income of the employee until the employee receives distributions from the plan. Amounts cannot be distributed until the employee attains age 70 1/2, severs employment, becomes disabled, incurs an unforeseeable emergency, or dies. The plan may impose additional restrictions on distributions.

Roth TSAs, Roth 401(k)s, and Roth 457(b)s. IRC Section 402A permits TSA plans, 401(k) plans, and governmental 457(b) plans to allow participating employees to designate some part or all of their future elective contributions as Roth contributions. Roth contributions to a TSA plan, 401(k) plan, or governmental 457(b) plan are included in the employee's taxable income as earned. Amounts attributable to Roth TSA, Roth 401(k), or Roth 457(b) contributions must be held in a separate account from amounts attributable to traditional pre-tax TSA, 401(k), or 457(b) contributions. Distributions from a Roth TSA, Roth 401(k), or Roth 457(b) account are considered to come proportionally from contributions and earnings. Distributions attributable to Roth account contributions are tax-free. Distributions attributable to Roth account earnings are tax-free following the five-year period beginning with the first year for which Roth contributions are made to the plan if the employee has attained age 59 1/2, become disabled, or died. A Roth TSA, Roth 401(k), or Roth 457(b) account is subject to the same distribution restrictions that apply to amounts attributable to traditional pre-tax TSA, 401(k), or 457(b) contributions made under a salary reduction agreement. The plan may impose additional restrictions on distributions.

Nonqualified Deferred Compensation Plans

Employers may invest in annuity contracts in connection with unfunded deferred compensation plans for their employees. Such plans may include eligible deferred compensation plans of non-governmental tax-exempt employers, as described in IRC Section 457(b); deferred compensation plans of both governmental and nongovernmental tax-exempt employers that are taxed under IRC Section 457(f) and subject to Section 409A; and nonqualified deferred compensation plans of for-profit employers subject to Section 409A. In most cases, these plans are designed so that amounts credited under the plan will not be includable in the employees' gross income until paid under the plan. In these situations, the annuity contracts are not plan assets and are subject to the claims of the employer's general creditors. Whether or not made from the Contract, plan benefit payments are subject to restrictions imposed by the IRC and the plan.

Summary of Income Tax Rules

The following chart summarizes the basic income tax rules governing tax-qualified retirement plans, nonqualified deferred compensation plans, and other non-tax-qualified Contracts.

	Tax-Qualified Contracts and Plans	Nonqualified Deferred Compensation Plans	Other Non-Tax-Qualified Contracts
Plan Types	• IRC §408 (IRA, SEP, SIMPLE IRA) • IRC §408A (Roth IRA) • IRC §403(b) (Tax-Sheltered Annuity) • IRC §401 (Pension, Profit–Sharing, 401(k)) • Governmental IRC §457(b) • IRC §402A (Roth TSA, Roth 401(k), or Roth 457(b))	• IRC §409A • Nongovernmental IRC §457(b) • IRC §457(f)	• IRC §72 only
Who May Purchase a Contract	Eligible employee, employer, or employer plan.	Employer on behalf of eligible employee. Employer generally loses tax-deferred status of Contract itself.	Anyone. Non-natural person will generally lose tax-deferred status.
Contribution Limits	Contributions are limited by IRC and/or plan requirements.		None.
Distribution Restrictions	Distributions from Contract and/or plan may be restricted to meet IRC and/or plan requirements.		None.
Taxation of Withdrawals, Surrenders, and Lump Sum Death Benefit	Generally, 100% of distributions must be included in taxable income. However, the portion that represents an after-tax investment is not taxable. Distributions from Roth IRA are deemed to come first from after-tax contributions. Distributions from other plans are generally deemed to come from income and after-tax investment (if any) on a pro-rata basis. Distributions from §408A Roth IRA or §402A Roth TSA, Roth 401(k), or Roth 457(b) are completely tax free if certain requirements are met. For tax purposes, all IRAs and SEP IRAs of an owner are treated as a single IRA, and all Roth IRAs of an owner are treated as a single Roth IRA.		Generally, distributions must be included in taxable income until all accumulated earnings are paid out. Thereafter, distributions are tax-free return of the original investment. However, distributions are tax-free until any investment made before August 14, 1982 is returned. For tax purposes, all non-tax-qualified annuity contracts issued to the same owner by the same insurer in the same calendar year are treated as one contract.
Taxation of Payout Option Payments (Annuity Benefit or Death Benefit)	A percentage of each payment is tax free equal to the ratio of after-tax investment (if any) to the total expected payments, and the balance is included in taxable income. Once the after-tax investment has been recovered, the full amount of each benefit payment is included in taxable income. Distributions from a Roth IRA, Roth TSA, Roth 401(k), or Roth 457(b) are completely tax free if certain requirements are met.		
Possible Penalty Taxes for Distributions Before Age 59 1/2	Taxable portion of payments made before age 59 1/2 may be subject to 10% penalty tax (or 25% for a SIMPLE IRA during the first two years of participation). Penalty taxes do not apply to payments after the participant's death, or to §457 plans. Other exceptions may apply.	None.	Taxable portion of payments made before age 59 1/2 may be subject to a 10% penalty tax. Penalty taxes do not apply to payments after the Owner's death. Other exceptions may apply.
Assignment/ Transfer of Contract	Assignment and transfer of Ownership generally not permitted.		Generally, deferred earnings taxable to transferor upon transfer or assignment. Gift tax consequences are not discussed herein.
Federal Income Tax Withholding	Eligible rollover distributions from §401, §403(b), and governmental §457(b) plans are subject to 20% mandatory withholding on taxable portion unless direct rollover. For other payments, Payee may generally elect to have taxes withheld or not.	Generally subject to wage withholding.	Generally, Payee may elect to have taxes withheld or not.

Rollovers, Transfers, and Exchanges

Amounts from a tax-qualified Contract may be rolled over, transferred, or exchanged into another tax-qualified account or retirement plan as permitted by the IRC and plan(s). Amounts may be rolled over, transferred, or exchanged into a tax-qualified Contract from another tax-qualified account or retirement plan as permitted by the IRC and plan(s). In most cases, such a rollover, transfer, or exchange is not taxable, unless the rollover of pre-tax amounts is made into a Roth IRA, a Roth TSA, Roth 401(k), or Roth 457(b). Rollovers, transfers, and exchanges are not subject to normal contribution limits. The IRC or plan may require that rollovers be held in a separate Contract from other plan funds.

Amounts from a non-tax-qualified Contract may be transferred to another non-tax-qualified annuity or to a qualified long-term care policy as a tax-free exchange as permitted by the IRC Section 1035. Amounts from another non-tax-qualified annuity or from a life insurance or endowment policy may be transferred to a Contract as a tax-free exchange under IRC Section 1035.

Required Distributions

The Contracts are subject to the required distribution rules of federal tax law. These rules vary based on the tax qualification of the Contract or the plan under which it is issued.

For a tax-qualified Contract other than a Roth IRA, required minimum distributions must generally begin by April 1 following the year the participant attains age 73 (age 75 if born after December 31, 1960, or age 72 if born after June 30, 1949, but before January 1, 1951, or age 70 1/2 if born before July 1, 1949). However, for a 403(b) Tax-Sheltered Annuity Plan, a 401 Pension, Profit-Sharing, or 401(k) Plan, or a 457(b) Governmental Deferred Compensation Plan, a participant who is not a 5% owner of the employer may delay required minimum distributions until April 1 following the year in which the participant retires from that employer. The required minimum distributions during life are calculated based on standard life expectancy tables adopted under federal tax law.

For a Roth IRA or for a Contract that is not tax-qualified, there are no required distributions during life.

A tax-qualified Contract must make required distributions after death. The required distributions vary depending on the type of beneficiary and whether minimum distributions were required during the life of the decedent. Some beneficiaries may take payments over life or life expectancy, and others must receive all benefits within five or ten years after death, and some must take payments over life or life expectancy with a final payment within ten years after the decedent's death. A non-tax-qualified Contract that has begun making payments under a payout option during the Owner's life must make any remaining payments at least as rapidly after death. If payments from a non-tax-qualified Contract have not begun, then the death benefit must be paid out in full within five years after death, or must be paid out in substantially equal payments beginning within one year of death over a period not exceeding the life expectancy of the designated beneficiary.

For a traditional IRA, a Roth IRA, or a Contract that is not tax-qualified, a beneficiary who is a surviving spouse may elect out of these requirements, and apply the required distribution rules as if the Contract were his or her own. For this purpose, federal tax law recognizes as married any two people whose marriage is valid in the state in which it was celebrated. A civil union or domestic partnership is not considered a marriage.

The Contract is intended for long-term investment purposes and the Contract and its Indexed Strategies may not be appropriate for investors who plan to take withdrawals (including automated withdrawals and required minimum distributions) during the first six Contract Years or who plan to take withdrawals from Indexed Strategies before the end of a Term.

PREMIUM AND OTHER TAXES

We reserve the right to deduct from the Purchase Payment or Account Value any taxes relating to the Contract paid by us to any government entity (including, but not limited to, premium taxes, additional taxes, and maintenance taxes on insurers, Federal, state and local withholding of income, estate, inheritance, or other taxes required by law from annuity purchase payments, and any new or increased taxes on insurers or annuity purchase payments that may be enacted into law).

Currently some state governments impose premium taxes, additional taxes, and maintenance taxes on insurers based on annuity purchase payments received or applied to an annuity payout benefit. These taxes currently range from zero to 3.5% depending upon the jurisdiction and the tax qualification of the Contract. A federal premium tax has been proposed but not enacted. We may deduct any such premium or other taxes from the Purchase Payments or the Account Value at the time that the tax is imposed. We may also deduct any such tax not previously deducted from the Annuity Payout value or Death Benefit value.

We reserve the right to deduct from the Contract for any income taxes that we incur because of the Contract. At the present time, however, we are not incurring any such income tax or making any such deductions.

DISTRIBUTION OF THE CONTRACTS

MM Ascend Life Investor Services, LLC ("MMALIS") is the principal underwriter and distributor of the securities offered through this prospectus. MMALIC and MMALIS are affiliated because MMALIS is a subsidary of MMALIC. MMALIS also acts as the principal underwriter and distributor of the variable annuity contracts that are issued by one of our subsidiaries.

MMALIS's principal executive offices are located at 191 Rosa Parks Street, Cincinnati, Ohio 45202. MMALIS is registered as a broker- dealer with the Securities and Exchange Commission under the Securities Exchange Act of 1934, as well as the securities regulators in the states in which it operates and registration is required. MMALIS is a member of the Financial Industry Regulatory Authority ("FINRA").

Contracts are sold by licensed insurance agents (the "Selling Agents") in those states where the Contract may be lawfully sold. Such Selling Agents will be appointed agents of MMALIC and will be registered representatives of broker-dealer firms (the "Selling Broker-Dealers") that have entered into selling agreements with us and MMALIS. Selling Broker-Dealers will be registered under the Securities Exchange Act of 1934 and will be members of FINRA.

FINRA provides background information about broker-dealers and their registered representatives through FINRA BrokerCheck. You may contact the FINRA BrokerCheck Hotline at 1-800-289-9999, or log on to www.finra.org to learn more about MMALIS, your Selling Agent, and his or her Selling Broker Dealer.

MMALIS receives no compensation for acting as underwriter of the Contracts; however, MMALIC pays for some of MMALIS's operating and other expenses, including overhead and legal and accounting fees. MMALIC may reimburse MMALIS for certain sales expenses, such as marketing materials and advertising expenses, and other expenses of distributing the Contracts.

MMALIC or MMALIS pay the Selling Broker-Dealers compensation for the promotion and sale of the Contract. The Selling Agents who solicit sales of the Contract typically receive a portion of the compensation paid to the Selling Broker-Dealers in the form of commissions or other compensation, depending on the agreement between the Selling Broker-Dealer and the Selling Agent.

The amount and timing of commissions paid to Selling Broker-Dealers may vary depending on the selling agreement but it will not be more than 9.2% of each Purchase Payment. In most cases, such amounts paid to a Selling Broker-Dealer will be divided between the Selling Agent and the Selling Broker-Dealer. Some Selling Broker-Dealers may elect to receive a lower commission when a Purchase Payment is made, along with annual trail commissions up to 1.5% of Account Value for so long as a contract remains in effect or as agreed in the selling agreement. MMALIC may pay or allow other promotional incentives or payments in the form of cash or other compensation to the extent permitted by FINRA rules and other applicable laws and regulations.

MMALIC also may pay compensation to wholesaling broker-dealers or other firms or intermediaries in return for wholesaling services such as providing marketing and sales support, product training, and administrative services to the Selling Agents of the Selling Broker-Dealers. These allowances may be based on a percentage of a Purchase Payment.

In addition to the compensation described above, MMALIC may make additional cash payments, in certain circumstances referred to as "override" compensations, or reimbursements to Selling Broker-Dealers in recognition of their marketing and distribution, transaction processing and/or administrative services support. These payments are not offered to all Selling Broker-Dealers, and the terms of any particular agreement governing the payments may vary among Selling Broker-Dealers depending on, among other things, the level and type of marketing and distribution support provided. Marketing and distribution support services may include, among other services, placement of MMALIC's products on the Selling Broker-Dealers' preferred or recommended list, increased access to the Selling Broker-Dealers' registered representatives for purposes of promoting sales of MMALIC products, assistance in training and education of the Selling Agents, and opportunities for MMALIC and MMALIS to participate in sales conferences and educational seminars. The payments or reimbursements may be calculated as a percentage of the particular Selling Broker-Dealer's actual or expected aggregate sales of our indexed annuity contracts (including the Contract) and/or may be a fixed dollar amount. Broker-dealers receiving these additional payments may pass on some or all of the payments to the Selling Agents.

You should ask your Selling Agent for further information about the commissions or other compensation that he or she, or the Selling Broker-Dealer for which he or she works, may receive in connection with your purchase of a Contract.

There is no front-end sales load deducted from the Purchase Payment(s) to pay sales commissions. Commissions and other incentives or payments described above are not charged directly to you. We intend to recoup at least a portion of the sales commissions and other sales expenses through fees and charges deducted under the Contract.

MASSMUTUAL ASCEND LIFE'S GENERAL ACCOUNT

Our general account (the "General Account") holds all our assets other than assets in our insulated separate accounts. We own our General Account assets, and, subject to applicable law, have sole investment discretion over them. The assets are subject to our general business operation liabilities and claims of our creditors and may lose value. Our General Account assets fund the guarantees provided in the Contracts.

We must invest our assets according to applicable state laws regarding the nature, quality and diversification of investments that may be made by life insurance companies. In general, these laws permit investments, within specified limits and subject to certain qualifications, in Federal, state, and municipal obligations, corporate bonds, preferred and common stocks, real estate mortgages, real estate and certain other investments.

We place a majority of the Purchase Payments made under the Contract in our General Account where we primarily invest the assets in a variety of fixed income securities.

We place a portion of the Purchase Payments made under the Contract in a non-unitized separate account (the "Separate Account") that is not registered with the Securities and Exchange Commission. We established and maintain the Separate Account pursuant to the laws of our domiciliary state for the purpose of supporting our obligation to adjust the Indexed Strategy values based on the Daily Value Percentage or rise or fall of the Index. The assets of the Separate Account are held in our name on behalf of the Separate Account and legally belong to us. The assets in the Separate Account are not chargeable with liabilities arising out of any other business that we conduct. We may invest these assets in hedging instruments, including derivative contracts as well as other assets permitted under state law. To support our obligations to adjust the Indexed Strategy values, we may move money between the Separate Account and our General Account. We are not obligated to invest the assets of the Separate Account according to any particular plan except as we may be required to by state insurance laws. Regardless of your Strategy allocations, we do not intend to invest the assets of the Separate Account in the iShares MSCI EAFE exchange traded fund the iShares U.S. Real Estate exchange traded fund, or the SPDR Gold Shares exchange traded fund. We may or may not hold the hypothetical options described in this prospectus in the Separate Account.

Contract owners do not have any interest in or claim on the assets in the Separate Account nor do Contract owners participate in any way in the performance of assets held in the Separate Account.

LEGAL MATTERS

Reliance on Rule 12h-7

MassMutual Ascend Life relies on the exemption provided by Rule 12h-7 under the Securities Exchange Act of the 1934 Act from the requirement to file reports pursuant to Section 15(d) of that Act.

Legal Proceedings

MassMutual Ascend Life and its subsidiaries are involved in litigation from time to time, generally arising in the ordinary course of business. This litigation may include, but is not limited to, general commercial disputes, lawsuits brought by contract owners and policyholders, employment matters, reinsurance collection matters and actions challenging certain business practices of insurance subsidiaries. Also, from time to time, state and federal regulators or other officials conduct formal and informal examinations or undertake other actions dealing with various aspects of the financial services and insurance industries. It is not possible to predict with certainty the ultimate outcome of any pending legal proceeding or regulatory action. However, MassMutual Ascend Life does not believe any such action or proceeding will have a material adverse effect upon its ability to meet its obligations under the Contracts.

Legal Opinion on Contracts

Legal matters in connection with federal laws and regulations affecting the issue and sale of the Contracts described in this prospectus and the organization of MassMutual Ascend Life, its authority to issue such Contracts under Ohio law, and the validity of the forms of the Contracts under Ohio law have been passed on by John P. Gruber, General Counsel of MassMutual Ascend Life.

Securities and Exchange Commission Position on Indemnification

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers or persons controlling MassMutual Ascend Life pursuant to its articles of incorporation or its code of regulations or pursuant to any insurance coverage or otherwise, MassMutual Ascend Life has been informed that, in the opinion of the Securities and Exchange Commission, such indemnification is against public policy as expressed in the Securities Act of 1933 and is therefore unenforceable.

EXPERTS

The statutory financial statements and financial statement schedules of MassMutual Ascend Life Insurance Company (formerly known as Great American Life Insurance Company) at December 31, 2023, 2022, and 2021 and for each of the years in the three year period ended December 31, 2023, have been included herein in reliance upon the reports of KPMG LLP, independent registered public accounting firm, appearing elsewhere herein, and upon the authority of said firm as experts in accounting and auditing.

The KPMG LLP report dated April 23, 2024 of MassMutual Ascend Life Insurance Company includes explanatory language that states that the financial statements are prepared by MassMutual Ascend Life Insurance Company using statutory accounting practices prescribed or permitted by the Ohio Department of Insurance, which is a basis of accounting other than U.S. generally accepted accounting principles. Accordingly, the KPMG LLP audit report states that the financial statements are not presented fairly in accordance with U.S. generally accepted accounting principles and further states that those statements are presented fairly, in all material respects, in accordance with statutory accounting practices prescribed or permitted by the Ohio Department of Insurance.

The KPMG LLP report dated April 23, 2024 of MassMutual Ascend Life Insurance Company includes an emphasis of matter paragraph that states that MassMutual Ascend Life Insurance Company elected to apply a prescribed practice promulgated under Ohio Administrative Code Section 3901-1-67 ("OAC 3901-1-67") to its derivative instruments hedging indexed products and indexed annuity reserve liabilities. The opinion was not modified with respect to this matter.

THE REGISTRATION STATEMENT

We filed a Registration Statement with the Securities and Exchange Commission under the Securities Act of 1933 relating to the Contracts offered by this prospectus. This prospectus was filed as a part of the Registration Statement, but it does not constitute the complete Registration Statement. The Registration Statement contains further information relating to the Company and the Contracts. The Registration Statement and the exhibits thereto may be inspected and copied at the office of the Securities and Exchange Commission, located at 100 F Street, N.E., Washington, D.C., and may also be accessed at www.sec.gov. The Securities and Exchange Commission file number for the Contract is 333-276475.

Statements in this prospectus discussing the content of the Contracts and other legal instruments are summaries. The actual documents are filed as exhibits to the Registration Statement. For a complete statement of the terms of the Contracts or any other legal document, refer to the appropriate exhibit to the Registration Statement.

OPTION PRICES

In order to calculate the Daily Value Percentage of an Indexed Strategy, we determine the prices of the hypothetical options using a valuation model. The price of each option is stated as a percentage of the Index for the last Market Close on or before the first day of the Term.

- **ATM Binary Call Option Price (at-the-money binary call option)**

  The ATM Binary Call Option Price is the calculated price of a hypothetical at-the-money binary call option (or collection of options) that will pay the holder an amount equal to the Trigger Rate multiplied by the Investment Base if the change in the Index for the Term is zero or is positive.

- **ATM Call Option Price (at-the-money call option)**

  The ATM Call Option Price is the calculated price of a hypothetical call option that will pay the holder an amount equal to the percentage rise, if any, in the Index from the last Market Close on or before the start of the Term to the final Market Close of the Term.

- **ATM Put Option Price (at-the-money put option)**

  The ATM Put Option Price is the calculated price of a hypothetical put option that will pay the holder an amount equal to the percentage fall, if any, in the Index from the last Market Close on or before the start of the Term to the final Market Close of the Term.

- **ITM Binary Call Option Price (in-the-money binary call option)**

  The ITM Binary Call Option Price is the calculated price of a hypothetical in-the-money binary call option (or collection of options) that will pay the holder an amount equal to the Trigger Rate multiplied by the Investment Base if the change in the Index for the Term is zero, is positive, or is negative but does not exceed the Buffer.

- **OTM Call Option Price (out-of-the-money call option)**

The OTM Call Option Price is the calculated price of a hypothetical call option that will pay the holder an amount equal to the percentage rise, if any, in the Index from the last Market Close on or before the start of the Term to the final Market Close of the Term, but only to the extent it exceeds the Cap for the Term.

- **OTM Put Option Price (out-of-the-money put option)**

The OTM Put Option Price is the calculated price of a hypothetical put option that will pay the holder an amount equal to the percentage fall, if any, in the Index from the last Market Close on or before the start of the Term to the final Market Close of the Term, but only to the extent it exceeds the Buffer or Floor for the Term.

Valuation Model

We use a mathematical model to calculate the price of the hypothetical options in our formulas because direct prices of comparable options are generally not available. Options in the marketplace do not directly align with (1) the time remaining in a Term and (2) the strike prices for any of the hypothetical options used in the calculation of the Daily Value Percentage.

Valuation models are widely used for option pricing and the model we use is based on standard methods for valuing derivatives. The methodology used to value these options is determined solely by us and the results of our valuation model may vary, higher or lower, from other estimated valuations or the actual selling price of identical derivatives. Any variance between our valuations and other estimated or actual prices may be different from Indexed Strategy to Indexed Strategy and may also change from day to day. Our valuation model calculates the theoretical price of options using the following inputs: Index levels or prices, expected dividend yield, option strike prices, expected interest rates, time, and implied volatility of option prices. Below is a brief explanation of those model inputs, which we receive from third party vendors.

- **Index Levels or Prices**

The initial Index level or price for a Term is the Index provided to us for the last Market Close on or before the first day of the Term. The current Index level or price is the Index provided to us for the most recent Market Close. We rely on third parties, such as Index providers and financial reporting vendors, to provide us with the current Index level or price for the most recent Market Close.

- **Dividend Yield (Div)**

Dividend Yield is the dividend yield to the end of the Term as of a calculation date where the dividend yield is (1) interpolated from yields or (2) implied from market data as reported by Bloomberg or another market source.

For the S&P 500 Index, the dividend yield will reduce the Index level and the applicable call option prices.

- **Strike Price (K)**

Strike Price is a value that varies for each type of option.

ATM binary call option strike price = Index at the start of the Term

ATM call option strike price = Index at the start of the Term

ATM put option strike price = Index at the start of the Term

ITM binary call option strike price = = Index at the start of the Term multiplied by (1 – Buffer). [For example, for a 10% Buffer Strategy, the ITM binary call option strike price is equal to the Index at the start of the Term multiplied by 1- .10, or .90]

OTM call option strike price = Index at the start of the Term multiplied by (1 + Cap). [For example, if the Cap is 8%, the OTM call option strike price is equal to the Index at the start of the Term multiplied by 1 + .08, or 1.08].

OTM put option strike price = Index at the start of the Term multiplied by (1 – Buffer) for a Buffer Strategy or (1 + Floor) for a Floor Strategy. [For example, for a 10% Buffer Strategy, the OTM put option strike price is equal to the Index at the start of the Term multiplied by 1- .10, or .90; for a -10% Floor Strategy, the OTM put option strike price is equal to the Index at the start of the Term multiplied by 1 + -.10, or 0.90]

- **Interest Rate (Rate)**

Interest Rate is a rate based on key derivative interest rates obtained from information provided by Bloomberg or another market source. These interest rates are obtained for maturities adjacent to the actual time remaining in the Term on the calculation date. We use interpolation to derive the rate used as our input for the model.

- **Time (T)**

Time is the portion of the Term that remains as measured by the following formula.

Time = number of calendar days from calculation date to end of Term / number of calendar days in Term

- **Implied Volatility (Vol)**

Volatility is the implied volatility of option prices. It is approximated daily using observed option prices as reported by Bloomberg or another market source. For each hypothetical option included in the calculation, we approximate the volatility of option prices by interpolating between (1) implied volatilities for similar options with the closest available time remaining and (2) strike prices.

Implied volatility varies with (1) how much time remains until the end of a Term, which is determined by using an expiration date for the designated option that corresponds to that time remaining and (2) the relationship between the strike price of that option and the value of the Index at the time of the calculation. This relationship is referred to as the "moneyness" of the option described above, and is calculated as the ratio of current price to strike price.

Direct market data for these inputs is generally not available because options on an Index that actually trade in the market have (1) specific maturity dates that are unlikely to precisely match the end date of a Term and (2) moneyness values that are unlikely to precisely match the moneyness of the designated option that we use in our calculations. Accordingly, we interpolate between the implied volatility quotes that are based on the actual maturities and moneyness values.

EXAMPLES: IMPACT OF WITHDRAWALS ON CONTRACT VALUES AND AMOUNTS REALIZED

These examples are intended to illustrate how a withdrawal from an Indexed Strategy before the end of the Term affect Indexed Strategy values and amounts realized at the end of the Term.

Example A: Withdrawal When Index Rising Steadily – Cap and Upside Participation Rate Strategies

This example assumes:
- your Contract was issued on or after June 7, 2024, so a Daily Charge rate of 0.95% applies;
- you allocate $50,000 to the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy, $50,000 to the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy, and $50,000 to the S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy;
- the Cap for the initial Term of the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy is 10%;
- the Upside Participation Rate for the initial Term of the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy is 75%;
- the Upside Participation Rate for the Term of the S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy is 110%;
- the S&P 500 is 1000 on the Term start date;
- you request a $10,000 withdrawal on Day 146 when the Daily Value Percentage is 2.15% for the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy, 2.33% for the S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy, and 10% for the S&P 500 6-year Term 10% Buffer with Participation Rate Strategy;
- you do not take any other withdrawals during the initial Term;
- the withdrawal is covered by the Free Withdrawal Allowance and therefore no Early Withdrawal Charges apply (If Early Withdrawal Charges did apply, the amounts realized at the end of the Term would be reduced by both the withdrawal and the amount of the Early Withdrawal Charge);
- the S&P 500 is 1130 on the 1-year Term end date and the 6-Year Term end date; and
- you have not made a Performance Lock election.

Please note that even with a rising Index, the Daily Value Percentage may be negative or lower than the Index rise because the Net Option Price is not equal to the current Index price, and because the Daily Value Percentage calculation subtracts the Amortized Option Cost and Trading Cost from the Net Option Price.

Impact of $10,000 Withdrawal on Day 146 of Term	S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy	S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy	S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy
Investment Base at Term Start	$50,000	$50,000	$50,000
Daily Charges through withdrawal date	$191	$191	$191
Remaining Investment Base	$49,809	$49,809	$49,809
Daily Value Percentage on Withdrawal Date	2.15%	2.33%	10.00%
Dollar Amount of Increase on Withdrawal Date	$49,809 x .0215 = $1,071	$49,809 x .0233 = $1,161	$49,809 x .10 = $4,981
Strategy Value before Withdrawal	$49,809 + $1,071 = $50,880	$49,809 + $1,161 = $50,970	$49,809 + $4,981 = $54,790
Amount Withdrawn*	$4,996	$5,004	$0
Withdrawal as Percentage of Strategy Value	$4,996 / $50,880 = 9.82%	$5,004 / $50,970 = 9.82%	$0 / $54,790 = 0%
Proportional Reduction in Investment Base	$49,809 x .0982 = $4,891	$49,809 x .0982 = $4,891	$49,809 x 0 = $0
Investment Base after Withdrawal	$49,809 - $4,891 = $44,918	$49,809 - $4,891 = $44,918	$49,809 - $0 = $49,809
Value at End of Term			
Investment Base after Withdrawal	$44,918	$44,918	$49,809
Daily Charges From Withdrawal Date to Term End	$257	$257	$2,593
Remaining Investment Base	$44,661	$44,661	$47,216
Index at Term Start	1000	1000	1000
Index at Term End	1130	1130	1130
Rise in Index	13%	13%	13%
Cap	10.00%	n/a	n/a
Upside Participation Rate	n/a	75%	110%
Increase as a Percentage	10%	13% x 75% = 9.75%	13% x 110% = 14.30%
Dollar Amount of Increase	$44,661 x .1000 = $4,466	$44661 x .0975 = $4,354	$47,216 x .1430 = $6,752
Strategy Value at Term End	$44,661 + $4,466 = $49,127	$44,661 + $4,354 = $49,015	$47,216 + $6,752 = $53,968

*   Note: The withdrawal is taken proportionally from Indexed Strategies having the shortest Term, based on the ratio of that Strategy's value to the total value of all Indexed Strategies having the same Term length immediately before the withdrawal. This means the withdrawal will be taken proportionally from Indexed Strategies with 1-year Terms, and then proportionally from Indexed Strategies with 2-year Terms, and then proportionally from Indexed Strategies with 3-year Terms, and finally from Indexed Strategies having 6-year Terms. In this example, the total value of all Indexed Strategies with 1-year Terms immediately before the withdrawal was $101,850 ($50,922 + $51,012). The S&P 500 1-year 50% Downside Participation Rate with Cap Strategy value was 49.96% of that total value ($50,880 / $101,850 = 49.96%), so 49.96% of the $10,000 withdrawal ($4,996) was taken from it. The S&P 500 with 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy value was 50.04% of that total value ($50,970 / $101,850 = 50.04%), so 50.04% of the $10,000 withdrawal ($5,004) was taken from it. Any withdrawal would only be taken from the S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy when no amounts remain

in Indexed Strategies with a 1-year Term or a 2-year Term. For Contracts issued in Missouri, amounts taken from Indexed Strategies will be proportional without regard to Term length.

In this example, you invested $50,000 in the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy, $50,000 in the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy, and $50,000 in the S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy. At the end of the 1-year Term you realized $108,142 from the 1-year Strategies ($10,000 withdrawal plus the Strategy values of $49,127 and $49,015 at the end of the 1-year Term). Had no withdrawal occurred, your 1-year Strategy values at the end of the Term would have totaled $108,832 ($50,000 minus $475 in Daily Charges, plus a 10% increase for the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy, and $50,000 minus $475 in Daily Charges, plus a 9.75% increase for the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy.)

The hypothetical Strategy value for the 1-year Strategies ($108,832) exceeds the amount realized ($108,142) because the portion of the Investment Base withdrawn from each Strategy did not earn the index increase (10% and 9.75% respectively) it would have earned if it had been left in the respective Strategy for the entire Term.

At the end of the 6-year Term you realized $534,968 from the 6-year Strategy, which is the same amount you would have realized had no withdrawal occurred, because no amounts were withdrawn from the 6-year Strategy.

In this example, the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy performed better than the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy because the Upside Participation Rate limited the increase more than the Cap did. The higher Upside Participation Rate for the S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy, along with the fact that none of the withdrawal was taken from the 6-year Strategy, led to it having a higher Strategy value at the end of a 6-year Term than the other Strategies had at the end of a 1-year Term.

Example B: Withdrawal When Index Rising Steadily – Trigger Strategies

This example assumes:
- your Contract was issued on or after June 7, 2024, so a Daily Charge rate of 0.95% applies;
- you allocate $50,000 to the S&P 500 1-Year 10% Buffer with Performance Trigger Strategy, and $50,000 to the S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy;
- the Trigger Rate for the initial Term of the S&P 500 1-Year 10% Buffer with Performance Trigger Strategy is 11%;
- the Trigger Rate for the initial Term of the S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy is 8%;
- the S&P 500 is 1000 on the Term start date;
- you request a $10,000 withdrawal on Day 146 when the Daily Value Percentage is 4.22% for the S&P 500 1-Year 10% Buffer with Performance Trigger Strategy and 3.79% for the S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy;
- you do not take any other withdrawals during the initial Term;
- the withdrawal is covered by the Free Withdrawal Allowance and therefore no Early Withdrawal Charges apply (If Early Withdrawal Charges did apply, the amounts realized at the end of the Term would be reduced by both the withdrawal and the amount of the Early Withdrawal Charge);
- the S&P 500 is 1130 on the 1-year Term end date; and
- you have not made a Performance Lock election.

Please note that even with a rising Index, the Daily Value Percentage may be negative or lower than the Index rise because the Net Option Price is not equal to the current Index price, and because the Daily Value Percentage calculation subtracts the Amortized Option Cost and Trading Cost from the Net Option Price.

Impact of $10,000 Withdrawal on Day 146 of Term	S&P 500 1-Year 10% Buffer with Performance Trigger Strategy	S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy
Investment Base at Term Start	$50,000	$50,000
Daily Charges through withdrawal date	$191	$191
Remaining Investment Base	$49,809	$49,809
Daily Value Percentage on Withdrawal Date	4.22%	3.79%
Dollar Amount of Increase on Withdrawal Date	$49,809 x .0422 = $2,102	$49,809 x .0379 = $1,888
Strategy Value before Withdrawal	$49,809 + $2,102 = $51,911	$49,809 + $1,888 = $51,697
Amount Withdrawn*	$5,010	$4,990
Withdrawal as Percentage of Strategy Value	$5,010 / $51,991 = 9.65%	$4,990 / $51,697 = 9.65%
Proportional Reduction in Investment Base	$49,809 x .0965 = $4,807	$49,809 x .0965 = $4,807
Investment Base after Withdrawal	$49,809 - $4,807 = $45,002	$49,809 - $4,891 = $45,002
Value at End of Term		
Investment Base after Withdrawal	$45,002	$45,002
Daily Charges From Withdrawal Date to Term End	$257	$257
Remaining Investment Base	$44,745	$44,745

Index at Term Start	1000	1000
Index at Term End	1130	1130
Rise in Index	13%	13%
Trigger Rate Activated?	Yes	Yes
Trigger Rate	11%	8%
Increase as a Percentage	11.00%	8.00%
Dollar Amount of Increase	$44,745 x .1100 = $4,922	$44,745 x .0800 = $3,580
Strategy Value at Term End	$44,745 + $4,922 = $49,667	$44,745 + $3,580 = $48,325

* Note: The withdrawal is taken proportionally from each Indexed Strategy, based on the ratio of that Strategy's value to the total value of all Indexed Strategies immediately before the withdrawal. In this example, the total value of all Indexed Strategies immediately before the withdrawal was $103,608 ($51,911 + $51,697). The S&P 500 1-Year 10% Buffer with Performance Trigger Strategy value was 50.10% of that total value ($51,911 / $103,608 = 50.10%), so 50.10% of the $10,000 withdrawal ($5,010) was taken from it. The S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy value was 49.90% of that total value ($51,697 / $103,608 = 49.90%), so 49.90% of the $10,000 withdrawal ($4,990) was taken from it.

In this example, you invested $50,000 in the S&P 500 1-Year 10% Buffer with Performance Trigger Strategy and $50,000 in the S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy. At the end of the 1-year Term you realized $107,992 from the Strategies ($10,000 withdrawal plus the Strategy values of $49,667 and $48,325 at the end of the 1-year Term). Had no withdrawal occurred, your 1-year Strategy values at the end of the Term would have totaled $108,460 ($50,000 minus $475 in Daily Charges, plus an 11.00% increase for the S&P 500 S&P 500 1-Year 10% Buffer with Performance Trigger Strategy, and $50,000 minus $475 in Daily Charges, plus an 8.00% increase for the S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy.)

The hypothetical Strategy value for the combined Strategies ($108,460) exceeds the amount realized ($107,992) because the portion of the Investment Base withdrawn from each Strategy did not earn the index increase (11.00% and 8.00% respectively) it would have earned if it had been left in the respective Strategy for the entire Term.

In this example, the S&P 500 1-Year 10% Buffer with Performance Trigger Strategy performed better than the S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy because the Trigger Rate for the S&P 500 1-Year 10% Buffer with Performance Trigger Strategy was higher than the Trigger Rate for the S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy.

Example C: Withdrawal When Index Falling Steadily – Downside Participation Rate and Buffer Strategies

This example assumes:
- your Contract was issued on or after June 7, 2024, so a Daily Charge rate of 0.95% applies;
- you allocate $50,000 to an S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy (or $50,000 to an S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy, either of which has a 50% Downside Participation Rate) and $50,000 to the S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy;
- the S&P 500 is 1000 on the Term start date;
- you request a $10,000 withdrawal on Day 146 when the Daily Value Percentage is -2.00% for the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy and -12.00% for the S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy;
- you do not take any other withdrawals during the initial Term;
- the withdrawal is covered by the Free Withdrawal Allowance and therefore no Early Withdrawal Charges apply (If Early Withdrawal Charges did apply, the amounts realized at the end of the Term would be reduced by both the withdrawal and the amount of the Early Withdrawal Charge);
- the S&P 500 is 800 on the 1-year Term end date and the 6-year Term end date; and
- you have not made a Performance Lock election.

Please note that the Daily Value Percentage may be more negative than the fall in the Index because the Net Option Price is not equal to the current Index price, and because the Daily Value Percentage calculation subtracts the Amortized Option Cost and Trading Cost from the Net Option Price.

Impact of $10,000 Withdrawal on Day 146 of Term	S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy	S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy
Investment Base at Term Start	$50,000	$50,000
Daily Charges through withdrawal date	$191	$191
Remaining Investment Base	$49,809	$49,809
Daily Value Percentage on Withdrawal Date	-2%	-12%
Dollar Amount of Decrease on Withdrawal Date	$49,809 x -.02 = $996	$49,809 x -.12 = $5,977
Strategy Value before Withdrawal	$49,809 - $996 = $48,813	$49,809 - $5,977 = $43,832
Amount Withdrawn*	$10,000	$0
Withdrawal as Percentage of Strategy Value	$10,000 / $48,813 = 20.49%	$0/ $43,832 = 0%
Proportional Reduction in Investment Base	$49,809 x .2047 = $10,206	$49,809 x .0 = $0

Investment Base after Withdrawal	$49,809 - $10,206 = $39,603	$49,809 - $0 = $49,809
Value at End of Term		
Investment Base after Withdrawal	$39,603	$49,809
Daily Charges From Withdrawal Date to Term End	$226	$2,593
Remaining Investment Base	$39,377	$47,216
Index at Term Start	1000	1000
Index at Term End	800	800
Fall in Index	20%	20%
Downside Participation Rate	50%	n/a
Buffer	n/a	10%
Decrease as a Percentage	-20% x 50% = 10.00%	-20% - 10% = 10.00%
Dollar Amount of Decrease	$39,377 x .1000 = $3,938	$47,216 x .1000 = $4,722
Strategy Value at Term End	$39,377 - $3,938 = $35,439	$47,216 - $4,722 = $42,494

* Note: The withdrawal is taken proportionally from Indexed Strategies having the shortest Term, based on the ratio of that Strategy's value to the total value of all Indexed Strategies having the same Term length immediately before the withdrawal. This means the withdrawal will be taken proportionally from Indexed Strategies with 1-year Terms, and then proportionally from Indexed Strategies with 2-year Terms, and then proportionally from Indexed Strategies with 3-year Terms, and finally from Indexed Strategies having 6-year Terms. In this example, only one Indexed Strategy had a 1-year Term, so 100% of the $10,000 withdrawal was taken from it. A withdrawal would only be taken from the S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy value when no amounts remain in Indexed Strategies with a 1-year Term, 2-year Term, or 3-year Term. For Contracts issued in Missouri, amounts taken from Indexed Strategies will be proportional without regard to Term length.

In this example, you invested $50,000 in the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy and $50,000 in the S&P 500 6-Year Buffer with Upside Participation Rate Strategy. At the end of the 1-year Term you realized $45,439 ($10,000 withdrawal plus the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy value of $35,439 at the end of the 1-year Term). Had no withdrawal occurred, your Strategy value at the end of the 1-year Term would have totaled $44,573 ($50,000 minus $475 in Daily Charges, minus 10% decrease for the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy).

At the end of the 6-year Term you realized $42,494, which is the same amount you would have realized had no withdrawal occurred, because no amounts were withdrawn from the 6-year Strategy.

The amount realized at the end of the 1-year Term for the S&P 500 1-year 50% Downside Participation Rate with Cap Strategy ($45,439) exceeds the hypothetical Strategy value at the end of the 1-year Term ($44,573) because the entire $10,000 withdrawal was taken from the 1-year Strategy, and that portion was not subject to the 10% decrease it would have suffered if it had been left in the Strategy for the entire 1-year Term.

The Strategy value for the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy at the end of a 1-year term ($35,439) is lower than the S&P 500 6-Year Buffer with Upside Participation Rate Strategy at the end of a 6-year Term ($43,013), because the entire $10,000 withdrawal was taken from the 1-year Strategy.

Example D: Withdrawal When Index Falling Steadily – Trigger Strategies

This example assumes:
- your Contract was issued on or after June 7, 2024, so a Daily Charge rate of 0.95% applies;
- you allocate $50,000 to the S&P 500 1-Year 10% Buffer with Performance Trigger Strategy, and $50,000 to the S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy;
- the Trigger Rate for the initial Term of the S&P 500 1-Year 10% Buffer with Performance Trigger Strategy is 11%;
- the Trigger Rate for the initial Term of the S&P 500 1-Year 10% Buffer with Performance Trigger Strategy is 8%;
- the S&P 500 is 1000 on the Term start date;
- you request a $10,000 withdrawal on Day 146 when the Daily Value Percentage is -2.31% for the S&P 500 1-Year 10% Buffer with Performance Trigger Strategy and -0.74% for the S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy;
- you do not take any other withdrawals during the initial Term;
- the withdrawal is covered by the Free Withdrawal Allowance and therefore no Early Withdrawal Charges apply (If Early Withdrawal Charges did apply, the amounts realized at the end of the Term would be reduced by both the withdrawal and the amount of the Early Withdrawal Charge);
- the S&P 500 is 800 on the 1-year Term end date; and
- you have not made a Performance Lock election.

Please note that the Daily Value Percentage may be more negative than the fall in the Index because the Net Option Price is not equal to the current Index price, and because the Daily Value Percentage calculation subtracts the Amortized Option Cost and Trading Cost from the Net Option Price.

Impact of $10,000 Withdrawal on Day 146 of Term	S&P 500 1-Year 10% Buffer with Performance Trigger Strategy	S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy
Investment Base at Term Start	$50,000	$50,000
Daily Charges through Withdrawal Date	$191	$191
Remaining Investment Base	$49,809	$49,809
Daily Value Percentage on Withdrawal Date	-2.31%	-0.74%
Dollar Amount of Decrease on Withdrawal Date	-($49,809 x -.0231) = $1,151	-($49,809 x -.0074) = $369
Strategy Value before Withdrawal	$49,809 - $1,151 = $48,658	$49,809 - $369 = $49,440
Amount Withdrawn*	$4,960	$5,040
Withdrawal as Percentage of Strategy Value	$4,960 / $48,658 = 10.19%	$5,040 / $49,440 = 10.19%
Proportional Reduction in Investment Base	$49,809 x .1019 = $5,076	$49,809 x .1019 = $5,076
Investment Base after Withdrawal	$49,809 - $5,076 = $44,733	$49,809 - $5,076 = $44,733
Value at End of Term		
Investment Base after Withdrawal	$44,733	$44,733
Daily Charges from Withdrawal Date to Term End	$255	$255
Remaining Investment Base	$44,478	$44,478
Index at Term Start	1000	1000
Index at Term End	800	800
Fall in Index	20%	20%
Buffer	10%	10%
Decrease as a Percentage	20% - 10% = 10.00%	20% - 10% = 10.00%
Dollar Amount of Decrease	$44,478 x .1000 = $4,448	$44,478 x .1000 = $4,448
Strategy Value at Term End	$44,478 - $4,448 = $40,030	$44,478 - $4,448 = $40,030

*   Note: The withdrawal is taken proportionally from each Indexed Strategy, based on the ratio of that Strategy's value to the total value of all Indexed Strategies immediately before the withdrawal. In this example, the total value of all Indexed Strategies immediately before the withdrawal was $98,098 ($48,658 + $49,440). The S&P 500 1-Year 10% Buffer with Performance Trigger Strategy value was 49.60% of that total value ($48,658 / $98,098 = 49.60%), so 49.60% of the $10,000 withdrawal ($4,960) was taken from it. The S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy value was 50.40% of that total value ($49,440 / $98,098 = 49.90%), so 50.40% of the $10,000 withdrawal ($5,040) was taken from it.

In this example, you invested $50,000 in the S&P 500 1-Year 10% Buffer with Performance Trigger Strategy and $50,000 in the S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy. At the end of the 1-year Term you realized $90,060 from the Strategies ($10,000 withdrawal plus the Strategy values of $40,030 and $40,030 at the end of the 1-year Term). Had no withdrawal occurred, your 1-year Strategy values at the end of the Term would have totaled $89,146 ($50,000 minus $475 in Daily Charges, minus a 10.00% decrease for the S&P 500 S&P 500 1-Year 10% Buffer with Performance Trigger Strategy, and $50,000 minus $475 in Daily Charges, minus a 10.00% decrease for the S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy.)

The amount realized at the end of the 1-year Term for the combined Strategies ($90,060) exceeds the hypothetical Strategy value ($89,146), because the $10,000 that was withdrawn was not subject to the full 10% decrease it would have suffered if it had been left in the Strategies for the entire 1-year Term.

In this example, the S&P 500 1-Year 10% Buffer with Performance Trigger Strategy and the S&P 500 1-Year 10% Buffer with Dual Performance Trigger Strategy performed identically because they are based on the same Index and the decrease in that Index was greater than 10%. Therefore, the 10% Buffer came into play for both Strategies.

Example E: Withdrawal When Index Rises - Downside Participation Rate with Cap Strategy

This example assumes:
- your Contract was issued on or after June 7, 2024, so a Daily Charge rate of 0.95% applies;
- you allocate your entire $50,000 Purchase Payment to the S&P 500 1-year 50% Downside Participation Rate with Cap Strategy when the S&P 500 is 1900;
- the Contract Effective Date and the Term start date are both April 6, 2025;
- an Early Withdrawal Charge of 9% applies in the initial Term;
- the Cap for the initial Term of that Strategy is 12%;
- you request a $10,000 withdrawal on August 1, 2025 when the Daily Value Percentage is 1%;
- you instruct us to pay the entire $10,000 to you, which results in an additional withdrawal for the Early Withdrawal Charge;

- you do not take any other withdrawals during the initial Term;
- the S&P 500 is 2033 on the Term end date of April 6, 2026; and
- you have not made a Performance Lock election.

Term Start Date	April 6, 2025	
Strategy Value	$ 50,000	See Footnote 1 below.
Investment Base	$ 50,000	See Footnote 1 below.
Cap for Term	12%	See Footnote 2 below.
Index	1900	
Withdrawal Date	**August 30, 2025**	
Daily Charges through Withdrawal Date	$ 191	See Footnote 3 below
Remaining Investment Base	$ 49,809	See Footnote 4 below
Daily Value Percentage on Withdrawal Date	1%	
Dollar Amount of Increase on Withdrawal Date	$ 498	See Footnote 5 below.
Strategy Value before Withdrawal	$ 50,307	See Footnote 6 below.
Amount of Withdrawal Requested	$ 10,000	
Free Withdrawal Allowance	$ 5,000	See Footnote 7 below.
Early Withdrawal Charge	$ 495	See Footnote 8 below.
Total Amount Withdrawn	$ 10,495	See Footnote 9 below.
Withdrawal as Percentage of Strategy Value	20.86%	See Footnote 10 below.
Proportional Reduction in Investment Base	$ 10,390	See Footnote 10 below.
Investment Base after Withdrawal	$ 39,419	See Footnote 11 below.
Strategy Value after Withdrawal	$ 39,812	See Footnote 12 below.
Term End Date	**April 6, 2026**	
Investment Base after Withdrawal	$ 39,419	See Footnote 11 below.
Daily Charges From Withdrawal Date to Term End	$ 225	See Footnote 13 below
Remaining Investment Base	$ 39,194	See Footnote 14 below
Index	2033	
Rise in Index	7.00%	See Footnote 15 below.
Increase as a Percentage	7.00%	See Footnote 16 below.
Dollar Amount of Increase	$ 2,744	See Footnote 16 below.
Strategy Value at Term End	$ 41,938	See Footnote 17 below.

Footnote 1. On the Term start date, the Strategy value is equal to the amount applied to the Strategy on the Term start date. The amount applied on the Term start date is also the beginning Investment Base.

Footnote 2. The Cap is the maximum positive net Index change for the Term taken into account to determine any increase at the end of a Term. In this example, the Cap is 12%, which means it will not affect the calculation of any increase unless the Index rises by more than 12%.

Footnote 3. The Daily Charge is the Investment Base from the prior day, multiplied by the Daily Charge Factor. The amount in the table is the sum of the daily charges deducted from the Investment Base from the first day of the Term to the withdrawal date.

>   Formula   Investment Base on the Term Start Date – (Investment Base on the Term Start Date x (1 – Daily Charge Factor) raised to a power equal to the number of days elapsed prior to withdrawal)

>   Calculation $50,000 – ($50,000 x (1 – 0.0000261515)[146]) = $150

Footnote 4. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

>   Formula   Beginning Investment Base – sum of Daily Charges since Term Start Date) – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base

>   Calculation $50,000 - $191 - $0 = $49,809

Footnote 5. When the Daily Value Percentage is positive, we use the following formula in calculating the Strategy value before the end of the Term.

>   Formula   Investment Base x Daily Value Percentage = dollar amount of increase

Calculation	$49,809 x 1% = $498

Footnote 6. In this example, the Daily Value Percentage is positive on the withdrawal date and you have not taken any withdrawals before that date. This means the Strategy value on the withdrawal date is the Investment Base plus the increase for the Daily Value Percentage on that date.

Formula	Investment Base + dollar amount of increase = Strategy value
Calculation	$49,809 + $498 = $50,307

Footnote 7. The Free Withdrawal Allowance (FWA) for the first Contract Year is 10% of the Purchase Payment. The FWA for each subsequent Contract Year is 10% of the Account Value as of the most recent Contract Anniversary.

Formula	Purchase Payment x 10% = FWA for first Contract Year
Calculation	$50,000 x 10% = $5,000

Footnote 8. The Early Withdrawal Charge that would apply to your withdrawal is equal to the amount subject to the charge multiplied by the Early Withdrawal Charge rate (EWC rate). The amount subject to the charge includes the charge itself. The amount subject to the charge does not include the FWA. The EWC rate depends on the Contract Year. In this example, the withdrawal occurs in the first Contract Year, when the EWC rate is 9%. The Early Withdrawal Charge rate declines after each of the first six Contract Years. There is no Early Withdrawal Charge after Contract Year 6.

Formula	[(Requested withdrawal – FWA) x EWC rate] / (1.00 – EWC rate) = Early Withdrawal Charge
Calculation	[($10,000 - $5,000) x 9%] / (1.00 – 0.09) = $5,000 x 9% / 0.91 = $450 / 0.91 = $495

Footnote 9. When you request a withdrawal, you can instruct us to pay you the amount you requested. If an Early Withdrawal Charge applies in that situation, we also withdraw an amount equal to the charge. This means that the total amount withdrawn from your Contract is equal to the amount you requested plus the applicable Early Withdrawal Charge.

Formula	Requested withdrawal + Early Withdrawal Charge = total amount withdrawn
Calculation	$10,000 + $495 = $10,495

Footnote 10. When you take a withdrawal, the deduction from the Investment Base taken is proportional to the reduction in the value of the Indexed Strategy due to the withdrawal. If the Strategy value on the withdrawal date is higher than the Investment Base, the proportional reduction in the Investment Base will be less than the total amount withdrawn.

Formula	Total amount withdrawn / Strategy value before withdrawal = withdrawal as percentage of Strategy value
Calculation	$10,495 / $50,307 = 20.86%
Formula	Investment Base before withdrawal x withdrawal as percentage of Strategy value = proportional reduction in Investment Base
Calculation	$49,809 x 20.86% = $10,390

Footnote 11. On the withdrawal date after the withdrawal, the Investment Base is equal to the Investment Base before the withdrawal minus the proportional reduction in the Investment Base for the withdrawal.

Formula	Investment Base before withdrawal – proportional reduction in Investment Base for withdrawal = Investment Base after withdrawal
Calculation	$49,809 - $10,390 = $39,419

Footnote 12. On the withdrawal date, the Strategy value after the withdrawal is equal to Strategy value before the withdrawal minus the total amount withdrawn.

Formula	Strategy value before withdrawal – total amount withdrawn = Strategy value after withdrawal
Calculation	$50,307 - $10,495 = $39,812

Footnote 13. The Daily Charge is the Investment Base from the prior day, multiplied by the Daily Charge Factor. The amount in the table is the sum of the daily charges deducted from the Investment Base from the withdrawal date to the last day of the Term.

Formula	Investment Base after Previous Withdrawal – (Investment Base after Previous Withdrawal x (1 – Daily Charge Factor) raised to a power equal to the Number of Days Elapsed Since Previous Withdrawal) = Daily Charges
Calculation	$39,419 – ($39,419 x (1 – 0.0000261515)^{219}) = $225

Footnote 14. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula	Beginning Investment Base – sum of Daily Charges since Term Start Date) – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base
Calculation	$50,000 – ($191 + $225) - $10,390 = $39,194

Footnote 15. The rise in the Index on the Term end date is equal to the percentage change in the Index measured from the Term start date to the Term end date.

Formula	(Index on Term end date – Index on Term start date) / Index on Term start date = rise in Index
Calculation	(2033 – 1900) / 1900 = 7.00%

Footnote 16. When the Index has risen for the Term, we use the following formulas to calculate the increase for a 50% Downside Participation Rate with Cap Strategy.

Formula	If the rise in Index is less than Cap, then rise in Index = increase percentage based on rise in Index
Calculation	7% rise in Index < 12% cap, so increase percentage = 7.00%
Formula	Investment Base x increase percentage based on rise in Index = dollar amount of increase based on rise in Index
Calculation	$39,194 x 7.00% = $2,744

Footnote 17. In this example, there has been a rise in the Index for the Term and you have taken a $10,000 withdrawal during the Term. This means the Strategy value at the end of the Term is the Investment Base on the Term end date plus the increase for the rise in the Index for the Term.

Formula	Investment Base on Term end date + dollar amount of increase based on rise in Index = Strategy value on Term end date
Calculation	$39,194 + $2,744 = $41,938

Example F: Withdrawal When Index Falls - Downside Participation Rate with Cap Strategy

This example assumes:
- your Contract was issued on or after June 7, 2024, so a Daily Charge rate of 0.95% applies;
- you allocate your entire $50,000 Purchase Payment to the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy when the S&P 500 is 1900;
- the Contract Effective Date and the Term Start Date are both April 6, 2025;
- an Early Withdrawal Charge of 9% applies in the initial Term;
- you request a $10,000 withdrawal on August 30, 2025 when the Daily Value Percentage is -6%;
- you instruct us to pay the entire $10,000 to you, which results in an additional withdrawal for the Early Withdrawal Charge;
- you do not take any other withdrawals during the initial Term;
- the S&P 500 is 1748 on the Term end date of April 6, 2026; and
- you have not made a Performance Lock election

Term Start Date	April 6, 2025	
Strategy Value	$50,000	See Footnote 1 below.
Investment Base	$50,000	See Footnote 1 below.
Downside Participation Rate	50%	See Footnote 2 below.
Index	1900	
Withdrawal Date	**August 30, 2025**	
Daily Charges through Withdrawal Date	$191	See Footnote 3 below.
Remaining Investment Base	$49,809	See Footnote 4 below.
Daily Value Percentage on Withdrawal Date	-6%	
Dollar Amount of Decrease on Withdrawal Date	$2,989	See Footnote 5 below.
Strategy Value before Withdrawal	$46,820	See Footnote 6 below.
Amount of Withdrawal Requested	$10,000	
Free Withdrawal Allowance	$5,000	See Footnote 7 below.

Term Start Date	April 6, 2025	
Early Withdrawal Charge	$495	See Footnote 8 below.
Total Amount Withdrawn	$10,495	See Footnote 9 below.
Withdrawal as Percentage of Strategy Value	22.42%	See Footnote 10 below.
Proportional Reduction in Investment Base	$11,167	See Footnote 10 below.
Investment Base after Withdrawal	$38,642	See Footnote 11 below.
Strategy Value after Withdrawal	$36,325	See Footnote 12 below.
Term End Date	April 6, 2026	
Daily Charges From Withdrawal Date to Term End	$221	See Footnote 13 below.
Remaining Investment Base	$38,421	See Footnote 14 below.
Index	1748	
Fall in Index	8.00%	See Footnote 15 below.
Decrease as a Percentage	4.00%	See Footnote 16 below.
Dollar Amount of Decrease	$1,537	See Footnote 16 below.
Strategy Value at Term End	$36,884	See Footnote 17 below.

Footnote 1. On the Term start date, the Strategy value is equal to the amount applied to the Strategy on the Term start date. The amount applied on the Term start date is also the beginning Investment Base.

Footnote 2. The Downside Participation Rate is your share of any net fall in the Index for the Term taken into account to determine any decrease at the end of the Term. For each Term of each Downside Participation Rate Strategy that we currently offer with this Contract, the Downside Participation Rate is 50%. The Downside Participation Rate will not change from Term to Term.

Footnote 3. The Daily Charge is the Investment Base from the prior day, multiplied by the Daily Charge Factor. The amount in the table is the sum of the daily charges deducted from the Investment Base from the first day of the Term to the withdrawal date.

Formula	Investment Base on the Term Start Date – (Investment Base on the Term Start Date x (1 – Daily Charge Factor) raised to a power equal to the number of days elapsed prior to withdrawal)
Calculation	$50,000 - ($50,000 x (1 - 0.0000261515)^{146}) = $191

Footnote 4. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula	Beginning Investment Base – sum of Daily Charges since Term Start Date) – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base
Calculation	$50,000 - $191 - $0 = $49,809

Footnote 5. When the Daily Value Percentage is negative, we use the following formula in calculating the Strategy value before the end of the Term.

Formula	(Investment Base x Daily Value Percentage) = dollar amount of decrease
Calculation	($49,8090 x -6%) = -$2,989

Footnote 6. In this example, the Daily Value Percentage is negative on the withdrawal date and you have not taken any withdrawals before that date. This means the Strategy value on the withdrawal date is the Investment Base, minus the decrease for the Daily Value Percentage on that date.

Formula	Investment Base – dollar amount of decrease = Strategy value
Calculation	$49,809 - $2,989 = $46,820

Footnote 7. The Free Withdrawal Allowance (FWA) for the first Contract Year is 10% of the Purchase Payment. The FWA for each subsequent Contract Year is 10% of the Account Value as of the most recent Contract Anniversary.

Formula	Purchase Payment x 10% = FWA for first Contract Year
Calculation	$50,000 x 10% = $5,000

Footnote 8. The Early Withdrawal Charge that would apply to your withdrawal is equal to the amount subject to the charge multiplied by the Early Withdrawal Charge rate (EWC rate). The amount subject to the charge includes the charge itself. The amount subject to the charge does not include the FWA. The EWC rate depends on the Contract Year. In this example, the withdrawal occurs in the first Contract Year, when the EWC rate is 9%. The Early Withdrawal Charge rate declines after each of the first six Contract Years. There is no Early Withdrawal Charge after Contract Year 6.

Formula	[(Requested withdrawal - FWA) x EWC rate] / (1.00 - EWC rate) = Early Withdrawal Charge
Calculation	[($10,000 - $5,000) x 9%] / (1.00 - 0.09) = $5,000 x 9% / 0.91 = $450 / 0.91 = $495

Footnote 9. When you request a withdrawal, you can instruct us to pay you the amount you requested. If an Early Withdrawal Charge applies in that situation, we also withdraw an amount equal to the charge. This means that the total amount withdrawn from your Contract is equal to the amount you requested plus the applicable Early Withdrawal Charge.

Formula	Requested withdrawal + Early Withdrawal Charge = total amount withdrawn
Calculation	$10,000 + $495 = $10,495

Footnote 10. When you take a withdrawal, the deduction from the Investment Base taken is proportional to the reduction in the value of the Indexed Strategy due to the withdrawal. If the Strategy value on the withdrawal date is less than the Investment Base, the proportional reduction in the Investment Base will be more than the total amount withdrawn.

Formula	total amount withdrawn / Strategy value before withdrawal = withdrawal as percentage of Strategy value
Calculation	$10,495 / $46,820 = 22.42%
Formula	Investment Base before withdrawal x withdrawal as percentage of Strategy value = proportional reduction in Investment Base
Calculation	$49,809 x 22.42% = $11,167

Footnote 11. On the withdrawal date, the Investment Base after the withdrawal is equal to the Investment Base before the withdrawal minus the proportional reduction in the Investment Base for the withdrawal.

Formula	Investment Base before withdrawal - proportional reduction in Investment Base for withdrawal = Investment Base after withdrawal
Calculation	$49,809 - $11,167 = $38,642

Footnote 12. On the withdrawal date, the Strategy value after the withdrawal is equal to the Strategy value before the withdrawal minus the total amount withdrawn.

Formula	Strategy value before withdrawal - total amount withdrawn = Strategy value after withdrawal
Calculation	$46,820 - $10,495 = $36,325

Footnote 13. The Daily Charge is the Investment Base from the prior day, multiplied by the Daily Charge Factor. The amount in the table is the sum of the daily charges deducted from the Investment Base from the withdrawal date to the last day of the Term.

Formula	Investment Base after Previous Withdrawal – (Investment Base after Previous Withdrawal x (1 – Daily Charge Factor) raised to a power equal to the Number of Days Elapsed Since Previous Withdrawal) = Daily Charges
Calculation	$38,642 - ($38,642 x (1 - 0.0000261515)^{219}) = $221

Footnote 14. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula	Beginning Investment Base – sum of Daily Charges since Term Start Date) – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base
Calculation	$50,000 – ($191 + $221) - $11,167 = $38,421

Footnote 15. The fall in the Index on the Term end date is equal to the negative of the percentage change in the Index measured from the Term start date to the Term end date.

Formula	(Index on Term end date - Index on Term start date) / Index on Term start date
Calculation	(1748 - 1900) / 1900 = -8.00%

Footnote 16. When the Index has fallen for the Term, we use the following formula to calculate the decrease.

Formula	Fall in Index x Downside Participation Rate = decrease as a percentage based on fall in Index
Calculation	8.00% x 50% = 4.00%

Formula	Investment Base x decrease percentage based on fall in Index = dollar amount of decrease based on fall in Index
Calculation	$38,421 x 4.00% = $1,537

Footnote 17. In this example, there has been a fall in the Index for the Term and you have taken a $10,000 withdrawal during the Term. This means the Strategy value at the end of the Term is the Investment Base on the Term end date minus the decrease for the fall in the Index for the Term.

Formula	Investment Base on Term end date – dollar amount of decrease based on fall in Index = Strategy value on Term end date
Calculation	$38,421 - $1,537 = $36,884

Example G: Amount Available for a Withdrawal When Index Rises Less Than Daily Charge Rate - Cap and Upside Participation Rate Strategies

The following example is intended to help you understand the amount that may be available for withdrawal when the Index rises at a rate lower than the amount of the Daily Charge over a Term. In such a scenario, Strategy values will be lower at the end of a Term than they were at the beginning of the Term, despite the fact that the Index rose over that period. This scenario will not apply to Trigger Strategies because the highest Daily Charge (0.95%) is lower than the lowest possible Trigger Rate (1.00%).

This example assumes:
- your Contract was issued on or after June 7, 2024, so a Daily Charge rate of 0.95% applies;
- you allocate a $50,000 Purchase Payment to the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy when the S&P 500 is 1000;
- you allocate a $50,000 Purchase Payment to the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy when the S&P 500 is 1000;
- the Contract Effective Date and the Term Start Date are both April 6, 2025;
- you do not take any withdrawals during the initial Term; and
- the S&P 500 is 1005 on the Term end date of April 6, 2026.

Term Start Date - April 6, 2025	S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy	S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy	
Strategy Value	$50,000	$50,000	See Footnote 1 below.
Investment Base	$50,000	$50,000	See Footnote 1 below.
Cap for Term	10%	n/a	See Footnote 2 below.
Upside Participation Rate for Term	n/a	75%	See Footnote 3 below.
Index	1000	1000	
Term End Date - April 6, 2026			
Daily Charges From Term Start Date to Term End Date	$475	$475	See Footnote 4 below.
Remaining Investment Base	$49,525	$49,525	See Footnote 5 below.
Index at Term Start Date	1000	1000	
Index at Term End Date	1005	1005	
Rise in Index	0.50%	0.50%	See Footnote 6 below.
Increase as a Percentage	0.500%	0.375%	See Footnote 7 below.
Dollar Amount of Increase	$248	$186	See Footnote 8 below.
Strategy Value at Term End	$49,773	$49,711	See Footnote 9 below.

Footnote 1. On the Term start date, the Strategy value is equal to the amount applied to the Strategy on the Term start date. The amount applied on the Term start date is also the beginning Investment Base.

Footnote 2. The Cap is the maximum positive net Index change for the Term taken into account to determine any increase at the end of a Term. In this example, the Cap is 10%, which means it will not affect the calculation of any increase unless the Index rises by more than 10%.

Footnote 3. The Upside Participation Rate is your share of any rise in the Index for the Term taken into account to determine the Strategy value at the end of the Term. In this example, the Upside Participation Rate is 75%, which means the calculation of any increase will include 75% of any Index rise.

Footnote 4. When no withdrawals are taken over the course of a Term, the Daily Charges through the Term End Date are equal to the Investment Base on the Term Start Date times the annual rate at which the Daily Charge compounds.

Formula	Investment Base on Term Start Date x annual rate
Calculation	$50,000 x 0.95% = $475

Footnote 5. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula	Beginning Investment Base – sum of Daily Charges since Term Start Date – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base
Calculation	$50,000 - $475 - $0 = $49,525

Footnote 6. The Rise in Index on the Term End Date is equal to the percentage change in the Index Value measured from the Term Start Date to the Term End Date.

Formula	(Index Value on Term End Date - Index Value on Term Start Date) / Index Value on Term Start Date
Calculation	(1005 - 1000) / 1000 = 0.50%

Footnote 7.

When the Index has risen for the Term, we use the following formulas in calculating the increase for the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy.

Formula	If the rise in Index is less than Cap, then rise in Index = increase percentage based on rise in Index
Calculation	0.50% rise in Index < 10% cap, so increase percentage = 0.50%

When the Index has risen for the Term, we use the following formulas to calculate the increase for a Strategy with an Upside Participation Rate.

Formula	Rise in Index for Term x Upside Participation Rate for Term = Increase as a Percentage
Calculation	0.50% x 75% = 0.375%

Footnote 8.

When the Index has risen for the Term, we use the following formula to calculate the increase.

Formula	Investment Base x increase percentage based on rise in Index = dollar amount of increase based on rise in Index

Calculation

S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy:	$49,525 x 0.50% = $248
S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$49,525 x 0.375% = $186

Footnote 9. In this example, there has been a rise in the Index for the Term. This means the Strategy value at the end of the Term is the Investment Base on the Term end date plus the increase for the rise in the Index for the Term.

Formula	Investment Base on Term end date + dollar amount of increase based on rise in Index = Strategy value on Term end date

Calculation

S&P 500 1-Year 50% Downside Participation Rate with Cap:	$49,525 + $248 = $49,773
S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$49,525 + $186 = $49,711

Example H: Amount Available for a Withdrawal After 6 Years When Index Rises Steadily – Cap and Upside Participation Rate Strategies

The following example is intended to help you understand the amount that may be available for withdrawal for Indexed Strategies that have different Term lengths after a six-year period when the Index rises at a steady rate. In many market conditions, at the end of six years an Indexed Strategy with a six-year Term will outperform Indexed Strategies with shorter Terms that use the same Index.

This example assumes:
- your Contract was issued on or after June 7, 2024, so a Daily Charge rate of 0.95% applies;
- you allocate a $50,000 Purchase Payment to the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy when the S&P 500 is 1000.00, and the Cap is 10%;

- you allocate a $50,000 Purchase Payment to the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy when the S&P 500 is 1000, and the Upside Participation Rate is 75%;

- you allocate a $50,000 Purchase Payment to the S&P 500 6-Year Term 10% Buffer with Upside Participation Rate when the S&P 500 is 1000.00, and the Upside Participation Rate is 130%;

- the Contract Effective Date and the Term start date are both April 6, 2025, so that the Contract Years and Term Years align;

- you do not take any withdrawals during the first six Contract Years;

- amounts allocated to the 1-year strategies are rolled over into the same Indexed Strategy at the end of each 1-year Term, and the Caps and Upside Participation Rates do not change; and

- on April 6, 2026, the S&P 500 is at 1040.00 and the 6-year Strategy Daily Value Percentage is -2.30%; on April 6, 2027, the S&P 500 is at 1081.60 and the 6-year Strategy Daily Value Percentage is 4.60%; on April 6, 2028, the S&P 500 is at 1124.86 and the 6-year Strategy Daily Value Percentage is 11.70%; on April 6, 2029, the S&P 500 is at 1169.86 and the 6-year Strategy Daily Value Percentage is 19.10%; on April 6, 2030, the S&P 500 is at 1216.65 and the 6-year Strategy Daily Value Percentage is 26.70%; and on April 6, 2031, the S&P 500 is at 1265.32; and

- you have not made a Performance Lock election

	S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy	S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy	S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy	
Year 1				
Strategy Value - April 6, 2025	$50,000	$50,000	$50,000	See Footnote 1 below.
Investment Base - April 6, 2025	$50,000	$50,000	$50,000	See Footnote 1 below.
Daily Charges for Period	$475	$475	$475	See Footnote 2 below.
Remaining Investment Base - April 6, 2026	$49,525	$49,525	$49,525	See Footnote 3 below.
Rise in Index for Period	4.00%	4.00%	n/a	See Footnote 4 below.
Cap for Period	10%	n/a	n/a	See Footnote 5 below.
Participation Rate for Period	n/a	75%	n/a	See Footnote 6 below.
Increase as a Percentage	4.00%	3.00%	-2.30%	See Footnote 7 below.
Dollar Amount of Increase	$1,981	$1,486	-$1,139	See Footnote 8 below.
Strategy Value – April 6, 2026	$51,506	$51,011	$48,386	See Footnote 9 below.
Year 2				
Investment Base – April 6, 2026	$51,506	$51,011	$49,525	See Footnote 9 below.
Daily Charges for Period	$489	$485	$470	See Footnote 10 below.
Remaining Investment Base – April 6, 2027	$51,017	$50,526	$49,055	See Footnote 11 below.
Rise in Index for Period	4.00%	4.00%	n/a	See Footnote 12 below.
Cap for Period	10%	n/a	n/a	See Footnote 13 below.
Participation Rate for Period	n/a	75%	n/a	See Footnote 14 below.
Increase as a Percentage	4.00%	3.00%	4.60%	See Footnote 15 below.
Dollar Amount of Increase	$2,041	$1,516	$2,257	See Footnote 16 below.
Strategy Value - April 6, 2027	$53,058	$52,042	$51,312	See Footnote 17 below.
Year 3				
Investment Base - April 6, 2027	$53,058	$52,042	$49,055	See Footnote 17 below.
Daily Charges for Period	$504	$494	$466	See Footnote 18 below.
Remaining Investment Base - April 6, 2028	$52,554	$51,548	$48,589	See Footnote 19 below.
Rise in Index for Period	4.00%	4.00%	n/a	See Footnote 20 below.
Cap for Period	10%	n/a	n/a	See Footnote 21 below.
Participation Rate for Period	n/a	75%	n/a	See Footnote 22 below.
Increase as a Percentage	4.00%	3.00%	11.70%	See Footnote 23 below.
Dollar Amount of Increase	$2,102	$1,546	$5,685	See Footnote 24 below.
Strategy Value – April 6, 2028	$54,656	$53,094	$54,274	See Footnote 25 below.
Year 4				
Investment Base – April 6, 2028	$54,656	$53,094	$48,589	See Footnote 25 below.
Daily Charges for period	$519	$504	$462	See Footnote 26 below.
Remaining Investment Base – April 6, 2029	$54,137	$52,590	$48,127	See Footnote 27 below.
Rise in Index for Period	4.00%	4.00%	n/a	See Footnote 28 below.

	S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy	S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy	S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy	
Cap for Period	10%	n/a	n/a	See Footnote 29 below.
Participation Rate for Period	n/a	75%	n/a	See Footnote 30 below.
Increase as a Percentage	4.00%	3.00%	19.10%	See Footnote 31 below.
Dollar Amount of Increase	$2,165	$1,578	$9,192	See Footnote 32 below.
Strategy Value – April 6, 2029	$56,302	$54,168	$57,319	See Footnote 33 below.
Year 5				
Investment Base – April 6, 2029	$56,302	$54,168	$48,127	See Footnote 33 below.
Daily Charges for Period	$535	$515	$457	See Footnote 34 below.
Remaining Investment Base – April 6, 2030	$55,767	$53,653	$47,670	See Footnote 35 below.
Rise in Index for Period	4.00%	4.00%	n/a	See Footnote 36 below.
Cap for Period	10%	n/a	n/a	See Footnote 37 below.
Participation Rate for Period	n/a	75%	n/a	See Footnote 38 below.
Increase as a Percentage	4.00%	3.00%	26.70%	See Footnote 39 below.
Dollar Amount of Increase	$2,231	$1,610	$12,728	See Footnote 40 below.
Strategy Value – April 6, 2030	$57,998	$55,263	$60,398	See Footnote 41 below.
Year 6				
Investment Base – April 6, 2030	$57,998	$55,263	$47,670	See Footnote 41 below.
Daily Charges for Period	$551	$525	$453	See Footnote 42 below.
Remaining Investment Base – April 6, 2031	$57,447	$54,738	$47,217	See Footnote 43 below.
Rise in Index for Period	4.00%	4.00%	26.53%	See Footnote 44 below.
Cap for Period	10%	n/a	n/a	See Footnote 45 below.
Participation Rate for Period	n/a	75%	130%	See Footnote 46 below.
Increase as a Percentage	4.00%	3.00%	34.49%	See Footnote 47 below.
Dollar Amount of Increase	$2,298	$1,642	$16,285	See Footnote 48 below.
Strategy Value - April 6, 2031	$59,745	$56,380	$63,502	See Footnote 49 below.

Footnote 1. At the beginning of the first Term, the Strategy value is equal to the amount applied to the Strategy on the Term start date. The amount applied on the Term start date is also the beginning Investment Base.

Footnote 2. When no withdrawals are taken over the course of a 1-year Term, the Daily Charges through the Term are equal to the Investment Base on the Term start date times the annual rate at which the Daily Charge compounds. When no withdrawals are taken over the course of a year that is part of a 6-year Term, the Daily Charges for the year are equal to the Investment Base at the Term start date or the most recent Term start date anniversary times the annual rate at which the Daily Charge compounds.

Formula   Investment Base on Term start date or anniversary x annual rate

Calculation $50,000 x 0.95% = $475 for all Indexed Strategies

Footnote 3. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula   Beginning Investment Base – sum of Daily Charges since beginning of year – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base

Calculation $50,000 - $475 - $0 = $49,525 for all Indexed Strategies

Footnote 4. For the 1-year Strategies, the value at the first Term is based on the rise or fall of the Index for the Term. The rise or fall in the Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

Formula   (Index Value on Term end date - Index Value on Term start date) / Index Value on Term start date

Calculation   (1040.00 – 1000.00) / 1000.00 = 4.00%

For the 6-year Strategy, the value at the end of Year 1 is based on the Daily Value Percentage, and not the rise or fall in the Index.

Footnote 5. The Cap is the maximum positive net Index change for a Term taken into account to determine any increase at the end of the Term. In this example, the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy has a Cap of 10% for the first Term, which means it will not affect the calculation of any increase unless the Index rises by more than 10% for the Term. The S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy and the S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy do not have a Cap.

Footnote 6. The Upside Participation Rate is your share of any rise in the Index for a Term taken into account to determine the Strategy value at the end of the Term. In this example, the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy has an Upside Participation Rate of 75% for the first Term, which means the calculation of any increase will include 75% of any Index rise for the Term. The S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy did not complete a Term in Year 1, so no Upside Participation Rate will be applied when determining the Strategy value at the end of Year 1. The S&P 500 1-year 50% Downside Participation Rate with Cap Strategy does not have an Upside Participation Rate.

Footnote 7.

When the Index has risen for a Term, we use the following formulas to calculate the increase for the 1-year Strategy with a Cap.

Formula	If the rise in Index is less than Cap, then rise in Index = increase percentage based on rise in Index
Calculation	4.0% rise in Index < 10% cap, so increase percentage = 4.0%

When the Index has risen for a Term, we use the following formulas to calculate the increase for the 1-year Strategy with an Upside Participation Rate.

Formula	Rise in Index for Term x Upside Participation Rate for Term = Increase as a Percentage
Calculation	4.0% x 75% = 3.0%

For the S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy, the Upside Participation Rate only applies at the end of the 6-year Term. At the end of Year 1, the Strategy value is determined based on the Daily Value Percentage. The Daily Value Percentage may be more or less than the cumulative rise or fall of the Index since the Term start date, and it may be negative even when the Index has risen. In our example, the Daily Value Percentage at the end of Year 1 is -2.30%.

Footnote 8.

For a 1-year Strategy, when the Index has risen for the Term, we use the following formula to calculate the increase.

Formula   Remaining Investment Base x increase percentage based on rise in Index = dollar amount of increase based on rise in Index

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$49,525 x 4.00% = $1,981
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$49,525 x 3.00% = $1,486

For the 6-year Strategy, when the Daily Value Percentage is negative, we use the following formula to calculate the amount of the decrease.

Formula   Remaining Investment Base x Daily Value Percentage = dollar amount of change based on Daily Value Percentage

Calculation

6-year 10% Buffer with Upside Participation Rate Strategy:	$49,525 x -2.30% = -$1,139

Footnote 9. In this example, for the 1-year Strategies, there has been a rise in the Index for the first Term. We use the following formula to calculate the Strategy value at the end of Year 1.

Formula   Remaining Investment Base on Term end date + dollar amount of increase based on rise in Index = Strategy value on Term end date

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$49,525 + $1,981 = $51,506
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$49,525 + $1,486 = $51,011

For the 6-year Strategy, the Daily Value Percentage is negative at the end of Year 1. We use the following formula to calculate the Strategy value.

Formula	Remaining Investment Base on valuation date - dollar amount of decrease based on Daily Value Percentage = current Strategy value

Calculation
6-year 10% Buffer with Upside Participation Rate
Strategy: $49,525 - $1,139 = $48,386

For the 1-year Strategies, the Strategy value at the end of the first Term is also the Investment Base at the beginning of the second Term. For the 6-year Strategy, the existing Investment Base is carried forward because it is not the end of a Term.

Footnote 10. When no withdrawals are taken over the course of a 1-year Term, the Daily Charges through the Term end date are equal to the Investment Base on the Term start date times the annual rate at which the Daily Charge compounds. When no withdrawals are taken over the course of a year that is part of a 6-year Term, the Daily Charges for the year are equal to the Investment Base at the Term start date or the most recent Term start date anniversary times the annual rate at which the Daily Charge compounds.

Formula	Investment Base on Term start date or anniversary x annual rate

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$51,506 x 0.95% = $489
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$51,011 x 0.95% = $485
6-year 10% Buffer with Upside Participation Rate Strategy:	$49,525 x 0.95% = $470

Footnote 11. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula	Beginning Investment Base – sum of Daily Charges since beginning of year – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$51,506 - $489 - $0 = $51,017
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$51,011 - $485 - $0 = $50,526
6-year 10% Buffer with Upside Participation Rate Strategy:	$49,525 - $470 - $0 = $49,055

Footnote 12. For a 1-year Strategy, the value at the end of the second Term is based on the rise or fall in the index for the Term. The rise or fall in Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

Formula	(Index Value on Term end date - Index Value on Term start date) / Index Value on Term start date
Calculation	(1081.60 – 1040.00) / 1040.00 = 4.00%

For the 6-year Strategy, the value at the end of Year 2 is based on the Daily Value Percentage, and not the rise or fall in the Index.

Footnote 13. The Cap is the maximum positive net Index change for a Term taken into account to determine any increase at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Cap Strategy has a Cap of 10% for the second Term, which means it will not affect the calculation of any increase unless the Index rises by more than 10% for the Term. The 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 6-year 10% Buffer with Upside Participation Rate Strategy do not have a Cap.

Footnote 14. The Upside Participation Rate is your share of any rise in the Index for a Term taken into account to determine the Strategy value at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy has an Upside Participation Rate of 75% for the second Term, which means the calculation of any increase will include 75% of any Index rise for the Term. The 6-year 10% Buffer with Upside Participation Rate Strategy did not complete a Term in Year 2, so no Upside Participation Rate will be applied when determining the Strategy value at the end of Year 2. The 1-year 50% Downside Participation Rate with Cap Strategy does not have an Upside Participation Rate.

Footnote 15.

When the Index has risen for a Term, we use the following formulas to calculate the increase for the 1-year Strategy with a Cap.

Formula	If the rise in Index is less than Cap, then rise in Index = increase percentage based on rise in Index
Calculation	4.00% rise in Index < 10% cap, so increase percentage = 4.00%

When the Index has risen over a Term, we use the following formulas to calculate the increase for the 1-year Strategy with an Upside Participation Rate.

Formula	Rise in Index for Term x Upside Participation Rate for Term = Increase as a Percentage
Calculation	4.00% x 75% = 3.00%

For the S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy, the Upside Participation Rate only applies at the end of the 6-year Term. At the end of Year 1, the Strategy value is determined based on the Daily Value Percentage. The Daily Value Percentage may be more or less than the cumulative rise or fall of the Index since the Term start date, and it may be negative even when the Index has risen. In our example, the Daily Value Percentage at the end of Year 2 is 4.60%.

Footnote 16.

For a 1-year Strategy, when the Index has risen for the Term, we use the following formula to calculate the increase.

Formula   Remaining Investment Base x increase percentage based on rise in Index = dollar amount of increase based on rise in Index

Calculation
1-year 50% Downside Participation Rate with Cap Strategy: $51,017 x 4.00% = $2,041
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $50,526 x 3.00% = $1,516

For the 6-year Strategy, when the Daily Value Percentage is positive, we use the following formula to calculate the amount of the increase.

Formula   Remaining Investment Base x Daily Value Percentage = dollar amount of increase based on Daily Value Percentage

Calculation
6-year 10% Buffer with Upside Participation Rate Strategy: $49,055 x 4.60% = $2,257

Footnote 17. In this example, for the 1-year Strategies, there has been a rise in the Index for the second Term. We use the following formula to calculate the Strategy value at the end of Year 2.

Formula   Remaining Investment Base on Term end date + dollar amount of increase based on rise in Index = Strategy value on Term end date

Calculation

1-year 50% Downside Participation Rate with Cap Strategy: $51,017 + $2,041 = $53,058
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $50,526 + $1,516 = $52,042

For the 6-year Strategy, the Daily Value Percentage is positive at the end of Year 2. We use the following formula to calculate the Strategy value.

Formula   Remaining Investment Base on valuation date + dollar amount of increase based on Daily Value Percentage = current Strategy value

Calculation
6-year 10% Buffer with Upside Participation Rate Strategy: $49,055 + $2,257 = $51,312

For the 1-year Strategies, the Strategy value at the end of the second Term is also the Investment Base at the beginning of the third Term. For the 6-year Strategy, the existing Investment Base is carried forward because it is not the end of a Term.

Footnote 18. When no withdrawals are taken over the course of a 1-year Term, the Daily Charges through the Term end date are equal to the Investment Base on the Term start date times the annual rate at which the Daily Charge compounds. When no withdrawals are taken over the course of a year that is part of a 6-year Term, the Daily Charges for the year are equal to the Investment Base at the Term start date or the most recent Term start date anniversary times the annual rate at which the Daily Charge compounds.

Formula   Investment Base on Term start date or anniversary x annual rate

Calculation

1-year 50% Downside Participation Rate with Cap Strategy: $53,058 x 0.95% = $504
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $52,042 x 0.95% = $494
6-year 10% Buffer with Upside Participation Rate Strategy: $49,055 x 0.95% = $466

Footnote 19. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula	Beginning Investment Base – sum of Daily Charges since beginning of year – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$53,058 - $504 - $0 = $52,554
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$52,042 - $494 - $0 = $51,548
6-year 10% Buffer with Upside Participation Rate Strategy:	$49,055 - $466 - $0 = $48,589

Footnote 20. For a 1-year Strategy, the value at the end of the third Term is based on the rise or fall in the index for the Term. The rise or fall in Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

Formula	(Index Value on Term end date - Index Value on Term start date) / Index Value on Term start date
Calculation	(1124.86- 1081.60) / 1081.60 = 4.00%

For the 6-year Strategy, the value at the end of Year 3 is based on the Daily Value Percentage, and not the rise or fall in the Index.

Footnote 21. The Cap is the maximum positive net Index change for a Term taken into account to determine any increase at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Cap Strategy has a Cap of 10% for the third Term, which means it will not affect the calculation of any increase unless the Index rises by more than 10% for the Term. The 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 6-year 10% Buffer with Upside Participation Rate Strategy do not have a Cap.

Footnote 22. The Upside Participation Rate is your share of any rise in the Index for a Term taken into account to determine the Strategy value at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy has an Upside Participation Rate of 75% for the third Term, which means the calculation of any increase will include 75% of any Index rise for the Term. The 6-year 10% Buffer with Upside participation Rate Strategy did not complete a Term in Year 3, so no Upside Participation Rate will be applied when determining the Strategy value at the end of Year 3. The 1-year 50% Downside Participation Rate with Cap Strategy does not have an Upside Participation Rate.

Footnote 23.

When the Index has risen for a Term, we use the following formulas to calculate the increase for the 1-year Strategy with a Cap.

Formula	If the rise in Index is less than Cap, then rise in Index = increase percentage based on rise in Index
Calculation	4.00% rise in Index < 10% cap, so increase percentage = 4.00%

When the Index has risen for a Term, we use the following formulas to calculate the increase for the 1-year Strategy with an Upside Participation Rate.

Formula	Rise in Index for Term x Upside Participation Rate for Term = Increase as a Percentage
Calculation	4.00% x 75% = 3.00%

For the S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy, the Upside Participation Rate only applies at the end of the 6-year Term. At the end of Year 1, the Strategy value is determined based on the Daily Value Percentage. The Daily Value Percentage may be more or less than the cumulative rise or fall of the Index since the Term start date, and it may be negative even when the Index has risen. In our example, the Daily Value Percentage at the end of Year 3 is 11.70%.

Footnote 24.

For a 1-year Strategy, when the Index has risen for the Term, we use the following formula to calculate the increase.

Formula	Remaining Investment Base x increase percentage based on rise in Index = dollar amount of increase based on rise in Index

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$52,554 x 4.00% = $2,102
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$51,548 x 3.00% = $1,546

For the 6-year Strategy, when the Daily Value Percentage is positive, we use the following formula to calculate the amount of the increase.

Formula	Remaining Investment Base x Daily Value Percentage = dollar amount of increase based on Daily Value Percentage

Calculation

6-year 10% Buffer with Upside Participation Rate Strategy:	$48,589 x 11.70% = $5,685

Footnote 25. In this example, for the 1-year Strategies, there has been a rise in the Index for the third Term. We use the following formula to calculate the Strategy value at the end of Year 3.

    Formula   Remaining Investment Base on Term end date + dollar amount of increase based on rise in Index = Strategy value on Term end date

    Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$52,554 + $2,102 = $54,656
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$51,548 + $1,546 = $53,094

For the 6-year Strategy, the Daily Value Percentage is positive at the end of Year 3. We use the following formula to calculate the Strategy value.

    Formula   Remaining Investment Base on valuation date + dollar amount of increase based on Daily Value Percentage = current Strategy value

    Calculation

6-year 10% Buffer with Upside Participation Rate Strategy:	$48,589 + $5,685 = $54,274

For the 1-year Strategies, the Strategy value at the end of the third Term is also the Investment Base at the beginning of the fourth Term. For the 6-year Strategy, the existing Investment Base is carried forward because it is not the end of a Term.

Footnote 26. When no withdrawals are taken over the course of a 1-year Term, the Daily Charges through the Term are equal to the Investment Base on the Term start date times the annual rate at which the Daily Charge compounds. When no withdrawals are taken over the course of a year that is part of a 6-year Term, the Daily Charges for the year are equal to the Investment Base at the Term start date or the most recent Term start date anniversary times the annual rate at which the Daily Charge compounds.

    Formula   Investment Base on Term start date or anniversary x annual rate

    Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$54,656 x 0.95% = $519
1-year 50% Downside Participation Rate with Upside Participation Rate	$53,094 x 0.95% = $504
6-year 10% Buffer with Upside Participation Rate Strategy:	$48,589 x 0.95% = $462

Footnote 27. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

    Formula   Beginning Investment Base – sum of Daily Charges since beginning of year – proportional reduction for any prior Withdrawals and related Charges = remaining Investment Base

    Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$54,656 - $519 - $0 = $54,137
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$53,094 - $504 - $0 = $52,590
6-year 10% Buffer with Upside Participation Rate Strategy:	$48,589 - $462 - $0 = $48,127

Footnote 28. For a 1-year Strategy, the value at the end of the fourth Term is based on the rise or fall in the index for the Term. The rise or fall in Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

    Formula   (Index Value on Term end date - Index Value on Term start date) / Index Value on Term start date

    Calculation   (1169.86 - 1125) / 1124.86 = 4.00%

For the 6-year Strategy, the value at the end of Year 4 is based on the Daily Value Percentage, and not the rise or fall in the Index.

Footnote 29. The Cap is the maximum positive net Index change for a Term taken into account to determine any increase at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Cap Strategy has a Cap of 10% for the fourth Term, which means it will not affect the calculation of any increase unless the Index rises by more than 10% for the Term. The 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 6-year 10% Buffer with Upside Participation Rate Strategy do not have a Cap.

Footnote 30. The Upside Participation Rate is your share of any rise in the Index for a Term taken into account to determine the Strategy value at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy has an Upside Participation Rate of 75% for the fourth Term, which means the calculation of any increase will include 75% of any Index rise for the Term. The 6-year 10% Buffer with Upside Participation Rate Strategy did not complete a Term in Year 4, so no Upside Participation Rate will be applied when

determining the Strategy value at the end of Year 4. The 1-year 50% Downside Participation Rate with Cap Strategy does not have an Upside Participation Rate.

Footnote 31.

When the Index has risen for a Term, we use the following formulas to calculate the increase for the 1-year Strategy with a Cap.

Formula	If the rise in Index is less than Cap, then rise in Index = increase percentage based on rise in Index
Calculation	4.00% rise in Index < 10% cap, so increase percentage = 4.00%

When the Index has risen for a Term, we use the following formulas to calculate the increase for the 1-year Strategy with an Upside Participation Rate.

Formula	Rise in Index for Term x Upside Participation Rate for Term = Increase as a Percentage
Calculation	4.00% x 75% = 3.00%

For the S&P 500 6-year Buffer with an Upside Participation Rate Strategy, the Upside Participation Rate only applies at the end of the 6-year Term. At the end of Year 1, the Strategy value is determined based on the Daily Value Percentage. The Daily Value Percentage may be more or less than the cumulative rise or fall of the Index since the Term start date, and it may be negative even when the Index has risen. In our example, the Daily Value Percentage at the end of Year 4 is 19.10%.

Footnote 32.

For a 1-year Strategy, when the Index has risen for the Term, we use the following formula to calculate the increase.

Formula	Remaining Investment Base x increase percentage based on rise in Index = dollar amount of increase based on rise in Index

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$54,137 x 4.00% = $2,165
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$52,590 x 3.00% = $1,578

For the 6-year Strategy, when the Daily Value Percentage is positive, we use the following formula to calculate the amount of the increase.

Formula	Remaining Investment Base x Daily Value Percentage = dollar amount of increase based on Daily Value Percentage

Calculation

6-year 10% Buffer with Upside Participation Rate Strategy:	$48,127 x 19.10% = $9,192

Footnote 33. In this example, for the 1-year Strategies, there has been a rise in the Index for the fourth Term. We use the following formula to calculate the Strategy value at the end of Year 4.

Formula	Remaining Investment Base on Term end date + dollar amount of increase based on rise in Index = Strategy value on Term end date

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$54,137 + $2,165 = $56,302
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$52,590 + $1,578 = $54,168

For the 6-year Strategy, the Daily Value Percentage is positive at the end of Year 4. We use the following formula to calculate the Strategy value.

Formula	Remaining Investment Base on valuation date + dollar amount of increase based on Daily Value Percentage = current Strategy value

Calculation

6-year 10% Buffer with Upside Participation Rate Strategy:	$48,127 + $9,192 = $57,319

For the 1-year Strategies, the Strategy value at the end of the fourth Term is also the Investment Base at the beginning of the fifth Term. For the 6-year Strategy, the existing Investment Base is carried forward because it is not the end of a Term.

Footnote 34. When no withdrawals are taken over the course of a 1-year Term, the Daily Charges through the Term are equal to the Investment Base on the Term start date times the annual rate at which the Daily Charge compounds. When no withdrawals are taken over the course of a year that is part of a 6-year Term, the Daily Charges for the year are equal to the Investment Base at the Term start date or the most recent Term start date anniversary times the annual rate at which the Daily Charge compounds.

Formula	Investment Base on Term start date or anniversary x annual rate

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$56,302 x 0.95% = $535
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$54,168 x 0.95% = $515
6-year 10% Buffer with Upside Participation Rate Strategy:	$48,127 x 0.95% = $457

Footnote 35. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula   Beginning Investment Base – sum of Daily Charges since beginning of year – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$56,302 - $535 - $0 = $55,767
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$54,168 - $515 - $0 = $53,653
6-year 10% Buffer with Upside Participation Rate Strategy:	$48,127 - $457 - $0 = $47,670

, the value at the end of the fifth Term is based on the rise or fall in the index for the Term. The rise or fall in Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

Formula   (Index Value on Term end date - Index Value on Term start date) / Index Value on Term start date

Calculation   (1216.65 – 1169.86) / 1169.86 = 4.00%

For the 6-year Strategy, the value at the end of Year 5 is based on the Daily Value Percentage, and not the rise or fall in the Index.

Footnote 37. The Cap is the maximum positive net Index change for a Term taken into account to determine any increase at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Cap Strategy has a Cap of 10% for the fifth Term, which means it will not affect the calculation of any increase unless the Index rises by more than 10% for the Term. The 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 6-year 10% Buffer with Upside Participation Rate Strategy do not have a Cap.

Footnote 38. The Upside Participation Rate is your share of any rise in the Index for a Term taken into account to determine the Strategy value at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy has an Upside Participation Rate of 75% for the fifth Term, which means the calculation of any increase will include 75% of any Index rise for the Term. The 6-year 10% Buffe with Upside Participation Rate Strategy did not complete a Term in Year 5, so no Upside Participation Rate will be applied when determining the Strategy value at the end of Year 5. The 1-year 50% Downside Participation Rate with Cap Strategy does not have an Upside Participation Rate.

Footnote 39.

When the Index has risen for a Term, we use the following formulas to calculate the increase for the 1-year Strategy with a Cap.

Formula   If the rise in Index is less than Cap, then rise in Index = increase percentage based on rise in Index

Calculation   4.0% rise in Index < 10% cap, so increase percentage = 4.0%

When the Index has risen for a Term, we use the following formulas to calculate the increase for the 1-year Strategy with an Upside Participation Rate.

Formula   Rise in Index for Term x Upside Participation Rate for Term = Increase as a Percentage

Calculation   4.00% x 75% = 3.00%

For the 6-year Strategy with an Upside Participation Rate, the Upside Participation Rate only applies at the end of the 6-year Term. At the end of Year 1, the Strategy value is determined based on the Daily Value Percentage. The Daily Value Percentage may be more or less than the cumulative rise or fall of the Index since the Term start date, and it may be negative even when the Index has risen. In our example, the Daily Value Percentage at the end of Year 5 is 26.70%.

Footnote 40.

For a 1-year Strategy, when the Index has risen for the Term, we use the following formula to calculate the increase.

Formula   Remaining Investment Base x increase percentage based on rise in Index = dollar amount of increase based on rise in Index

Calculation

1-year 50% Downside Participation Rate with Cap Strategy: $55,767 x 4.00% = $2,231

1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $53,653 x 3.00% = $1,610

For the 6-year Strategy, when the Daily Value Percentage is positive, we use the following formula to calculate the amount of the increase.

Formula   Remaining Investment Base x Daily Value Percentage = dollar amount of increase based on Daily Value Percentage

Calculation

6-year 10% Buffer with Upside Participation Rate Strategy: $47,670 x 26.70% = $12,728

Footnote 41. In this example, for the 1-year Strategies, there has been a rise in the Index for the fifth Term. We use the following formula to calculate the Strategy value at the end of Year 5.

Formula   Remaining Investment Base on Term end date + dollar amount of increase based on rise in Index = Strategy value on Term end date

Calculation

1-year 50% Downside Participation Rate with Cap Strategy: $55,767 + $2,231 = $57,998

1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $53,653 + $1,610 = $55,263

For the 6-year Strategy, the Daily Value Percentage is positive at the end of Year 5. We use the following formula to calculate the Strategy value.

Formula   Remaining Investment Base on valuation date + dollar amount of increase based on Daily Value Percentage = current Strategy value

Calculation

6-year 10% Buffer with Upside Participation Rate Strategy: $47,670 + $12,728 = $60,398

For the 1-year Strategies, the Strategy value at the end of the fifth Term is also the Investment Base at the beginning of the sixth Term. For the 6-year Strategy, the existing Investment Base is carried forward because it is not the end of a Term.

Footnote 42. When no withdrawals are taken over the course of a 1-year Term, the Daily Charges through the Term are equal to the Investment Base on the Term start date times the annual rate at which the Daily Charge compounds. When no withdrawals are taken over the course of a year that is part of a 6-year Term, the Daily Charges for the year are equal to the Investment Base at the Term start date or the most recent Term start date anniversary times the annual rate at which the Daily Charge compounds.

Formula   Investment Base on Term start date or anniversary x annual rate

Calculation

1-year 50% Downside Participation Rate with Cap Strategy: $57,998 x 0.95% = $551

1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $55,263 x 0.95% = $525

6-year 10% Buffer with Upside Participation Rate Strategy: $47,670 x 0.95% = $453

Footnote 43. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula   Beginning Investment Base – sum of Daily Charges since beginning of year – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base

Calculation

1-year 50% Downside Participation Rate with Cap Strategy: $57,998 - $551 - $0 = $57,447

1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $55,263 - $525 - $0 = $54,738

6-year 10% Buffer with Upside Participation Rate Strategy: $47,670 - $453 - $0 = $47,217

, the value at the end of the sixth Term is based on the rise or fall in the index for the Term. The rise or fall in Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

Formula   (Index Value on Term end date - Index Value on Term start date) / Index Value on Term start date

Calculation   (1265.32 – 1216.65) / 1216.65 = 4.00%

For the 6-year Strategy, the value at the end of the Term is based on the rise or fall in the index over the entire 6-year Term. The rise or fall in the Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

Formula   (Index Value on Term end date - Index Value on Term start date) / Index Value on Term start date

Calculation	(1265.32 – 1000.00) / 1000.00 = 26.53%

Footnote 45. The Cap is the maximum positive net Index change for a Term taken into account to determine any increase at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Cap Strategy has a Cap of 10% for the sixth Term, which means it will not affect the calculation of any increase unless the Index rises by more than 10% for the Term. The 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 6-year 10% Buffer with Upside Participation Rate Strategy do not have a Cap.

Footnote 46. The Upside Participation Rate is your share of any rise in the Index for a Term taken into account to determine the Strategy value at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy has an Upside Participation Rate of 75% for the sixth Term, which means the calculation of any increase will include 75% of any Index rise for the Term. The 6-year 10% Buffer with Upside Participation Rate Strategy has an Upside Participation Rate of 130% for the 6-year Term, which means the calculation of any increase will include 130% of any Index rise for the term. The 1-year 50% Downside Participation Rate with Cap Strategy does not have an Upside Participation Rate.

Footnote 47.

When the Index has risen for a Term, we use the following formulas to calculate the increase for the 1-year Strategy with a Cap.

Formula	If the rise in Index is less than Cap, then rise in Index = increase percentage based on rise in Index
Calculation	4.00% rise in Index < 10% cap, so increase percentage = 4.00%

When the Index has risen for a Term, we use the following formulas to calculate the increase for the 1-year Strategy with an Upside Participation Rate.

Formula	Rise in Index for Term x Upside Participation Rate for Term = Increase as a Percentage
Calculation	4.00% x 75% = 3.00%

When the Index has risen for a Term, we use the following formulas to calculate the increase for the 6-year Strategy with an Upside Participation Rate.

Formula	Rise in Index for Term x Upside Participation Rate for Term = Increase as a Percentage
Calculation	26.53% x 130% = 34.49%

Footnote 48.

When the Index has risen for the Term, we use the following formula to calculate the increase.

Formula	Remaining Investment Base x increase percentage based on rise in Index = dollar amount of increase based on rise in Index

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$57,447 x 4.0% = $2,298
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$54,738 x 3.00% = $1,642
6-year 10% Buffer with Upside Participation Rate Strategy:	$47,217 x 34.49% = $16,285

Footnote 49. In this example, for the 1-year Strategies, there has been a rise in the Index for the sixth Term. For the 6-year Strategy, there has also been a rise in the index for its 6-year Term. This means that both for a 1-year Strategy and the 6-year Strategy, the Strategy value at the end of Year 6 is the Remaining Investment Base on the Term end date plus the increase for the rise in the Index over the Term.

Formula	Remaining Investment Base on Term end date + dollar amount of increase based on rise in Index = Strategy value on Term end date

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$57,447 + $2,298 = $59,745
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$54,738 + $1,642 = $56,380
6-year 10% Buffer with Upside Participation Rate Strategy:	$47,217 + $16,285 = $63,502

Example I: Amount Available for a Withdrawal After 6 Years When Index Falls Steadily – Downside Participation Rate and Buffer Strategies

The following example is intended to help you understand the amount that may be available for withdrawal for Indexed Strategies that have different Term lengths after a six-year period when the Index falls at a steady rate.

This example assumes:

- your Contract was issued on or after June 7, 2024, so a Daily Charge rate of 0.95% applies;

- you allocate a $50,000 Purchase Payment to the S&P 500 1-Year 50% Downside Participation Rate with Cap Strategy when the S&P 500 is 1000.00;

- you allocate a $50,000 Purchase Payment to the S&P 500 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy when the S&P 500 is 1000.00;

- you allocate a $50,000 Purchase Payment to the S&P 500 6-Year 10% Buffer with Upside Participation Rate Strategy when the S&P 500 is 1000.00;

- the Contract Effective Date and the Term start date are both April 6, 2025, so that the Contract Years and Term Years align;

- you do not take any withdrawals during the first six Contract Years;

- amounts allocated to the 1-year strategies are rolled over into the same Indexed Strategy at the end of each 1-year Term; and

- on April 6, 2026, the S&P 500 is at 960.00 and the 6-year Strategy Daily Value Percentage is -4.50%; on April 6, 2027, the S&P 500 is at 921.60 and the 6-year Strategy Daily Value Percentage is -4.90%; on April 6, 2028, the S&P 500 is at 884.74 and the 6-year Strategy Daily Value Percentage is -6.00%; on April 6, 2029, the S&P 500 is at 849.35 and the 6-year Strategy Daily Value Percentage is -8.10%; on April 6, 2030, the S&P 500 is at 815.37 and the 6-year Strategy Daily Value Percentage is -10.00%; and on April 6, 2031, the S&P 500 is at 782.76; and

- you have not made a Performance Lock election.

	S&P 500 1-year 50% Downside Participation Rate with Cap Strategy	S&P 500 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy	S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy	
Year 1				
Strategy Value - April 6, 2025	$50,000	$50,000	$50,000	See Footnote 1 below.
Investment Base - April 6, 2025	$50,000	$50,000	$50,000	See Footnote 1 below.
Daily Charges for Period	$475	$475	$475	See Footnote 2 below.
Remaining Investment Base - April 6, 2026	$49,525	$49,525	$49,525	See Footnote 3 below.
Fall in Index for Period	4.00%	4.00%	n/a	See Footnote 4 below.
Buffer for Period	n/a	n/a	n/a	See Footnote 5 below.
Downside Participation Rate For Period	50%	50%	n/a	See Footnote 6 below.
Decrease as a Percentage	2.00%	2.00%	4.50%	See Footnote 7 below.
Dollar Amount of Decrease	$991	$991	$2,229	See Footnote 8 below.
Strategy Value - April 6, 2026	$48,534	$48,534	$47,296	See Footnote 9 below.
Year 2				
Investment Base - April 6, 2026	$48,534	$48,534	$49,525	See Footnote 9 below.
Daily Charges for Period	$461	$461	$470	See Footnote 10 below.
Remaining Investment Base - April 6, 2027	$48,073	$48,073	$49,055	See Footnote 11 below.
Fall in Index for Period	4.00%	4.00%	n/a	See Footnote 12 below.
Buffer for Period	n/a	n/a	n/a	See Footnote 13 below.
Downside Participation Rate For Period	50%	50%	n/a	See Footnote 14 below.
Decrease as a Percentage	2.00%	2.00%	4.90%	See Footnote 15 below.
Dollar Amount of Decrease	$961	$961	$2,404	See Footnote 16 below.
Strategy Value – April 6, 2027	$47,112	$47,112	$46,651	See Footnote 17 below.
Year 3				
Investment Base – April 6, 2027	$47,112	$47,112	$49,055	See Footnote 17 below.
Daily Charges for Period	$448	$448	$466	See Footnote 18 below.
Remaining Investment Base – April 6, 2028	$46,664	$46,664	$48,589	See Footnote 19 below.
Fall in Index for Period	4.00%	4.00%	n/a	See Footnote 20 below.
Buffer for Period	n/a	n/a	n/a	See Footnote 21 below.
Downside Participation Rate For Period	50%	50%	n/a	See Footnote 22 below.
Decrease as a Percentage	2.00%	2.00%	6.00%	See Footnote 23 below.
Dollar Amount of Decrease	$933	$933	$2,915	See Footnote 24 below.
Strategy Value - April 6, 2028	$45,731	$45,731	$45,674	See Footnote 25 below.
Year 4				

Investment Base - April 6, 2028	$45,731	$45,731	$48,589	See Footnote 25 below.
Daily Charges for Period	$434	$434	$462	See Footnote 26 below.
Remaining Investment Base - April 6, 2029	$45,297	$45,297	$48,127	See Footnote 27 below.
Fall in Index for Period	4.00%	4.00%	n/a	See Footnote 28 below.
Buffer for Period	n/a	n/a	n/a	See Footnote 29 below.
Downside Participation Rate For Period	50%	50%	n/a	See Footnote 30 below.
Decrease as a Percentage	2.00%	2.00%	8.10%	See Footnote 31 below.
Dollar Amount of Decrease	$906	$906	$3,898	See Footnote 32 below.
Strategy Value - April 6, 2029	$44,391	$44,391	$44,229	See Footnote 33 below.
Year 5				
Investment Base - April 6, 2029	$44,391	$44,391	$48,127	See Footnote 33 below.
Daily Charges for Period	$422	$422	$457	See Footnote 34 below.
Remaining Investment Base - April 6, 2030	$43,969	$43,969	$47,670	See Footnote 35 below.
Fall in Index for Period	4.00%	4.00%	n/a	See Footnote 36 below.
Buffer for Period	n/a	n/a	n/a	See Footnote 37 below.
Downside Participation Rate For Period	50%	50%	n/a	See Footnote 38 below.
Decrease as a Percentage	2.00%	2.00%	0.00%	See Footnote 39 below.
Dollar Amount of Decrease	$879	$879	4,767	See Footnote 40 below.
Strategy Value - April 6, 2030	$43,090	$43,090	$42,903	See Footnote 41 below.
Year 6				
Investment Base - April 6, 2030	$43,090	$43,090	$47,670	See Footnote 41 below.
Daily Charges for Period	$409	$409	$453	See Footnote 42 below.
Remaining Investment Base - April 6, 2031	$42,681	$42,681	$47,217	See Footnote 43 below.
Fall in Index for Period	4.00%	4.00%	21.72%	See Footnote 44 below.
Buffer for Period	n/a	n/a	10%	See Footnote 45 below.
Downside Participation Rate For Period	50%	50%	n/a	See Footnote 46 below.
Decrease as a Percentage	2.00%	2.00%	11.72%	See Footnote 47 below.
Dollar Amount of Decrease	$854	$854	$5,534	See Footnote 48 below.
Strategy Value - April 6, 2031	$41,827	$41,827	$41,683	See Footnote 49 below.

Footnote 1. At the beginning of the first Term, the Strategy value is equal to the amount applied to the Strategy on the Term start date. The amount applied on the Term start date is also the beginning Investment Base.

Footnote 2. When no withdrawals are taken over the course of a 1-year Term, the Daily Charges through the Term are equal to the Investment Base at the Term start date times the annual rate at which the Daily Charge compounds. When no withdrawals are taken over the course of a year that is part of a 6-year Term, the Daily Charges for the year are equal to the Investment Base at the Term start date or the most recent Term start date anniversary times the annual rate at which the Daily Charge compounds.

Formula	Investment Base at Term start date or anniversary x annual rate
Calculation	$50,000 x 0.95% = $475 for all Indexed Strategies

Footnote 3. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula	Beginning Investment Base – sum of Daily Charges since beginning of year – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base
Calculation	$50,000 - $475 - $0 = $49,525 for all Indexed Strategies

Footnote 4. For a 1-year Strategy, the value at the end of the first Term is based on the rise or fall in the index for the Term. The rise or fall in Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

Formula	(Index Value on Term end date - Index Value on Term start date) / Index Value on Term start date
Calculation	(960.00 – 1000.00) / 1000.00 = -4.00%

Thus, the Index has fallen 4.00%.

For the 6-year Strategy, the value at the end of Year 1 is based on the Daily Value Percentage, and not the rise or fall in the Index.

Footnote 5. The Buffer is the decrease in the value of an Index for a Term that is disregarded when determining the loss for the Term. In this example, the S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy did not complete a Term in Year 1, so no Buffer will be applied when determining the Strategy value at the end of Year 1. The 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 1-year 50% Downside Participation Rate with Cap Strategy do not have a Buffer.

Footnote 6. The Downside Participation Rate is your share of any fall in the Index for a Term taken into account to determine the Strategy value at the end of the Term. In this example, both the 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 1-year 50% Downside Participation Rate with Cap Strategy each have a Downside Participation Rate of 50%, which means the calculation of any decrease will include 50% of any Index fall. The 6-year 10% Buffer with Upside Participation Rate Strategy does not have a Downside Participation Rate.

Footnote 7.

The Index has fallen 4% in Year 1.

For a 1-year Strategy, when the Index has fallen for a Term, we use the following formula to calculate the decrease for both the 1-year 50% Downside Participation Rate with Cap Strategy and the 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy.

Formula	Fall in Index for Term x Downside Participation Rate for Term = Decrease as a Percentage
Calculation	4.00% x 50% = 2.0%

For the 6-year 10% Buffer with Upside Participation Rate Strategy, the Buffer only applies at the end of the 6-year Term. At the end of Year 1, the Strategy value is determined based on the Daily Value Percentage. The Daily Value Percentage may be more or less than the cumulative rise or fall of the Index since the Term start date, and it may be negative even when the Index has risen. The Strategy value may decline even when the fall in the Index has not exceeded the Buffer.

Footnote 8.

The Index has fallen 4% in Year 1

For a 1-year Strategy, when the Index has fallen for the Term, we use the following formula to calculate the amount of the decrease.
Formula   Remaining Investment Base x decrease percentage based on fall in Index = dollar amount of decrease based on fall in Index

Calculation
1-year 50% Downside Participation Rate with Cap Strategy: $49,525 x 2.0% = $991
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $49,525 x 2.0% = $991

Year 1 does not mark the end of a Term for the S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy, so the value for that Strategy at the end of Year 1 is calculated using the same formula used on any other day before the end of a Term:

For the 6-year Strategy, when the Daily Value Percentage is negative, we use the following formula to calculate the amount of the decrease.
Formula   Remaining Investment Base x Daily Value Percentage = dollar amount of change based on Daily Value Percentage

Calculation
6-year 10% Buffer with Upside Participation Rate Strategy: $49,525 x -4.50% = -$2,229

Thus, the dollar amount of decrease is $2,229.

Footnote 9. In this example, for the 1-year Strategies, there has been a fall in the Index for the first Term. We use the following formula to calculate the Strategy value at the end of Year 1.
Formula   Remaining Investment Base on Term end date - dollar amount of decrease based on fall in Index = Strategy value on Term end date

Calculation
1-year 50% Downside Participation Rate with Cap Strategy: $49,525 - $991 = $48,534
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $49,525 - $991 = $48,534

For the 6-year Strategy, the Daily Value Percentage is negative at the end of Year 1. We use the following formula to calculate the Strategy value.
Formula   Remaining Investment Base on valuation date - dollar amount of decrease based on Daily Value Percentage = current Strategy value

Calculation
6-year 10% Buffer with Upside Participation Rate Strategy: $49,525 - $2,229 = $47,296

For the 1-year Strategies, the Strategy value at the end of the first Term is also the Investment Base at the beginning of the second Term. For the 6-year Strategy, the existing Investment Base is carried forward because it is not the end of a Term.

Footnote 10. When no withdrawals are taken over the course of a 1-year Term, the Daily Charges through the Term are equal to the Investment Base on the Term start date times the annual rate at which the Daily Charge compounds. When no withdrawals are taken over the course of a year that is part of a 6-year Term, the Daily Charges for the year are equal to the Investment Base at the Term start date or the most recent Term start date anniversary times the annual rate at which the Daily Charge compounds.

Formula   Investment Base on Term start date or anniversary x annual rate

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$48,534 x 0.95% = $461
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$48,534 x 0.95% = $461
6-year 10% Buffer with Upside Participation Rate Strategy:	$49,525 x 0.95% = $470

Footnote 11. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula   Beginning Investment Base – sum of Daily Charges since beginning of year – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$48,534 - $461 - $0 = $48,073
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$48,534 - $461 - $0 = $48,073
6-year 10% Buffer with Upside Participation Rate Strategy:	$49,525 - $470 - $0 = $49,055

Footnote 12. For a 1-year Strategy, the value at the end of the second Term is based on the rise or fall in the index for the Term. The rise or fall in Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

Formula   (Index Value on Term end date - Index Value on Term start date) / Index Value on Term start date

Calculation   (921.60 – 960.00) / 960.00 = 4.0%

Thus, the Index has fallen 4.00%.

For the 6-year Strategy, the value at the end of Year 2 is based on the Daily Value Percentage, and not the rise or fall in the Index.

Footnote 13. The Buffer is the decrease in the value of an Index for a Term that is disregarded when determining the loss for the Term. In this example, the S&P 500 6-year10% Buffer with Upside Participation Rate did not complete a Term in Year 2, so no Buffer will be applied to that Strategy in Year 2. The 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 1-year 50% Downside Participation Rate with Cap Strategy do not have a Buffer.

Footnote 14. The Downside Participation Rate is your share of any fall in the Index for a Term taken into account to determine the Strategy value at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 1-year 50% Downside Participation Rate with Cap Strategy each have a Downside Participation Rate of 50%, which means the calculation of any decrease will include 50% of any Index fall. The 6-10% Buffer with Upside Participation Rate year Strategy does not have a Downside Participation Rate.

Footnote 15.

The Index has fallen 4% in Year 2.

When the Index has fallen for a Term, we use the following formula to calculate the decrease for both the 1-year 50% Downside Participation Rate with Cap Strategy and the 1-Year 50% Downside Participation Rate with an Upside Participation Rate Strategy.

Formula   Fall in Index for Term x Downside Participation Rate for Term = Decrease as a Percentage

Calculation   4.00% x 50% = 2.00%

For the 6-year 10% Buffer with Upside Participation Rate Strategy, the Buffer only applies at the end of the 6-year Term. At the end of Year 2, the Strategy value is determined based on the Daily Value Percentage. The Daily Value Percentage may be more or less than the cumulative rise or fall of the Index since the Term start date, and it may be negative even when the Index has risen. The Strategy value may decline even when the fall in the Index has not exceeded the Buffer.

Footnote 16.

The Index has fallen 4% in Year 2

For a 1-year Strategy, when the Index has fallen for the Term, we use the following formula to calculate the amount of the decrease.

Formula   Remaining Investment Base x decrease percentage based on fall in Index = dollar amount of decrease based on fall in Index

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$48,073 x 2.00% = $961
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$48,073 x 2.00% = $961

Year 2 does not mark the end of a Term for the S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy, so the value for that Strategy at the end of Year 2 is calculated using the same formula used on any other day before the end of a Term:

Formula   Remaining Investment Base x Daily Value Percentage = dollar amount of decrease based on Daily Value Percentage

Calculation

6-year 10% Buffer with Upside Participation Rate Strategy:	$49,055 x -4.90% = -$2,404

Thus, the dollar amount of decrease is $2,404.

Footnote 17. In this example, for the 1-year Strategies, there has been a fall in the Index for the second Term. We use the following formula to calculate the Strategy value at the end of Year 2.

Formula   Remaining Investment Base on Term end date - dollar amount of decrease based on fall in Index = Strategy value on Term end date

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$48,073 - $961 = $47,112
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$48,073 - $961 = $47,112

For the 6-year Strategy, the Daily Value Percentage is negative at the end of Year 2. We use the following formula to calculate the Strategy value.

Formula   Remaining Investment Base on valuation date - dollar amount of decrease based on Daily Value Percentage = current Strategy value

Calculation

6-year 10% Buffer with Upside Participation Rate Strategy:	$49,055 - $2,404 = $46,651

For the 1-year Strategies, the Strategy value at the end of the second Term is also the Investment Base at the beginning of the third Term. For the 6-year Strategy, the existing Investment Base is carried forward because it is not the end of a Term.

Footnote 18. When no withdrawals are taken over the course of a 1-year Term, the Daily Charges through the Term are equal to the Investment Base on the Term start date times the annual rate at which the Daily Charge compounds. When no withdrawals are taken over the course of a year that is part of a 6-year Term, the Daily Charges for the year are equal to the Investment Base at the Term start date or the most recent Term start date anniversary times the annual rate at which the Daily Charge compounds.

Formula   Investment Base on Term start date or anniversary x annual rate

Calculation

1-year Strategy with a Cap:	$47,112 x 0.95% = $448
1-year Strategy with an Upside Participation Rate:	$47,112 x 0.95% = $448
6-year Strategy with a Buffer:	$49,055 x 0.95% = $466

Footnote 19. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula   Beginning Investment Base – sum of Daily Charges since beginning of year – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$47,112 - $448 - $0 = $46,664
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$47,112 - $448 - $0 = $46,664
6-year 10% Buffer with Upside Participation Rate Strategy:	$49,055 - $466 - $0 = $48,589

Footnote 20. For a 1-year Strategy, the value at the end of the third Term is based on the rise or fall in the index for the Term. The rise or fall in Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

Formula   (Index Value on Term end date - Index Value on Term start date) / Index Value on Term start date

Calculation   (884.74- 921.60) / 921.60 = -4.0%

Thus, the Index has fallen 4.00%.

For the 6-year Strategy, the value at the end of Year 3 is based on the Daily Value Percentage, and not the rise or fall in the Index.

Footnote 21. The Buffer is the decrease in the value of an Index for a Term that is disregarded when determining the loss for the Term. In this example, the S&P 500 6-year10% Buffer with Upside Participation Rate Strategy did not complete a Term in Year 3, so no Buffer will be applied to that Strategy in Year 3. The 1-year Upside Participation Rate Strategy and the 1-year Strategy with a Cap do not have a Buffer.

Footnote 22. The Downside Participation Rate is your share of any fall in the Index for a Term taken into account to determine the Strategy value at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 1-year 50% Downside Participation Rate with Cap Strategy each have a Downside Participation Rate of 50%, which means the calculation of any decrease will include 50% of any Index fall. The 6-year 10% Buffer with Upside Participation Rate Strategy does not have a Downside Participation Rate.

Footnote 23.

The Index has fallen 4% in Year 3.

For a 1-year Strategy, when the Index has fallen for a Term, we use the following formula to calculate the decrease for both the 1-year Strategy with a Cap and the 1-Year Strategy with an Upside Participation Rate.

Formula   Fall in Index for Term x Downside Participation Rate for Term = Decrease as a Percentage

Calculation   4.00% x 50% = 2.00%

For the 6-year 10% Buffer with Upside Participation Rate Strategy, the Buffer only applies at the end of the 6-year Term. At the end of Year 3, the Strategy value is determined based on the Daily Value Percentage. The Daily Value Percentage may be more or less than the cumulative rise or fall of the Index since the Term start date, and it may be negative even when the Index has risen. The Strategy value may decline even when the fall in the Index has not exceeded the Buffer.

Footnote 24.

The Index has fallen 4% in Year 3.

For a 1-year Strategy, when the Index has fallen over the Term, we use the following formula to calculate the amount of the decrease.

Formula   Remaining Investment Base x decrease percentage based on rise in Index = dollar amount of decrease based on fall in Index

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$46,664 x 2.00% = $933
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$46,664 x 2.00% = $933

Year 3 does not mark the end of a Term for the S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy, so the value for that Strategy at the end of Year 3 is calculated using the same formula used on any other day before the end of a Term:

Formula   Remaining Investment Base x Daily Value Percentage = dollar amount of change based on Daily Value Percentage

Calculation

6-year 10% Buffer with Upside Participation Rate Strategy:	$48,589 x -6.00% = -$2,915

Thus, the dollar amount of decrease is $2,915.

Footnote 25. In this example, for the 1-year Strategies, there has been a fall in the Index for the third Term. This means the Strategy value at the end of Year 3 is the Remaining Investment Base on the Term end date minus the decrease for the fall in the Index for the Term.

Formula   Remaining Investment Base on Term end date - dollar amount of decrease based on rise in Index = Strategy value on Term end date

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$46,664 - $933 = $45,731
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$46,664 - $933 = $45,731

For the 6-year Strategy, the Daily Value Percentage is negative at the end of Year 3. We use the following formula to calculate the Strategy value.

Formula   Remaining Investment Base on valuation date - dollar amount of decrease based on Daily Value Percentage = current Strategy value

Calculation

6-year 10% Buffer with Upside Participation Rate Strategy:	$48,589 - $2,915 = $45,674

For the 1-year Strategies, the Strategy value at the end of the third Term is also the Investment Base at the beginning of the fourth Term. For the 6-year Strategy, the existing Investment Base is carried forward because it is not the end of a Term.

Footnote 26. When no withdrawals are taken over the course of a 1-year Term, the Daily Charges through the Term are equal to the Investment Base on the Term start date times the annual rate at which the Daily Charge compounds. When no withdrawals are taken over the course of a year that is part of a 6-year Term, the Daily Charges for the year are equal to the Investment Base at the Term start date or the most recent Term start date anniversary times the annual rate at which the Daily Charge compounds.

Formula   Investment Base on Term start date or anniversary x annual rate

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$45,731 x 0.95% = $434
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$45,731 x 0.95% = $434
6-year 10% Buffer with Upside Participation Rate Strategy:	$48,589 x 0.95% = $462

Footnote 27. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula   Beginning Investment Base – sum of Daily Charges since beginning of year – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$45,731 - $434 - $0 = $45,297
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$45,731 - $344 - $0 = $45,297
6-year 10% Buffer with Upside Participation Rate Strategy:	$48,589 - $462 - $0 = $48,127

Footnote 28. For a 1-year Strategy, the value at the end of the fourth Term is based on the rise or fall in the index for the Term. The rise or fall in Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

Formula   (Index Value on Term end date- Index Value on Term start date) / Index Value on Term start date

Calculation   (849.35 – 884.74) / 884.74 = -4.00%

Thus, the Index has fallen 4.00%.

For the 6-year Strategy, the value at the end of Year 4 is based on the Daily Value Percentage, and not the rise or fall in the Index.

Footnote 29. The Buffer is the decrease in the value of an Index for a Term that is disregarded when determining the loss for the Term. In this example, the S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy did not complete a Term in Year 4, so no Buffer will be applied to that Strategy in Year 4. The 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 1-year 50% Downside Participation Rate with Cap Strategy with a Cap do not have a Buffer.

Footnote 30. The Downside Participation Rate is your share of any fall in the Index for a Term taken into account to determine the Strategy value at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 1-year 50% Downside Participation Rate with Cap Strategy each have a Downside Participation Rate of 50%, which means the calculation of any decrease will include 50% of any Index fall. The 6-year 10% Buffer with Upside Participation Rate Strategy does not have a Downside Participation Rate.

Footnote 31.

The Index has fallen 4% in Year 4

For a 1-year Strategy, when the Index has fallen over a Term, we use the following formula to calculate the decrease for both the 1-year 50% Downside Participation Rate with Cap Strategy and the 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy.

Formula   Fall in Index for Term x Downside Participation Rate for Term = Decrease as a Percentage

Calculation   4.0% x 50% = 2.0%

For the 6-year 10% Buffer with Upside Participation Rate Strategy, the Buffer only applies at the end of the 6-year Term. At the end of Year 4, the Strategy value is determined based on the Daily Value Percentage. The Daily Value Percentage may be more or less than the cumulative rise or fall of the Index since the Term start date, and it may be negative even when the Index has risen. The Strategy value may decline even when the fall in the Index has not exceeded the Buffer.

Footnote 32.

The Index has fallen 4% in Year 4

For a 1-year Strategy, when the Index has fallen for the Term, we use the following formula to calculate the amount of the decrease.

Formula   Remaining Investment Base x decrease percentage based on fall in Index = dollar amount of decrease based on fall in Index

Calculation

1-year 50% Downside Participation Rate with Cap Strategy: $45,297 x 2.00% = $906
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $45,297 x 2.00% = $906

Year 4 does not mark the end of a Term for the S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy, so the value for that Strategy at the end of Year 4 is calculated using the same formula used on any other day before the end of a Term:

Formula   Remaining Investment Base x Daily Value Percentage = dollar amount of change based on Daily Value Percentage

Calculation
6-year 10% Buffer with Upside Participation Rate Strategy: $48,127 x -8.10% = -$3,898

Thus, the dollar amount of decrease is $3,898.

Footnote 33. In this example, for the 1-year Strategies, there has been a fall in the Index for the fourth Term. This means the Strategy value at the end of Year 4 is the Remaining Investment Base on the Term end date minus the decrease for the fall in the Index for the Term.

Formula   Remaining Investment Base on Term end date - dollar amount of decrease based on fall in Index = Strategy value on
                        Term end date

Calculation

1-year 50% Downside Participation Rate with Cap Strategy: $45,297 - $906 = $44,391
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $45,297 - $906 = $44,391

For the 6-year 10% Buffer with Upside Participation Rate Strategy, the Daily Value Percentage is negative at the end of Year 4. We use the following formula to calculate the Strategy value.

Formula   Remaining Investment Base on valuation date - dollar amount of decrease based on Daily Value Percentage = current
                        Strategy value

Calculation

6-year 10% Buffer with Upside Participation Rate Strategy: $48,127 - $3,898 = $44,229

For the 1-year Strategies, the Strategy value at the end of the fourth Term is also the Investment Base at the beginning of the fifth Term. For the 6-year Strategy, the existing Investment Base is carried forward because it is not the end of a Term.

Footnote 34. When no withdrawals are taken over the course of a 1-year Term, the Daily Charges through the Term are equal to the Investment Base on the Term start date times the annual rate at which the Daily Charge compounds. When no withdrawals are taken over the course of a year that is part of a 6-year Term, the Daily Charges for the year are equal to the Investment Base at the Term start date or the most recent Term start date anniversary times the annual rate at which the Daily Charge compounds.

Formula   Investment Base on Term start date or anniversary x annual rate

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$44,391 x 0.95% = $422
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$44,391 x 0.95% = $422
6-year 10% Buffer with Upside Participation Rate Strategy:	$48,127 x 0.95% = $457

Footnote 35. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula   Beginning Investment Base – sum of Daily Charges since beginning of year – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$44,391 - $422 - $0 = $43,969
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$44,391 - $422 - $0 = $43,969
6-year 10% Buffer with Upside Participation Rate Strategy:	$48,127 - $457 - $0 = $47,670

Footnote 36. For a 1-year Strategy, the value at the end of the fifth Term is based on the rise or fall in the index for the Term. The rise or fall in Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

Formula   (Index Value on Term end date - Index Value on Term start date) / Index Value on Term start date

Calculation   (815.37 – 849.35) / 849.35 = -4.00%

Thus, the Index has fallen 4.00%.

For the 6-year 10% Buffer with Upside Participation Rate Strategy, the value at the end of Year 5 is based on the Daily Value Percentage, and not the rise or fall in the Index.

Footnote 37. The Buffer is the decrease in the value of an Index for a Term that is disregarded when determining the loss for the Term. In this example, the S&P 500 6-year 10% Buffer with Upside Participation Rate Term 10% Buffer did not complete a Term in Year 5, so no Buffer will be applied to that Strategy in Year 5. The 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 1-year 50% Downside Participation Rate with Cap Strategy with a Cap do not have a Buffer.

Footnote 38. The Downside Participation Rate is your share of any fall in the Index for a Term taken into account to determine the Strategy value at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 1-year 50% Downside Participation Rate with Cap Strategy each have a Downside Participation Rate of 50%, which means the calculation of any decrease will include 50% of any Index fall. The 6-year 10% Buffer with Upside Participation Rate Strategy does not have a Downside Participation Rate.

Footnote 39.

The Index has fallen 4% in Year 5

For a 1-year Strategy, when the Index has fallen for a Term, we use the following formula to calculate the decrease for both the 1-year Strategy with a Cap and the 1-Year Strategy with an Upside Participation Rate.

Formula   Fall in Index for Term x Downside Participation Rate for Term = Decrease as a Percentage

Calculation   4.00% x 50% = 2.00%

For the 6-year 10% Buffer with Upside Participation Rate Strategy with a Buffer, the Buffer only applies at the end of the 6-year Term. At the end of Year 5, the Strategy value is determined based on the Daily Value Percentage. The Daily Value Percentage may be more or less than the cumulative rise or fall of the Index since the Term start date, and it may be negative even when the Index has risen. The Strategy value may decline even when the fall in the Index has not exceeded the Buffer.

Footnote 40.

The Index has fallen 4% in Year 5

For a 1-year Strategy, when the Index has fallen for the Term, we use the following formula to calculate the amount of the decrease.

Formula   Remaining Investment Base x decrease percentage based on fall in Index = dollar amount of decrease based on rise in Index

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$43,969 x 2.00% = $879

1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $43,969 x 2.00% = $879

Year 5 does not mark the end of a Term for the S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy, so the value for that Strategy at the end of Year 5 is calculated using the same formula used on any other day before the end of a Term:

Formula   Remaining Investment Base x Daily Value Percentage = dollar amount of change based on Daily Value Percentage

Calculation
6-year 10% Buffer with Upside Participation Rate Strategy: $47,670 x -10.00% = -$4,767

Thus, the dollar amount of decrease is $4,767.

Footnote 41. In this example, for the 1-year Strategies, there has been a fall in the Index for the fifth Term. This means the Strategy value at the end of Year 5 is the Remaining Investment Base on the Term end date minus the decrease for the fall in the Index for the Term.

Formula   Remaining Investment Base on Term end date + dollar amount of decrease based on fall in Index = Strategy value on Term end date

Calculation

1-year 50% Downside Participation Rate with Cap Strategy: $43,969 - $879 = $43,090
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $43,969 - $879 = $43,090

For the 6-year 10% Buffer with Upside Participation Rate Strategy, the Daily Value Percentage is negative at the end of Year 5. We use the following formula to calculate the Strategy value.

Formula   Remaining Investment Base on valuation date - dollar amount of decrease based on Daily Value Percentage = current Strategy value

Calculation

6-year 10% Buffer with Upside Participation Rate Strategy: $47,670 - $4,767 = $42,903

For the 1-year Strategies, the Strategy value at the end of the fifth Term is also the Investment Base at the beginning of the sixth Term. For the 6-year Strategy, the existing Investment Base is carried forward because it is not the end of a Term.

Footnote 42. When no withdrawals are taken over the course of a 1-year Term, the Daily Charges through the Term are equal to the Investment Base on the Term start date times the annual rate at which the Daily Charge compounds. When no withdrawals are taken over the course of a year that is part of a 6-year Term, the Daily Charges for the year are equal to the Investment Base at the Term start date or the most recent Term start date anniversary times the annual rate at which the Daily Charge compounds.

Formula   Investment Base on Term start date or anniversary x annual rate

Calculation

1-year 50% Downside Participation Rate with Cap Strategy: $43,090 x 0.95% = $409
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $43,090 x 0.95% = $409
6-year 10% Buffer with Upside Participation Rate Strategy: $47,670 x 0.95% = $453

Footnote 43. The remaining Investment Base is equal to the beginning Investment Base minus the sum of the Daily Charges and minus the proportional reduction for any prior withdrawals and related Early Withdrawal Charges.

Formula   Beginning Investment Base – sum of Daily Charges since beginning of year – proportional reduction for any prior Withdrawals and related Early Withdrawal Charges = remaining Investment Base

Calculation

1-year 50% Downside Participation Rate with Cap Strategy: $43,090 - $409 - $0 = $42,681
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy: $43,090 - $409 - $0 = $42,681
6-year 10% Buffer with Upside Participation Rate Strategy: $47,670 - $453 - $0 = $47,217

Footnote 44. For a 1-year Strategy, the value at the end of the sixth Term is based on the rise or fall in the index for the Term. The rise or fall in Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

Formula   (Index Value on Term end date - Index Value on Term start date) / Index Value on Term start date

Calculation   (782.76 – 815.37) / 815.37 = -4.00%

Thus, the Index has fallen 4%.

For the 6-year 10% Buffer with Upside Participation Rate Strategy, the value at the end of the Term is based on the rise or fall in the index for the entire 6-year Term. The rise or fall in Index for the Term is equal to the percentage change in the Index Value measured from the Term start date to the Term end date.

Formula	(Index Value on Term end date - Index Value on Term start date) / Index Value on Term start date
Calculation	(782.76 – 1000.00) / 1000.00 = -21.7%

Thus, the Index has fallen 21.72%.

Footnote 45. The Buffer is the decrease in the value of an Index for a Term that is disregarded when determining the loss for the Term. The S&P 500 6-year 10% Buffer with Upside Participation Rate Strategy has a Buffer of -10% that is applied to calculate the Strategy value at the end of the 6-year Term. The 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 1-year 50% Downside Participation Rate with Cap Strategy do not have a Buffer.

Footnote 46. The Downside Participation Rate is your share of any fall in the Index for a Term taken into account to determine the Strategy value at the end of the Term. In this example, the 1-year 50% Downside Participation Rate with Upside Participation Rate Strategy and the 1-year 50% Downside Participation Rate with Cap Strategy each have a Downside Participation Rate of 50%, which means the calculation of any decrease will include 50% of any Index fall. The 6-year 10% Buffer with Upside Participation Rate Strategy does not have a Downside Participation Rate.

Footnote 47.

The Index has fallen 4% in Year 6 and has fallen 21.72% from the start of Year 1 to the end of Year 6.

For a 1-year Strategy, when the Index has fallen for a Term, we use the following formula to calculate the decrease for both the 1-year 50% Downside Participation Rate with Cap Strategy and the 1-Year 50% Downside Participation Rate with Upside Participation Rate Strategy.

Formula	Fall in Index for Term x Downside Participation Rate for Term = Decrease as a Percentage
Calculation	4.00% x 50% = 2.00%

For the 6-year Strategy, when the Index has fallen for a Term, we use the following formulas to calculate the decrease.

Formula	If the fall in Index is greater than Buffer, then Fall in Index – Buffer = Decrease as a Percentage If the fall in Index is not greater than Buffer, then Decrease as a Percentage = 0
Calculation	21.72% fall in Index is greater than the 10% Buffer, so Decrease as a Percentage = 21.72% - 10% = 11.72%

Footnote 48.

For both a 1-year Strategy and the 6-year Strategy, when the Index has fallen for the Term, we use the following formula to calculate the decrease.

Formula   Remaining Investment Base x decrease percentage based on fall in Index = dollar amount of decrease based on fall in Index

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$42,681 x 2.0% = $854
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$42,681 x 2.0% = $854
6-year 10% Buffer with Upside Participation Rate Strategy:	$47,217 x 11.72% = $5,534

Footnote 49. In this example, for the 1-year Strategies, there has been a fall in the Index for the sixth Term. For the 6-year Strategy, there has also been a fall in the Index for its 6-year Term. This means that for both a 1-year Strategy and the 6-year Strategy, the Strategy value at the end of Year 6 is the Remaining Investment Base on the Term Year end date minus the decrease for the fall in the Index for the Term.

Formula   Remaining Investment Base on Term end date - dollar amount of decrease based on fall in Index = Strategy value on Term end date

Calculation

1-year 50% Downside Participation Rate with Cap Strategy:	$42,681 - $854 = $41,827
1-year 50% Downside Participation Rate with Upside Participation Rate Strategy:	$42,681 - $854 = $41,827
6-year 10% Buffer with Upside Participation Rate Strategy:	$47,217 - $5,534 = $41,683

STATE VARIATIONS

This prospectus describes the material features of the Contract. Contracts issued in your state may provide different features and benefits from, and impose different costs than, those described in this prospectus because of state law variations. However, please note that the maximum charge is set forth in this prospectus. If you would like to review a copy of the Contract and any endorsements, contact us at P.O. Box 5423, Cincinnati, OH 45201-5423, visit our website at www.mmascend.com or call us at 1-800-789-6771.

The following information is a summary of material state variations as of the date of this prospectus.

General

For Contracts Issued in Illinois

References to "spouse" have been changed to "spouse or civil union partner."

For Contracts Issued in Missouri

When taken from Indexed Strategies, withdrawals are taken proportionately without regard to Term length.
Certain Indexed Strategies are not available.

For Contracts Issued in Nebraska

Certain Indexed Strategies are not available.

For Contracts Issued in New Jersey

References to "spouse" have been changed to "spouse or civil union partner."

Extended Care Waiver Rider

For Contracts Issued in California

The Waiver of Early Withdrawal Charges for Facility Care or Home Care or Community-Based Services Rider (CA Rider) provides a waiver under an expanded set of circumstances. The waiver will apply if, at the time of the withdrawal or surrender, or within the immediately preceding 90 days, the following conditions are met: (1) the insured is confined in a facility or is receiving, as prescribed by a physician, registered nurse or licensed social worker, home care or community-based services; (2) the insured's confinement in a facility, the insured's receipt of home care or community-based services, or any combination thereof has continued for a period of at least 90 consecutive days; and (3) the first day of such 90-day period was at least one year after the Contract Effective Date. Facility includes a skilled nursing facility, a convalescent nursing home, or an extended care facility or a residential care facility or a residential care facility for the elderly. Home care or community-based services includes home health care, adult day care, personal care, homemaker services, hospice services and respite care as defined in the rider. Additional conforming changes have been made including revised and new definitions, and inclusion of a description of circumstances under which the waiver does not apply. The termination provision has been modified to reflect that the rider will not terminate if you transfer or assign an interest in the contract to a person or entity other than the insured.

For Contracts Issued in Connecticut

The conditions under which the waiver applies have been modified. The waiver will apply if at the time of a withdrawal or surrender or within the immediately preceding 90 days all of the following conditions are met: (1) an insured is confined in a long-term care facility or hospital; and (2) the confinement has continued for a period of at least 90 consecutive days.

For Contracts Issued in Kansas

The conditions under which the waiver applies have been modified. The first day of confinement must be at least 90 days after the contract effective date, rather than one year after the contract effective date.

For Contracts Issued in Massachusetts

This waiver rider is not available in Massachusetts.

For Contracts Issued in Missouri

This waiver rider is not available in Missouri.

For Contracts Issued in Montana

The definition of medically necessary has been modified and refers to the Insured's physician.

For Contracts Issued in Nebraska

The definition of skilled nursing facility has been modified by adding a licensed practical nurse to the list of persons who may provide nursing services or supervise the provision of nursing services.

For Contracts Issued in New Hampshire

The definition of skilled nursing facility has been modified by changing the phrase "licensed and operated as a skilled nursing facility" to "operated as a skilled nursing facility."

For Contracts Issued in Pennsylvania

The conditions under which the waiver is available have been modified. The waiver will apply if at the time of a withdrawal or surrender or within the immediately preceding 90 days all of the following conditions are met: (1) an insured is confined in one or more long-term care facilities, hospital, or a combination of such; (2) the confinement is prescribed by a physician and is medically necessary; (3) the first day of the confinement is at least one year after the contract effective date; and (4) the confinement has continued for a period of at least 90 consecutive days, or has continued for a total of at least 90 days if each successive confinement occurs within six months of the previous confinement and is for the same related medical cause.

The definition of long-term care facility has been modified. The following facilities have been deleted from the list of facilities excluded from that definition: a facility that primarily treats drug addicts and a facility that is a home for the mentally ill. An exclusion provision has been added to clarify that the waiver will not apply if the insured is confined in a long-term care facility or hospital for the treatment of certain types of drug addiction or mental illnesses.

The definition of hospital has been modified by changing the phrase "it maintains, or has access to, medical, diagnostic, and major surgical facilities" to "it maintains, or has access to, medical and diagnostic facilities."

For Contracts Issued in Vermont

The definition of long-term care facility has been modified. The following facilities have been deleted from the list of excluded facilities: a facility that primarily treats drug addicts, a facility that primarily treats alcoholics, and a facility that is a home for the mentally ill. In addition, the definition of physician has been modified by changing the phrase "a person who is licensed in the United States as a medical doctor or a doctor of osteopathy and who is practicing within the scope of his or her license" to "a person who is licensed in the United States who is providing medical care and treatment when such services are provided within the scope of his or her license and provided pursuant to applicable law."

For Contracts Issued in Washington

The waiver is based on confinement to an extended care facility or hospital rather than a long-term care facility or hospital. Definitions are modified to reflect the new terminology, references to "skilled nursing facility" are changed to "nursing facility" and the related definition is modified. In the definition of nursing facility and hospital, a licensed practical nurse is added to the list of persons who may provide nursing services or supervise the provision of nursing services.

Terminal Illness Waiver Rider

For Contracts Issued in Illinois

As a result of the terminal illness, your life expectancy must be 24 months from the date of death, rather than 12 months.

For Contracts Issued in Kansas

As a result of the terminal illness, your life expectancy must be 24 months from the date of death, rather than 12 months. The diagnosis must be rendered 90 days after the contract effective date, rather than one year after the contract effective date.

For Contracts Issued in New Jersey

The requirement related to the timing of the diagnosis does not apply. But the waiver will not be available until at least one year after the contract effective date.

For Contracts Issued in Massachusetts

This waiver rider is not available in Massachusetts.

For Contracts Issued in Pennsylvania

The diagnosis must be rendered after the contract effective date, rather than one year after the contract effective date. But the waiver will not be available until at least one year after the contract effective date. In addition, the waiver is based on a terminal condition as defined in the rider, rather than a terminal illness.

For Contracts Issued in Texas

The diagnosis must be rendered on or after the contract effective date, rather than one year after the contract effective date.

For Contracts Issued in Washington

As a result of the terminal illness, your life expectancy must be 24 months from the date of death, rather than 12 months.

Form of Annuity Payout Benefit

For Contracts Issued in Texas:

Payments under a Payout Option are subject to a $50 minimum.

Right to Cancel (Free Look)

State law governs the length of the free look period and the amount of the refund that you will receive. The period and amount may differ if you are replacing a life insurance policy or annuity contract. The table below summarizes the state law provisions.

For Contracts Issued in:	Free Look Period	Refund	Replacement Free Look Period	Replacement Refund
Alabama	20 days	Account Value	30 days	Account Value + Fees/Charges
Alaska	20 days	Account Value + Fees/Charges	30 days	Account Value + Fees/Charges
Arizona	20 days	Account Value + Fees/Charges	30 days	Account Value + Fees/Charges
Arkansas	20 days	Account Value	30 days	Account Value
California	30 days	Account Value + Fees/Charges **Note**: If owner is age 60 or older, refund amount is Purchase Payments.	30 days	Account Value + Fees/Charges **Note**: If owner is age 60 or older, refund amount is Purchase Payments.
Colorado	20 days	Account Value	30 days	Account Value + Fees/Charges
Connecticut	20 days	Account Value + Fees/Charges	30 days	Account Value + Fees/Charges
Delaware	20 days	Account Value	30 days	Purchase Payments
District of Columbia	20 days	Account Value	30 days	Account Value
Florida	21 days	Account Value + Fees/Charges	30 days	Account Value + Fees/Charges
Georgia	20 days	Purchase Payments	30 days	Purchase Payments
Hawaii	20 days	Account Value	30 days	Account Value + Fees/Charges
Idaho	20 days	Purchase Payments	30 days	Purchase Payments
Illinois	20 days	Account Value + Fees/Charges	30 days	Account Value + Fees/Charges
Indiana	20 days	Account Value	30 days	Purchase Payments
Iowa	20 days	Account Value	30 days	Account Value + Fees/Charges
Kansas	20 days	Account Value + Fees/Charges	30 days	Account Value + Fees/Charges
Kentucky	20 days	Purchase Payments	30 days	Account Value + Fees/Charges
Louisiana	20 days	Purchase Payments	30 days	Account Value + Fees/Charges
Maine	20 days	Account Value	30 days	Account Value + Fees/Charges
Maryland	20 days	Purchase Payments	30 days	Account Value + Fees/Charges
Massachusetts	20 days	Account Value	30 days	Purchase Payments
Michigan	20 days	Account Value + Fees/Charges	30 days	Account Value + Fees/Charges
Minnesota	20 days	Account Value + Fees/Charges	30 days	Purchase Payments
Mississippi	20 days	Account Value	30 days	Account Value + Fees/Charges
Missouri	20 days	Purchase Payments	30 days	Purchase Payments
Montana	20 days	Account Value	30 days	Account Value + Fees/Charges
Nebraska	20 days	Purchase Payments	30 days	Account Value + Fees/Charges
Nevada	20 days	Purchase Payments	30 days	Purchase Payments
New Hampshire	20 days	Purchase Payments	30 days	Account Value + Fees/Charges
New Jersey	20 days	Account Value + Fees/Charges	30 days	Account Value + Fees/Charges

For Contracts Issued in:	Free Look Period	Refund	Replacement Free Look Period	Replacement Refund
New Mexico	20 days	Account Value	30 days	Account Value + Fees/Charges
North Carolina	20 days	Purchase Payments	30 days	Account Value + Fees/Charges
North Dakota	20 days	Account Value + Fees/Charges	30 days	Account Value + Fees/Charges
Ohio	20 days	Account Value	30 days	Account Value + Fees/Charges
Oklahoma	20 days	Purchase Payments	30 days	Purchase Payments
Oregon	20 days	Account Value	30 days	Account Value + Fees/Charges
Pennsylvania	20 days	Account Value	30 days	Account Value
Rhode Island	20 days	Purchase Payments	30 days	Account Value + Fees/Charges
South Carolina	20 days	Purchase Payments	30 days	Account Value + Fees/Charges
South Dakota	20 days	Account Value + Fees/Charges	30 days	Account Value + Fees/Charges
Tennessee	20 days	Account Value	30 days	Purchase Payments
Texas	20 days	Purchase Payments	30 days	Account Value + Fees/Charges
Utah	20 days	Purchase Payments	30 days	Purchase Payments
Vermont	20 days	Account Value	30 days	Account Value + Fees/Charges
Virginia	20 days	Account Value	30 days	Account Value + Fees/Charges
Washington	20 days	Greater of: (1) Purchase Payments or (2) Account Value minus taxes	30 days	Purchase Payments
West Virginia	20 days	Account Value	30 days	Account Value + Fees/Charges
Wisconsin	30 days	Account Value	30 days	Account Value + Fees/Charges
Wyoming	20 days	Account Value	30 days	Greater of: (1) Purchase Payments or (2) Account Value + Fees/Charges

Assignment

For Contracts Issued in Ohio:

Subject to the tax qualifications endorsement, if any, you may assign your rights to designate or change a Beneficiary or an Annuitant, to change Owners, or to elect a Payout Option if you make a specific Request in Good Order.

Amendment of the Contract

For Contracts Issued in Florida:

You have the right to reject an endorsement that changes the provisions of this Contract to obtain or retain the intended tax treatment under federal tax law, or to take into account other pertinent laws and governmental regulations and rulings. We will not be responsible for the tax or other consequences of your rejection.

For Contracts Issued in Texas:

You have the right to reject an endorsement that changes the provisions of this Contract to obtain or retain the intended tax treatment under federal tax law, or to take into account other pertinent laws and governmental regulations and rulings. We will not be responsible for the tax or other consequences of your rejection.

Involuntary Termination

For Contracts Issued in Texas:

Our right to terminate this Contract is not tied to the minimum required value. We have the right to terminate this Contract if the Account Value would provide a benefit of less than $20 each month at age 70 under a life payout with payments for at least a fixed period of 10 years.

Our form number for the Contract is P1833621NW (P1833621PR in Puerto Rico). Our form numbers for the Crediting Strategy endorsements to the Contract are E1825318NW, E1825418NW, E1825518NW, E1825618NW, E1825718NW, E1842022NW, E1850022NW, E1850122NW, E1825822NW, E1825922NW, E1850622NW, E1842723NW, E1826118NW, E1850622NW, E1850522NW, E1826318NW, E1843222NW, E1849122NW, E1849222NW, E1856423NW-1, E1856523NW-1, E1856623NW-1, E1856723NW-1, E1856823NW-1, E1856923NW-1, E1857223NW-1, E1857423NW, and E1857323NW. Our form number for the Death Benefit endorsement to this Contract is E1826318NW. The form numbers may vary by state. The Securities and Exchange Commission file number for the Contract is 333-276475.

- **The Contract is not insured by the FDIC (Federal Deposit Insurance Corporation) or the NCUSIF (National Credit Union Share Insurance Fund).**
- **Although the Contract may be sold through relationships with banks or other financial institutions, the Contract is not a deposit or obligation of, or guaranteed by, such institutions or any federal regulatory agency.**

The Contract doesn't invest in any equity, debt, or other investments.

Dealer Prospectus Delivery Obligations. All dealers that effect transactions in these securities are required to deliver a prospectus.

SECTION II

MASSMUTUAL ASCEND LIFE INFORMATION

<u>Overview</u>

MassMutual Ascend Life is a stock insurance company incorporated in 1961. We are domiciled in the state of Ohio and have been continuously engaged in the insurance business since that time. We are licensed to conduct life insurance business in all states of the United States except New York, as well as the District of Columbia and Puerto Rico. Our principal executive offices are located at 191 Rosa Parks Street, Cincinnati, Ohio 45202.

We are a wholly-owned subsidiary of Massachusetts Mutual Life Insurance Company ("MassMutual"), a mutual life insurance company. MassMutual and its domestic life insurance subsidiaries provide individual and group life insurance, disability insurance, individual and group annuities and guaranteed interest contracts to individual and institutional customers in all 50 states of the U.S., the District of Columbia and Puerto Rico.

Below is a chart that shows the relationships among MassMutual, MassMutual Ascend Life, and other MassMutual subsidiaries that are mentioned in this Section II of this prospectus. Each subsidiary in the chart is wholly-owned by its immediate parent.

Massachusetts Mutual Life Insurance Company ("MassMutual")

- Glidepath Holdings Inc. ("Glidepath") is a subsidiary of MassMutual. It is a financial services holding company.

    - **MassMutual Ascend Life Insurance Company** ("MMALIC") is a subsidiary of Glidepath. It is the issuer of the annuities that are the subject of this Registration Statement and other annuity products.

        - MM Ascend Life Investor Services, LLC ("MMALIS") is a subsidiary of MMALIC. It is the principal underwriter and distributor of the annuities that are the subject of this Registration Statement.

- MM Asset Management Holding LLC is a subsidiary of MassMutual. It is a financial services holding company.

    - Barings LLC ("Barings") is a subsidiary of MM Asset Management Holding LLC. It provides investment services for MassMutual and certain of its affiliated companies, including MMALIC.

Prior to October 3, 2022, MMALIC's name was Great American Life Insurance Company ("GALIC") and MMALIS' name was Great American Advisors, LLC ("GAA"). On May 28, 2021, American Financial Group, Inc. sold its annuity business consisting of GALIC and its two insurance subsidiaries, Annuity Investors Life Insurance Company and Manhattan National Life Insurance Company, as well as a broker-dealer affiliate, GAA, and insurance distributor, AAG Insurance Agency, Inc. to MassMutual.

No company other than MMALIC has any legal responsibility to pay amounts owed under the Contract. You should look to the financial strength of MMALIC for its claims-paying ability.

<u>Directors and Executive Officers of MassMutual Ascend Life</u>

Below is a list of the names and ages of the individuals who will serve as directors and executive officers of MMALIC, and a description of the business experience of each of the respective individuals.

Name	Year of Birth	Position(s) with MassMutual Ascend Life	Served in Position(s) Since
Dominic L. Blue	1976	Director and Chief Executive Officer	May 2021/ June 2023
Donna Carrelli	1974	Head of Insurance Operations	February 2022
Susan M. Cicco	1971	Director	May 2021
Geoffrey J. Craddock	1959	Director	May 2021
Roger W. Crandall	1964	Director, Chairman of the Board	May 2021
John P. Gruber	1962	Senior Vice President, Secretary, Chief Compliance Officer and General Counsel	November 2005
Paul A. LaPiana	1969	Director	May 2021

Name	Year of Birth	Position(s) with MassMutual Ascend Life	Served in Position(s) Since
Sears Merritt	1981	Director	May 2022
Mark F. Muething	1959	Director	October 1993
		President	April 2018
Michael J. O'Connor	1969	Director	May 2021
Eric W. Partlan	1973	Director, Chief Investment Officer	May 2021
Brian P. Sponaugle	1969	Senior Vice President and Treasurer	May 2022
Arthur W. Wallace	1974	Director	May 2021
Elizabeth A. Ward	1964	Director	May 2021

Dominic L. Blue

Mr. Blue has served as Chief Executive Officer of MMALIC since June, 2023 and as the Head of MassMutual Strategic Distributors since October 2020. Mr. Blue has served in various positions with MassMutual since August 2011.

Donna Carrelli

Ms. Carrelli has served as MMALIC's Head of Insurance Operations since February 2022. Ms. Carrelli has served in various positions with the Company since March 1998.

Susan M. Cicco

Ms. Cicco has served as the Head of Human Resources & Employee Experience since January 2017 and also has served since July 2020 as the Chief of Staff to the CEO. Ms. Cicco has served in various positions with MassMutual since 1993.

Geoffrey J. Craddock

Mr. Craddock has served as the Chief Risk Officer of MassMutual since October 2017. Previously, Mr. Craddock served as the leader of risk management and asset allocation at MassMutual's former subsidiary, OppenheimerFunds, Inc., from 2008 through September 2017.

Roger W. Crandall

Mr. Crandall has served as Chairman of the Board of MMALIC since May 28, 2021. Mr. Crandall has served as Chairman, President and Chief Executive Officer of MassMutual since December 2010. Mr. Crandall has served in various positions with MassMutual since 1988.

John P. Gruber

Mr. Gruber has served as MMALIC's Senior Vice President, General Counsel and Secretary since November 2005. He also serves as Chief Compliance Officer of MMALIC. Mr. Gruber has served in various positions with the Company since July 1993.

Paul A. LaPiana

Mr. LaPiana has served as Head of MMUS Product since February of 2019. Mr. LaPiana joined MassMutual in July of 2016 and served as the Head of Field Management until he assumed his current role.

Sears Merritt

Mr. Merritt has served as the Head of Enterprise Technology & Experience since May 2022. Mr. Merritt has served in various positions with MassMutual since 2014.

Mark F. Muething

Mr. Muething has served as President of MMALIC since April 2018. Mr. Muething served in various positions with MMALIC since October 1993.

Michael J. O'Connor

Mr. O'Connor has served as the General Counsel of MassMutual since February 2017. Mr. O'Connor has served in various positions with MassMutual since he joined the company in 2005, including as the Chief of Staff to the CEO.

Eric W. Partlan

Mr. Partlan has served as MMALIC's Chief Investment Officer since May 28, 2021. Mr. Partlan has served as the Head of Portfolio Management at MassMutual since January 2013. He joined MassMutual in January of 2010 as the Head of Investment Risk and served in that office until he assumed his current role.

Brian P. Sponaugle

Mr. Sponaugle has served as Senior Vice President and Treasurer of MMALIC since June 2022. Mr. Sponaugle served in various positions with MMALIC since June 1993.

Arthur W. Wallace

Mr. Wallace has served as MassMutual's Chief Actuary since he joined MassMutual in October of 2019. Previously, Mr. Wallace was Chief Actuary at Prudential Financial from November 2014 until joining MassMutual.

Elizabeth A. Ward

Ms. Ward has served as the Chief Financial Officer of MassMutual since June 2016. Ms. Ward has served in various positions since joining MassMutual in 2007, including as Chief Actuary and as Chief Enterprise Risk Officer.

Executive Compensation

MMALIC does not have any employees. Its parent, Glidepath, provides personnel to MMALIC pursuant to a Services Agreement between MMALIC and Glidepath.

As a result, MMALIC does not determine or pay any compensation to its executive officers or additional personnel provided by Glidepath. Glidepath determines and pays salaries, bonuses and other compensation to its executive officers and additional personnel provided by Glidepath commensurate with their positions, tenure and levels of responsibility. Glidepath also determines whether and to what extent it will provide employee benefits plans to such persons.

See "Transactions with Related Persons" for more information about the Services Agreement.

Director Compensation

Mark Muething is the only director who is an employee of Glidepath. No director receives any additional compensation for serving as a director.

Director Independence

No director is considered independent under independence standards applicable to MMALIC. MMALIC does not have a separately designated audit, nominating or compensation committee, but MassMutual's audit committee performs a similar function for MMALIC.

Compensation Committee Interlocks and Insider Participation

MMALIC does not have a compensation committee.

Security Ownership of Certain Beneficial Owners and Management

MassMutual indirectly owns 100% of the voting securities of MMALIC. MassMutual's principal executive offices are located at 1295 State Street, Springfield, Massachusetts 01111-0001.

Transactions with Related Persons

Transactions between MMALIC and Glidepath

Pursuant to a Leased Employee Agreement between MMALIC and Glidepath, Glidepath furnishes MMALIC with personnel as requested by MMALIC. MMALIC pays for these services on the basis of cost, which must be fair and reasonable. Payments for these services by MMALIC to Glidepath were approximately $109 million in 2023 and $98 million in 2022.

Transactions between MMALIC and MassMutual or Other MassMutual Subsidiaries

MMALIC and Barings are parties to an Investment Services Agreement under which Barings provides investment services to MMALIC in accordance with guidelines. MMALIC pays Barings a fee based on Barings's cost of providing these services.

Pursuant to an Administrative Services Agreement between MMALIC and MassMutual, MassMutual furnishes MMALIC with office, data processing, telecommunications, and administrative and support services, including enterprise risk management services, corporate finance services, actuarial services, legal services, internal audit services, corporate compliance services and procurement services, as agreed upon by the parties. Payments for these services by MMALIC to MassMutual were approximately $4.4 million in 2023 and $4.4 million in 2022.

MMALIC and its subsidiaries have entered into an intercompany tax allocation agreement. Pursuant to the agreement, each company's tax expense is determined based upon its inclusion in the consolidated tax return of MMALIC and its includable subsidiaries. Estimated payments are made quarterly during the year. Following year-end, additional settlements are made on the original due date of the return and, when extended, at the time the return is filed. The method of allocation among the companies under the agreement is based upon separate return calculations with current credit for losses to the extent the losses provide a benefit in the consolidated return.

Transactions Involving Immediate Family Members of MMALIC's Directors and Executive Officers

A brother of MMALIC's President is a partner and Chairman of the Board of Keating Muething & Klekamp PLL. MMALIC and its related entities paid Keating Muething & Klekamp approximately $5,300 in 2023, $0.4 million in 2022, and $1.1 million in 2021.

Review, Approval or Ratification of Transactions with Related Persons
MMALIC's senior management team approves all related party transactions involving directors and executive officers of MMALIC, including relevant transactions described in "Transactions Involving Immediate Family Members of MMALIC's Directors and Executive Officers" above. In considering the transaction, MMALIC's senior management team may consider all relevant factors, including as applicable: the business rationale for entering into the transaction; the alternatives to entering into a related person transaction; whether the transaction is on terms comparable to those available to third parties, or in the case of employment relationships, to employees generally; the potential for the transaction to lead to an actual or apparent conflict of interest and any safeguards imposed to prevent such actual or apparent conflicts; and the overall fairness of the transaction to MMALIC. Potential related party transactions are covered by MMALIC's Code of Conduct policy. Approval of such related person transactions would be evidenced by resolutions of the Finance committee of the MMALIC Board of Directors in accordance with its practice of reviewing and approving transactions in this manner.

Information on MMALIC's Business and Property

Competition

MMALIC's annuity businesses operate in highly competitive markets. They compete with other insurers and financial institutions based on many factors, including: (i) ratings; (ii) financial strength; (iii) reputation; (iv) service to policyholders and agents; (v) product design (including interest rates credited, bonus features and index participation); and (vi) commissions. Because most policies are marketed and distributed through independent agents, the insurance companies must also compete for agents.

No single insurer dominates the markets in which MMALIC's annuity businesses compete. See Risks Primarily Related to MMALIC's Financial Strength and Claims-Paying Ability. MMALIC's competitors include (i) individual insurers and insurance groups, (ii) mutual funds and (iii) other financial institutions. In a broader sense, MMALIC's annuity businesses compete for retirement savings with a variety of financial institutions offering a full range of financial services. In the financial institution annuity market, MMALIC's annuities compete directly against competitors' annuities, certificates of deposit and other investment

alternatives at the point of sale.

Sales of annuities, including renewal premiums, are affected by many factors, including: (i) competitive annuity products and rates; (ii) the general level and volatility of interest rates, including the slope of the yield curve; (iii) the favorable tax treatment of annuities; (iv) commissions paid to agents; (v) services offered; (vi) ratings from independent insurance rating agencies; (vii) other alternative investments; (viii) performance and volatility of the equity markets; (ix) media coverage of annuities; (x) regulatory developments regarding suitability and the sales process; and (xi) general economic conditions.

Financial Strength Ratings

MMALIC believes that the ratings assigned by independent insurance rating agencies are an important competitive factor because agents, potential policyholders and financial institutions often use a company's rating as an initial screening device in considering annuity products. MMALIC believes that a rating in the "A" category by at least one rating agency is necessary to successfully compete in its primary annuity markets. In 2023, MMALIC was rated A++ (Superior) by A.M. Best and A+ by Standard & Poor's.

Regulation

MMALIC is subject to regulation in the jurisdictions where MMALIC does business. In general, the insurance laws of the various states establish regulatory agencies with broad administrative powers governing, among other things, premium rates, solvency standards, licensing of insurers, agents and brokers, trade practices, forms of policies, maintenance of specified reserves and capital for the protection of policyholders, deposits of securities for the benefit of policyholders, investment activities and relationships between insurance subsidiaries and their parents and affiliates. Material transactions between insurance subsidiaries and their parents and affiliates generally must receive prior approval of the applicable insurance regulatory authorities and be disclosed.

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 ("Dodd-Frank Act"), among other things, established a Federal Insurance Office ("FIO") within the U.S. Treasury. Under this law, the regulatory framework for the FIO to carry out its mandate to focus on systemic risk oversight continues to evolve. Since its formation, the FIO has worked with the National Association of Insurance Commissioners ("NAIC") and other stakeholders to explore a hybrid approach to regulation of the insurance industry; however, the state-based system of regulation has largely been retained. MMALIC cannot predict the future role of the FIO and its role in regulation of the insurance industry and how that might ultimately affect MMALIC's operations.

Most states have created insurance guaranty associations that assess solvent insurers to pay claims of insurance companies that become insolvent. Annual guaranty assessments for MMALIC have not been material.

<u>Risks Primarily Related to MMALIC's Financial Strength and Claims-Paying Ability</u>

We make annuity payout benefit payments and pay death benefits for this Contract from our general account. We also pay benefits for other insurance contracts from our general account, and our general account is subject to claims by our creditors. Our ability to make payments from our general account is subject to our financial strength. Set out below are the most significant factors that may negatively impact our financial strength and claims-paying ability.

Financial losses could adversely affect our financial strength and claims-paying ability.

Owners of MMALIC's insurance products do not share in the profits and losses generated by our business. However, if we were to experience significant losses, we might not have sufficient assets in our general account to satisfy all of the guarantees provided in our insurance contracts. Events that may result in financial losses are listed below. We cannot predict the impact that any of these events may ultimately have on our financial strength and claims-paying ability.

Adverse developments in financial markets and deterioration in global economic conditions.

Worldwide financial markets have, from time to time, experienced significant and unpredictable disruption. For example, a prolonged economic downturn may result in heightened credit risk, reduction in the valuation of certain investments and decreased economic activity. Our financial position is materially impacted by the global economy and capital markets. During an economic downturn, we could experience a drop in the demand for our insurance products. In addition, surrenders and

withdrawals from MMALIC's insurance products might also increase during an economic downturn, and owners of MMALIC's insurance products might opt to discontinue or delay paying insurance premiums or additional purchase payments. In recent years, the financial markets have experienced periods of significant volatility and negative returns, contributing to an uncertain and evolving economic environment. The performance of the markets in recent years has been impacted by several interrelating factors such as, but not limited to, the COVID-19 pandemic, rising inflation, changes in interest rates, geopolitical turmoil, and actions by governmental authorities. In addition, multiple bank failures in 2023 resulted in periods of market disruption and volatility and reduced confidence in depository institutions. While such bank failures did not significantly impact our business, if banks or other financial institutions with whom we do business were to enter into receivership or become insolvent in the future, there could be an adverse effect on our business and financial condition. It is not possible to predict the future performance of the markets with any certainty.

Unfavorable interest rate environments.

During periods of declining interest rates, we may experience losses as the spread tightens between crediting rates that we pay to owners of our insurance contracts and returns on our investments. During periods of increasing rates, we may experience financial losses due to increases in surrenders and withdrawals under our insurance contracts as owners of those contracts choose to seek higher returns. In an attempt to curb rising inflation, the Federal Reserve and other central banks raised interest rates multiple times in recent years. It is unclear whether and how interest rates will change in future periods. Although we take measures to manage economic risks associated with different interest rate environments, we may not be able to fully mitigate those risks.

Losses on our investment portfolio.

A significant majority of MMALIC's investment portfolio consists of fixed maturity investments, which are subject to both interest rate risk and credit risk. Interest rate risk refers to how the values of our fixed maturity investments fluctuate in response to changes in market interest rates. Increases in market interest rates generally result in decreases in the value of our fixed maturity investment portfolio. On the other hand, decreases in rates generally result in increases in the portfolio value. Credit risk refers to the risk that certain investments may default or become impaired due to deterioration in the financial condition of the issuers of those investments.

A portion of MMALIC's investment portfolio consists of equity investments that are generally valued based on quoted market prices and subject to market risk. Market risk refers to how market prices for equity investments are subject to fluctuation due to general market conditions or changes in the actual or perceived attractiveness of an investment. A decrease in the market price for an equity investment could result in losses upon the sale of that investment.

MMALIC's investment portfolio also includes investments that lack liquidity, such as privately placed fixed maturity investments, mortgage loans, collateralized debt obligations, commercial mortgage-backed securities, real estate and limited partnership interests. The value of our real estate investments may be negatively impacted by general, regional, and local economic conditions in the real estate sector, such as supply and demand, market volatility, interest rate fluctuations, vacancy rates, and geographic and extreme weather conditions, as well as the creditworthiness of obligors. If we were required to sell illiquid investments on short notice, we might have difficulty doing so and may be forced to sell them for less than fair value.

Loss of market share due to intense competition.

There is strong competition among individual insurers and insurance groups, mutual funds and other financial institutions seeking clients for the products we provide. Competition is based on numerous factors including the ability to recruit and retain key personnel, quality of service, reputation, product design, crediting rates, insurance product performance and pricing, scope of distribution, perceived financial strength and credit ratings. If competition limits MMALIC's ability to write new or renewal business at adequate rates, its results of operations will be adversely affected.

Ineffectiveness of risk management policies.

Our risk management policies and procedures, which are intended to identify, monitor and manage economic risks, may not be fully effective at mitigating risk exposures in all market conditions or against all types of risk. For instance, we use derivatives to alleviate risks related to floating-rate investments as well as annuity products that credit interest or provide a return based, in part, on the change in a referenced index. Our use of derivatives may not accurately counterbalance the actual risk exposure,

and any derivatives held may not be sufficient to completely hedge the associated risks. In addition, counterparties may fail to perform under the derivative financial instruments. We may also decide not to hedge, or fail to identify, certain risks to which we are exposed. Ultimately, our use of derivatives and other risk management strategies may be inadequate to protect against the full extent of the exposure or losses we seek to mitigate.

Changes in applicable law and regulations may affect our financial strength and claims-paying ability.

We are subject to comprehensive regulation and supervision by government agencies in all the jurisdictions in which we operate. Our operations, products and services are subject to a variety of state and federal laws. We are regulated by various regulatory authorities and self-regulatory authorities including state insurance departments, state securities administrators, the Securities and Exchange Commission ("SEC"), the Financial Industry Regulatory Authority ("FINRA"), the Internal Revenue Service ("IRS") and the Department of Labor ("DOL").

Changes to state and federal laws and regulations and regulatory interpretations thereof may materially impact the way we conduct business. For example, a change in U.S. federal tax policy that would modify the favorable tax treatment of annuities could make our products less attractive to consumers. Moreover, the pace of changes to the regulatory environment continues to increase. Federal and state governments, including federal and state regulatory authorities, are active in the regulation of the manufacture, sale and administration of annuity products. We cannot predict the potential effects that any new laws or regulations, changes in existing laws and regulations, or the interpretation or enforcement of laws and regulations may have on our business, but such changes may increase our compliance costs and negatively impact our financial strength and claims-paying ability. Below, we summarize areas of applicable law that have been subject to substantial change in recent years.

Cybersecurity and Data Privacy.

We are subject to federal and state laws, regulations, and directives that require financial institutions and other businesses to protect the security of computer systems and the confidentiality of personal information. Financial regulators continue to focus on data privacy and cybersecurity, have communicated heightened expectations with respect to security and regulatory compliance, and have increased emphasis in this area in their examinations of regulated entities. Recently, the SEC proposed new rules that would require registered separate accounts to adopt and implement comprehensive cybersecurity policies and procedures and disclose significant cybersecurity incidents in the prospectuses for variable contracts. Also, many states have adopted comprehensive privacy and data protection laws, and insurance regulatory activity related to privacy, data protection and cybersecurity also continues to increase. For example, the NAIC is considering a new Consumer Privacy Protection Model Law (to replace the corresponding existing model law) that would include stronger provisions related to consumer rights, consent, and notification, as well as third-party service agreements, data retention and deletion policies, and data sharing agreements. We actively monitor regulatory developments in this area, and may be subject to increased compliance costs, regulatory requirements, and legal proceedings as new laws become effective.

Standards of Care.

The SEC adopted a series of rules related to the standard of care owed by a broker-dealer and an investment adviser to its customers ("Regulation BI"), and the creation of a Form CRS Relationship Summary. The obligations of Regulation BI and Form CRS became effective on June 30, 2020. Among other things, Regulation BI imposes a "best interest" standard of care on broker-dealers making a recommendation to their customers, and provides certain new disclosure requirements for broker-dealers with respect to, among other things, their compensation and conflicts. Broker-dealers and investment advisers are required to provide the Form CRS Relationship Summary to their customers. The Form is designed to provide information about the broker-dealer or investment adviser to their customers. Since its adoption, Regulation BI has been a focus of SEC examinations and enforcement activity. The changes under Regulation BI and the Form CRS have increased overall compliance costs. In addition, these changes may lead to greater exposure to legal claims in certain circumstances, including an increased risk of regulatory enforcement actions or potentially private claims.

The NAIC adopted revisions to its Suitability in Annuity Transactions Model Regulation that would impose a requirement that any recommendation of an annuity product be in the consumer's best interest in 2020. To date, at least 40 states have adopted revisions to their suitability laws to generally track the NAIC's revised model regulation. As a result, as changes are adopted by state insurance regulator(s) and made applicable to insurers or the third-party firms that distribute insurer products, they could have an adverse impact on business.

In addition, sales of annuities to employee benefit plans governed by provisions of the Employee Retirement Income Security Act ("ERISA") and to IRAs governed by similar provisions under the Internal Revenue Code are subject to restrictions that require ERISA fiduciaries to perform their duties solely in the interests of ERISA plan participants and beneficiaries, and that prohibit ERISA fiduciaries from causing a covered plan or retirement account to engage in certain prohibited transactions absent an exemption. The definition of a "fiduciary" as it relates to ERISA plans and IRAs has been the subject of multiple DOL rulemaking initiatives, interpretive guidance releases, and subsequent legal challenges in recent years. On October 31, 2023, the DOL proposed rule amendments that would broaden the circumstances under which fiduciary duties are imposed, particularly with regard to recommendations to "rollover" assets from a qualified retirement plan to an IRA or from an IRA to another IRA.

We continue to closely monitor these ongoing regulatory developments. It remains unclear the extent to which these regulatory initiatives and the evolving nature of enforcement and interpretation of them could ultimately affect how our annuities are marketed and distributed. Any of the foregoing regulatory and legislative measures (or judicial matters on those measures), or the reaction to such activity by consumers or other members of the insurance industry could have an adverse impact on our ability to sell annuities and to retain in-force business. Inconsistencies among the rules adopted by the SEC, the DOL, and state insurance regulators could increase this impact.

Artificial Intelligence.

State regulators and the NAIC are evaluating existing regulatory frameworks for insurance industry use of artificial intelligence, machine learning, and large language models ("AI"). Regulators are concerned about the privacy and protection of individual consumer data and about bias and discrimination resulting from the use of AI in algorithms and predictive models, as may be used either directly by insurance companies or indirectly through third party service providers. For example, in December 2023, the NAIC adopted a model bulletin on the use of AI by insurers, which was intended to remind insurance companies that decisions impacting consumers that are made or supported by advanced analytical and computational technologies, including AI, must comply with all applicable insurance laws and regulations, including unfair trade practices. The bulletin also sets forth state insurance regulators' expectations on how insurers should govern the use of such technologies by or on behalf of the insurer to make or support such decisions. Our adoption of new AI technologies may be inhibited by the emergence of industry-wide standards, a changing legislative and regulatory environment, and other factors. In addition, our adoption of new AI technologies may expose us to increased compliance costs and heightened regulatory risks.

The evolving landscape of environmental, social and governance standards could adversely affect our reputation or business results and could lead to litigation or regulatory proceedings that harm our financial condition.

Customers, regulators, and other market participants may evaluate our business or other practices according to a variety of environmental, social and governance ("ESG") standards, expectations, or metrics, all of which may evolve, may be subjective or underdeveloped in nature, and may reflect contrasting or conflicting values. Standard-setting organizations and regulators including, but not limited to, the NAIC, SEC, and state insurance regulators, have proposed or adopted, or may propose or adopt, ESG rules or standards applicable to us. For example, the NAIC has generally modified the Insurer Climate Risk Disclosure survey to align with aspects of the Financial Stability Board's Task Force on Climate-Related Financial Disclosures framework, a recognized framework of recommendations that were developed to enhance climate-related disclosures. The SEC has also adopted new disclosure rules that generally require a wide range of registered companies to provide extensive disclosures and financial information on climate-related risk in their registration statements and periodic reports filed with the SEC. In October 2023, the Governor of California signed two bills into law that will require significant climate-related disclosures (in some cases beyond the disclosures required by the SEC's new rules) by large entities doing business in that state. In addition, certain organizations that provide information to investors have developed ratings for evaluating companies on their approach to different ESG matters. Due to the sometimes conflicting, uncertain, and subjective ESG regulatory and market environment, we may be seen as acting inconsistently with ESG standards or values from the perspective of certain customers, regulators, or other constituents. As a result, we may face adverse regulatory, customer, media, or public scrutiny related to ESG that potentially could have a negative impact on our business or reputation or lead to legal challenges.

The inability to obtain or collect on reinsurance could adversely affect our financial strength and claims-paying ability.

We use reinsurance for various business segments as part of our risk management strategy. While reinsurance agreements typically bind the reinsurer for the life of the business reinsured at specific pricing, market conditions may determine the availability and cost of the reinsurance for new business. Our risk of loss increases if we are unable to purchase reinsurance at

acceptable terms. We are also subject to credit risk related to the ability of a reinsurer to meet its obligations. If we are unable to purchase reinsurance at acceptable terms or if the financial condition of our reinsurers is impaired, it may impact our ability to meet our financial obligations.

A downgrade or potential downgrade in MMALIC's financial strength ratings by one or more rating agencies could adversely affect its financial strength and claims-paying ability.

MMALIC's claims-paying and financial strength is rated A++ (Superior) by A.M. Best and A+ by Standard & Poor's. We believe a rating in the "A" category by at least one rating agency is important for us to successfully compete in our primary annuity markets. We also believe the ratings assigned by these independent insurance rating agencies are an important competitive factor because agents, potential contract owners and financial institutions often use a company's rating as an initial screening device in considering annuity products. A downgrade in MMALIC's claims-paying and financial strength ratings could adversely impact MMALIC's financial strength and claims-paying ability by causing financial losses to our business. Such losses may be due to:
- Reduction in new sales of annuity products;
- Harm to our relationships with distributors of our annuity products;
- Increases to the cost of capital or limitation on our access to sources of capital;
- Harm to our ability to obtain reinsurance or reasonable terms for reinsurance;
- Significant increases in the number and amount of surrenders of, or withdrawals from, our annuity products; and
- Pressure to increase the crediting rates for our annuity products.

Credit rating agencies also evaluate the insurance industry as a whole and may change our claims-paying and financial strength rating based on their overall view of our industry.

Variations from actual experience and management's estimates and assumptions could result in inadequate reserves.

We establish and maintain reserves to pay future benefits and claims of our policyholders and contract holders. The reserves we establish are estimates, primarily based on actuarial assumptions with regard to our future experience, which involve the exercise of significant judgment. Our future financial results depend on the extent to which our actual future experience is consistent with the assumptions we have used in pricing our products and determining our reserves. Many factors can affect future experience, including investment yields (and spreads over fixed annuity crediting rates), benefit utilization rates, equity market performance, the cost of call and put options used in the indexed annuity business, persistency, mortality, surrenders, annuity benefit payments, withdrawals, expenses incurred and changes in regulations. Developing such assumptions is complex and involves information obtained from company-specific and industry-wide data, as well as general economic information. We cannot precisely predict the ultimate amounts we will pay for actual benefits or the timing of those payments. We use actuarial models to assist us in establishing reserves. If actual results differ significantly from our estimates and assumptions, our claim costs could increase significantly and our reserves could be inadequate. If so, we will be required to increase reserves or accelerate amortization of deferred acquisition costs. We cannot be certain that our reserves will ultimately be sufficient to pay future benefit and claims of policyholders and contract holders.

The amount of capital that we must hold to meet our statutory capital requirements can vary significantly from time to time.

Statutory capital requirements are set by applicable state insurance regulators and the NAIC. State insurance regulators have established regulations that govern reserving requirements and provide minimum capitalization requirements based on risk-based capital ("RBC") ratios for life insurance companies. Statutory surplus and RBC ratios may change in a given year based on a number of factors, including statutory income or losses, reserve changes, excess capital held to support growth, changes in equity market levels, interest rate changes, the value of certain fixed-income and equity securities, and changes to the RBC formulas. Additionally, state insurance regulators have significant leeway in interpreting existing regulations, which could further impact the amount of statutory capital or reserves that we must maintain. There is no guarantee that we will be able to maintain our current RBC ratio in the future or that our RBC ratio will not fall to a level that could have a material adverse effect on our business. If we are unable to maintain minimum capitalization requirements, our business may be subject to significant increases in supervision or control by state insurance regulators.

Legal actions and regulatory proceedings may adversely affect our financial strength and claims-paying ability.

We have been named as defendant in lawsuits. We have also been involved in regulatory investigations and examinations. We may be involved in lawsuits and regulatory actions in the future. Lawsuits and regulatory actions arise in various contexts, including MMALIC's roles as an insurer, investor, securities issuer and taxpaying entity. These actions may result in material amounts of damages or fines that we must pay and may involve certain regulatory authorities that have substantial power over our business operations. A negative outcome in any legal action or regulatory proceeding that results in significant financial losses or operational burdens may adversely impact MMALIC's financial position and claims-paying ability.

We may experience difficulties with technology or data security, which could have an adverse effect on our business.

We use computer systems and services to process, store, retrieve, evaluate and utilize company and customer data and information. Systems failures or outages could compromise our ability to perform business functions in a timely manner, which could harm our ability to conduct business and hurt our relationships with business partners and customers. In the event of a disaster such as a natural catastrophe, an industrial accident, a blackout, a malicious software attack, a terrorist attack or war, our systems may be inaccessible to employees, customers or business partners for an extended period of time. As a result, our employees may be unable to perform their duties for an extended period of time if our data or systems are disabled or destroyed.

Our computer systems are subject to cyber-attacks, viruses, malware, ransomware, denial of service, hackers and other external hazards, as well as inadvertent errors, equipment and system failures and to unauthorized or illegitimate actions by employees, consultants, agents and other persons with legitimate access to our systems. Publicly-reported cyber-security threats and incidents have dramatically increased in recent years, and financial services companies and their third-party service providers are increasingly the targets of cyber-attacks. The techniques used to attack systems and networks change frequently and can originate from a wide variety of sources. In addition, over time, the sophistication of these threats continues to increase. It is possible that a cyber-security incident could persist for an extended period of time without detection. The use of remote or flexible work arrangements, remote access tools, and mobile technology have expanded potential targets for cyber-attacks. Our administrative and technical controls as well as other preventative actions used to reduce the risk of cyber incidents and protect our information may be insufficient to detect or prevent future unauthorized access, other physical and electronic break-ins, cyber-attacks or other security breaches to our computer systems or those of third parties with whom we transact business.

We have increasingly outsourced certain technology and business process functions to third parties and may continue to do so in the future. Outsourcing of certain technology and business process functions to third parties may expose us to increased risk related to data security or service disruptions. If we do not effectively develop, implement and monitor these relationships, third-party providers do not perform as anticipated, technological or other problems are incurred with a transition, or outsourcing relationships relevant to our business process functions are terminated, we may not realize expected productivity improvements or cost efficiencies and may experience operational difficulties, increased costs and a loss of business.

The increased risks identified above could expose us to data loss, disruption of service, monetary and reputational damages, competitive disadvantage and significant increases in compliance costs, and costs to improve the security and resiliency of our computer systems. The compromise of personal, confidential or proprietary information could also subject us to legal liability or regulatory action under evolving cyber-security, data protection and privacy laws and regulations enacted by the U.S. federal and state governments, or by various regulatory organizations. As a result, our ability to conduct business and our results of operations might be materially and adversely affected. We could also suffer harm to our business and reputation if attempted cyber-attacks are publicized. The regulatory trend toward broad consumer and general public notification of such incidents could exacerbate the harm.

Any failure to protect the confidentiality of customer information could have a material adverse effect on our business and financial condition.

We are subject to privacy regulations and confidentiality obligations, including the Gramm-Leach-Bliley Act and state privacy laws and regulations, that restrict the use and dissemination of, and access to, the information we produce, store or maintain in the course of our business. We also have contractual obligations to protect certain confidential information received through various business relationships. The obligations generally include protecting such information in the same manner and to the same extent as we protect our own confidential information, and, in some instances, may impose indemnity obligations on us relating to unlawful or unauthorized disclosure of any such information.

If we do not properly comply with privacy regulations or fail to protect confidential information, we could experience adverse consequences, including reputational damage, possible litigation, and regulatory sanctions, such as penalties, fines and loss of

license. This could have adverse impact on our image or customer relationships and, consequently, result in loss of business partners, lower sales, lapses of existing business or increased expenses. While we may maintain insurance to mitigate or offset these risks, we cannot be certain that any such insurance coverage would be sufficient in amount or scope to fully address any resulting losses or liability.

Failure to maintain effective and efficient information systems could adversely affect our business.

Our various lines of business depend greatly on the use of effective information systems. Maintaining and updating current information systems and the development of new systems to match emerging technology, regulatory standards and customer expectations requires a substantial commitment of resources. We must maintain adequate information systems in order to perform necessary business functions, including processing premium and purchase payments, administering our products, providing customer support and paying claims. We also use systems for investment management, financial reporting and data analysis to support our reserves and other actuarial estimates. Any interruptions may reduce our revenues or increase our expenses, and may adversely impact our reputation, business partnerships and customer relationships. In addition, system interruptions may impair our ability to timely and accurately complete our financial reporting and other regulatory obligations, and may impact the effectiveness of our internal controls over financial reporting.

The occurrence of catastrophic events, pandemics, terrorism or military actions could adversely affect our business operations.

The occurrence of natural or man-made disasters and catastrophes, including but not limited to pandemics such as COVID-19, acts of terrorism, floods, earthquakes, industrial accident, blackout, cyberattack, malicious software, insider threat, insurrections and military actions and the resulting response by the United States and other countries, unanticipated problems with our business continuity plans and disaster recovery systems, or a support failure from a third party vendor, could adversely affect our business operations and business results. In addition to impacting our normal business operations, such disasters and catastrophes may impact us indirectly by changing the condition and behavior of our customers, business counterparties and regulators, as well as by causing declines or volatility in the economic and financial markets. We maintain business continuity plans for our operations, but we cannot predict with certainty when normal operations would resume if such an event occurred.

The failure of third parties to perform contracted services or the inadequate policies and procedures of third parties with whom we transact business could adversely affect our business operations and financial results.

The Company contracts with third parties to deliver certain services, including administrative, operational, technology, financial, investment, and actuarial services. There is a risk that we will fail to meet legal, regulatory, financial, or customer obligations in the event that our third party service providers fail to deliver contracted services, fail to comply with applicable laws and regulations, fail to provide material information on a timely basis, or suffer a cyber-attack or other security breach. We may also be exposed to reputational damage due to the actions or inactions of our third party service providers. In addition, if we transition to new third party service providers, we may incur unanticipated expenses or experience service delays or interruptions.

Forward-Looking Statements

The disclosures in this Form S-1 contain certain forward-looking statements that are subject to numerous assumptions, risks or uncertainties. The Private Securities Litigation Reform Act of 1995 provides a safe harbor for forward-looking statements. Some of the forward-looking statements can be identified by the use of words such as "anticipates", "believes", "expects", "projects", "estimates", "intends", "plans", "seeks", "could", "may", "should", "will" or the negative version of those words or other comparable terminology. Such forward-looking statements include statements relating to: expectations concerning market and other conditions and their effect on future premiums, revenues, earnings and investment activities; recoverability of asset values; and rate changes.

Actual results and/or financial condition could differ materially from those contained in or implied by such forward-looking statements for a variety of reasons including but not limited to the following and those discussed in Risk Factors.
- changes in financial, political and economic conditions, including changes in interest and inflation rates, currency fluctuations and extended economic recessions or expansions in the U.S. and/or abroad;
- performance of securities markets, including the cost of equity index options;
- new legislation or declines in credit quality or credit ratings that could have a material impact on the valuation of securities in MMALIC's investment portfolio;

- the availability of capital;
- regulatory actions (including changes in statutory accounting rules);
- changes in the legal environment affecting MMALIC or its customers;
- tax law and accounting changes;
- terrorist activities (including any nuclear, biological, chemical or radiological events), incidents of war or losses resulting from civil unrest and other major losses;
- disruption caused by cyber-attacks or other technology breaches or failures by MMALIC or its business partners and service providers, which could negatively impact MMALIC's business and/or expose MMALIC to litigation;
- availability of reinsurance and ability of reinsurers to pay their obligations;
- trends in persistency and mortality;
- competitive pressures;
- the ability to obtain adequate rates and policy terms; and
- changes in MMALIC's financial strength ratings assigned by major ratings agencies.

The forward-looking statements herein are made only as of the date of this report. MMALIC assumes no obligation to publicly update any forward-looking statements.

Management's Discussion and Analysis of Financial Conditions and Results of Operations

The following discussion provides an assessment of the financial position and results of operations on a statutory basis of MassMutual Ascend Life Insurance Company ("MMALIC" or "Company") operations. Statutory accounting practices ("SAP") financial information is prepared and presented in accordance with accounting practices prescribed or permitted by the National Association of Insurance Commissioners ("NAIC") and the Ohio Department of Insurance. Certain differences exist between SAP and U.S. generally accepted accounting principles ("GAAP"). See Note B of MMALIC's statutory basis audited financial statements, which are included elsewhere in this document, for a discussion of these differences.

OVERVIEW

In the fourth quarter of 2022, the Company's name was changed to MassMutual Ascend Life Insurance Company, formerly known as Great American Life Insurance Company ("GALIC"). MMALIC, a stock life insurance company domiciled in the state of Ohio, is a direct, wholly-owned subsidiary of Glidepath Holdings Inc., a financial services holding company wholly-owned by Massachusetts Mutual Life Insurance Company ("MassMutual").

MMALIC predominantly markets traditional fixed, fixed-indexed, and registered index-linked annuities nationwide to the savings and retirement markets and maintains term and universal life in-force business, which the Company manages as one operating segment. MMALIC is licensed to write life, annuity and accident & health insurance in forty-nine states, District of Columbia and Puerto Rico (effective February 8th, 2024).

CHANGE OF OWNERSHIP

On May 28, 2021, MassMutual purchased MMALIC, formerly known as GALIC, and its two insurance subsidiaries, Annuity Investors Life Insurance Company and Manhattan National Life Insurance Company, as well as a broker-dealer affiliate, MM Ascend Life Investor Services, LLC (formerly known as Great American Advisors, LLC) and insurance distributor AAG Insurance Agency, LLC from American Financial Group, Inc. ("AFG"). Total proceeds for the sale were $3.57 billion. MMALIC and its subsidiaries at that date became a direct wholly-owned subsidiary of Glidepath Holdings Inc., a financial services holding company wholly-owned by MassMutual.

NOTABLE TRANSACTIONS

On February 17, 2022, MMALIC entered into a Funds Withheld Coinsurance agreement, effective February 1, 2022, with Martello Re Limited, a Bermuda-domiciled Class E life and annuity reinsurer launched in 2022. MMALIC ceded statutory reserves of approximately $14.2 billion on a closed block of fixed, fixed-indexed and payout annuity policies, in exchange for a $320.0 million ceding commission paid by Martello Re. The transaction resulted in a significant increase to MMALIC's Risk Based Capital ratio.

Effective January 1, 2022, the Company recaptured the fixed-indexed annuity policies ceded to Hannover Life Reassurance Company of America pursuant to an Indemnity Reinsurance Agreement, dated December 31, 2018. The financial impact of the reinsurance recapture was a decrease to statutory capital of $140.6 million and reported as a change in policyholder reserves.

In 2021 the Ohio Department of Insurance promulgated Ohio Administrative Code Section 3901-1-67, Alternative Derivative and Reserve Accounting Practices (OAC 3901-1-67). This regulation allows Ohio-domiciled insurance companies to utilize certain alternative derivative and reserve accounting practices for eligible derivative instruments and indexed products, respectively, in order to better align the measurement of indexed product reserves and the derivatives that hedge them. Effective January 1, 2022, the Company elected to apply OAC 3901-1-67 to its derivative instruments hedging fixed-indexed annuity products and fixed-indexed reserve liabilities.

Under OAC 3901-1-67, derivative instruments will be carried on the statutory balance sheet at amortized cost

with the initial hedge cost amortized over the term and asset payoffs realized at the end of the term being reported through net investment income. Additionally, the cash surrender value reserves for fixed-indexed annuity products will only reflect index interest credits at the end of the crediting term as compared to partial index interest credits accumulating throughout the crediting term as an increase in aggregate reserves for life and accident and health contracts. As a result of the Company's election to apply OAC 3901-1-67 as of January 1, 2022, total statutory admitted assets decreased $393.6 million, total statutory liabilities decreased $236.2 million and total statutory capital and surplus decreased $157.4 million. The following table summarizes the components of the total decrease in statutory surplus as of the adoption date of January 1, 2022 (in millions):

Change in reserve on account of change in valuation basis	$	236.2
Cumulative effect of change in accounting principle		(454.4)
Change in net deferred tax asset		46.2
Change in nonadmitted assets		14.6
Total decrease in statutory surplus	$	(157.4)

In August 2023, the NAIC adopted INT 23-01T — Disallowed IMR ("INT 23-01T"). INT 23-01T provides optional, limited-term guidance for the assessment of disallowed IMR for up to 10% of adjusted general account capital and surplus. An insurer's capital and surplus must first be adjusted to exclude certain "soft assets" including net positive goodwill, electronic data processing equipment and operating system software, net deferred tax assets and admitted disallowed IMR. An insurer will only be able to admit the negative IMR if the insurer's risk-based capital is over 300% authorized control level after adjusting to remove the assets described above.

As adopted, negative IMR may be admitted first in the insurer's general account and then, if all disallowed IMR in the general account is admitted and the percentage limit is not reached, to the separate account proportionately between insulated and noninsulated accounts. If the insurer can demonstrate historical practice in which acquired gains from derivatives were also reversed to IMR (as liabilities) and amortized, there is no exclusion for derivatives losses. INT 23-01T was adopted by the Company as of September 30, 2023 and will be effective through December 31, 2025. To the extent the Company's IMR balance is a net negative, the effects of INT 23-01T will be reflected in the Company's financial position, results of operations, and financial statement disclosures. The Company has adopted this guidance and the adoption resulted in an admitted disallowed IMR of $271.5 million.

ANALYIS OF RESULTS OF OPERATIONS – YEARS ENDED DECEMBER 31, 2023 AND 2022

The following table presents MMALIC's statutory results of operations for the periods indicated:

	Year Ended December 31		
	2023	**2022**	**% Change**
Revenues:			
Premiums and annuity considerations	$ 8,506.8	$ (7,198.3)	218%
Net investment income	1,918.4	1,019.0	88%
Other income	139.8	581.0	-76%
Total premiums and other revenues	10,565.0	(5,598.3)	289%
Benefits and Expenses:			
Policyholder benefits	748.1	505.8	48%
Surrender benefits	2,434.7	1,460.5	67%
Change in policyholder reserves	5,901.8	(8,743.9)	167%
Direct commissions and commissions and expense allowances on reinsurance assumed	394.2	364.6	8%
Other expenses	695.8	610.5	14%
Total benefits and expenses	10,174.6	(5,802.5)	275%
Operating results before federal income taxes and realized capital gains (losses)	390.4	204.2	91%
Federal income taxes on operations	(241.8)	(13.6)	1678%
Operating results before realized gains (losses)	148.6	190.6	-22%
Realized losses net of federal income taxes	(153.7)	(32.6)	371%
Net income	$ (5.1)	$ 158.0	-103%

Operating results before federal income taxes and realized capital gains (losses) increased by 91% for the 12 months ended December 31, 2023, compared to the 12 months ended December 31, 2022. This increase was primarily attributable to higher net investment income in 2023 partially offset by the Hannover reinsurance treaty recapture in 2022.

Net income decreased 103% in 2023 compared to 2022. This decrease was largely driven by federal income taxes on operations and realized losses primarily related to option mark to market gains (partially offset in change in deferred tax asset). In addition, impairments increased by $48.4 million in 2023 compared to 2022 primarily related to Silicon Valley Bank and Signature Bank.

Revenues
Total revenues increased to $10,565.0 million in the 12 months ended December 31, 2023 from ($5,598.3) million for the 12 months ended December 31, 2022. Following is a discussion of the primary contributors to this increase.

This increase is primarily attributable to the Martello Re transaction recorded through premium and annuity considerations in 2022 (offset in change in policyholder reserves). Excluding the initial Martello Re ceded premium of $14.2 billion, premium and annuity considerations increased 23%. This increase is due to record premium sales in 2023 primarily attributable to higher traditional fixed annuity sales. Net investment income increased 88% in the 2023 compared to 2022, primarily due to higher investment income from higher yields, ceded investment income related to reimbursement of capital losses, and higher income on derivative instruments. Gross investment income, excluding derivative instruments, increased 35% primarily due to growth in annuity sales.

The following table provides a summary of the components of net investment income:

	Year Ended December 31		
	2023		**2022**
Investment income:			
Bonds	$ 1,803.2	$	1,436.1
Equity securities	23.7		9.3
Mortgage loans	200.3		116.5
Policy loans	3.8		4.1
Cash and short-term investments	109.7		17.5
Other invested assets	131.9		96.1
Derivative instruments	(41.3)		(174.6)
Other	-		2.9
Gross investment income	2,231.3		1,507.9
Investment expenses	(72.2)		(35.6)
Ceded investment income	(240.7)		(453.3)
Net investment income	$ 1,918.4	$	1,019.0

Other income decreased 76% from 2022 to 2023, primarily due to the $320.0 million ceding commission paid by Martello Re in 2022. In accordance with statutory accounting practices, ceding commissions representing gains on the reinsurance of in-force blocks of business are deferred in surplus and amortized over the reinsurance contract period. The offsetting impact of ceding commissions is recorded in other income with a corresponding increase in surplus representing the deferred gain that will be amortized over the reinsurance contract.

Benefits and Expenses

Policyholder benefits increased 48% in 2023 compared to 2022. This increase was primarily attributable to the initial ceded annuity claim liability related to the Martello Re transaction in 2022. Surrender benefits increased 67% in 2023 compared to the prior year due to the higher interest rate environment in 2023 and aging of the business. Net Surrender and withdrawal benefits are offset by a corresponding change in policyholder reserves. The death benefits paid pursuant to life insurance policies resulted in an impact to operating earnings by the amount of benefits paid above the amount of policyholder reserves released, net of reinsurance.

Change in policyholder reserves increased 167% in 2023 compared to 2022. This increase was primarily the result of the initial Martello Re transaction recorded through Change in policyholder reserves (offset in Premiums and annuity considerations) in 2022 and record annuity sales in 2023 partially offset by surrenders.

Commissions related expenses – direct commissions and expense allowances on reinsurance assumed increased 8% in 2023 compared to 2022, primarily due to higher commissions on record gross annuity sales in 2023. Other expenses increased 14% from 2023 to 2022 primarily due to a litigation accrual and net transfer to separate accounts in 2023 partially offset by the amortization of the ceding commission paid by Martello Re in 2022. The amortization of the ceding commission is offset by the ceding commission reported in Other income.

Realized Gains (Losses) Net of Federal Income Taxes

Realized losses net of federal income taxes in 2023 were ($153.7) million compared to losses of ($32.6) million in 2022. For statutory reporting purposes, realized gains (losses) reported on the statement of operations are net of gains and losses transferred to the Interest Maintenance Reserve ("IMR"). Amounts transferred to IMR, which

is a liability reported in the statement of financial position, are the portion of gains and losses for securities sold that relates to gains and losses resulting from changes in interest rates and are amortized into operations over the estimated remaining lives of the securities sold. Gains and losses reported in the statement of operations are credit and non-interest related. The increase in realized losses (net of federal income taxes) relates to option mark to market gains (partially offset in change in deferred tax asset). In addition, impairments increased by $48.4 million in 2023 compared to 2022 primarily related to Silicon Valley Bank and Signature Bank.

ANALYIS OF RESULTS OF OPERATIONS – YEARS ENDED DECEMBER 31, 2022 AND 2021

The following table presents the statutory results of operations for the periods indicated:

	Year Ended December 31		
	2022	**2021**	**% Change**
Revenues:			
Premiums and annuity considerations	$ (7,198.3)	$ 5,027.0	-243%
Net investment income	1,019.0	1,951.0	-48%
Other income	581.0	97.0	499%
Total premiums and other revenues	(5,598.3)	7,075.0	-179%
Benefits and Expenses:			
Policyholder benefits	505.8	901.2	-44%
Surrender benefits	1,460.5	2,208.0	-34%
Change in policyholder reserves	(8,743.9)	3,107.8	-381%
Direct commissions and commissions and expense allowances on reinsurance assumed	364.6	285.2	28%
Other expenses	610.5	317.0	93%
Total benefits and expenses	(5,802.5)	6,819.2	-185%
Operating results before federal income taxes and realized capital gains (losses)	204.2	255.8	-20%
Federal income taxes on operations	(13.6)	(45.5)	-70%
Operating results before realized gains (losses)	190.6	210.3	-9%
Realized gains (losses) net of federal income taxes	(32.6)	118.7	-127%
Net income	$ 158.0	$ 329.0	-52%

Operating results before federal income taxes and realized capital gains (losses) decreased by 20% for the 12 months ended December 31, 2022 compared to the 12 months ended December 31, 2021. This decrease was primarily attributable to the Hannover reinsurance treaty recapture and the impact from the Martello Re reinsurance transaction.

Net income decreased 52% in 2022 compared to 2021. This decrease was largely driven by items mentioned above, along with realized losses in 2022 compared to realized gains in 2021. The realized losses in 2022 were primarily related to sales of fixed maturities, equities, and derivative instruments. The realized gains in 2021 were primarily related to sales of fixed maturities, equities, and other invested assets.

Revenues

Total revenues decreased to ($5,598.3) million in the 12 months ended December 31, 2022 from $7,075.0 million for the 12 months ended December 31, 2021. Following is a discussion of the primary contributors to this decrease.

This decrease is primarily attributable to the initial Martello Re transaction recorded through premium and annuity considerations (offset in change in policyholder reserves). Excluding the initial Martello Re ceded premium of $14.2 billion, premium and annuity considerations increased 39%. This increase is primarily attributable to higher traditional fixed, fixed-indexed and registered index-linked annuity sales in 2022. Net investment income decreased 48% in the 2022 period compared to 2021, primarily due to ceded investment income related to the Martello Re reinsurance transaction, and lower income on derivative instruments. Gross investment income, excluding derivative instruments, increased 16% primarily due to growth in annuity sales.

The following table provides a summary of the components of net investment income:

	Year Ended December 31	
	2022	2021
Investment income:		
Bonds	$ 1,436.1	$ 1,240.2
Equity securities	9.3	28.5
Mortgage loans	116.5	74.6
Real estate	-	11.9
Policy loans	4.1	4.7
Cash and short-term investments	17.5	18.8
Other invested assets	96.1	75.8
Derivative instruments	(174.6)	543.7
Other	2.9	2.0
Gross investment income	1,507.9	2,000.2
Investment expenses	(35.6)	(49.2)
Ceded investment income	(453.3)	-
Net investment income	$ 1,019.0	$ 1,951.0

Other income increased 499% from 2021 to 2022, primarily due to the $320.0 million ceding commission paid by Martello Re. In accordance with statutory accounting practices, ceding commissions representing gains on the reinsurance of in-force blocks of business are deferred in surplus and amortized over the reinsurance contract period. The offsetting impact of ceding commissions is recorded in other income with a corresponding increase in surplus representing the deferred gain that will be amortized over the reinsurance contract.

Benefits and Expenses

Policyholder benefits decreased 44% in 2022 compared to 2021. This decrease was primarily attributable to ceded annuity benefits related to the Martello Re transaction. Surrender benefits decreased 34% in 2022 compared to the prior year due to ceded surrenders related to the Martello Re transaction. Net Surrender and withdrawal benefits were offset by a corresponding change in policyholder reserves. The death benefits paid pursuant to life insurance

policies resulted in an impact to operating earnings by the amount of benefits paid above the amount of policyholder reserves released, net of reinsurance.

Change in policyholder reserves decreased 381% in 2022 compared to 2021. This decrease was primarily the result of the initial Martello Re transaction recorded through Change in policyholder reserves (offset in Premiums and annuity considerations). The initial Martello Re transaction in the first quarter of 2022 resulted in a reduction of annuity reserves of approximately $14.2 billion.

Commissions related expenses – direct commissions and expense allowances on reinsurance assumed increased 28% in 2022 compared to 2021, primarily due to higher commissions on record gross annuity sales in 2022. Other expenses increased 93% from 2021 to 2022 primarily due to the amortization of the ceding commission paid by Martello Re. The amortization of the ceding commission is offset by the ceding commission reported in Other income.

Realized Gains (Losses) Net of Federal Income Taxes

Realized losses net of federal income taxes in 2022 were ($32.6) million compared to gains of $118.7 million in 2021. For statutory reporting purposes, realized gains (losses) reported on the statement of operations are net of gains and losses transferred to the Interest Maintenance Reserve ("IMR"). Amounts transferred to IMR, which is a liability reported in the statement of financial position, are the portion of gains and losses for securities sold that relates to gains and losses resulting from changes in interest rates and are amortized into operations over the estimated remaining lives of the securities sold. Gains and losses reported in the statement of operations are credit and non-interest related. The decrease is mainly due to the net gain recognized by MMALIC in 2021 related to the sale of Schedule BA assets to AFG prior to MassMutual's acquisition of MMALIC and its subsidiaries.

LIQUIDITY AND CAPITAL RESOURCES

Liquidity

Management believes MMALIC has sufficient resources to meet its liquidity requirements. MMALIC's liquidity requirements relate primarily to the liabilities associated with its annuity and life products as well as operating costs and expenses, taxes, and contributions of capital to its subsidiaries. Historically, cash flows from premiums and investment income have provided more than sufficient funds to meet these requirements. Funds received in excess of cash requirements are generally invested in additional marketable securities. In addition, MMALIC generally holds a significant amount of highly liquid, short-term investments. If funds generated from operations are insufficient to meet liquidity requirements for any period, MassMutual may contribute funds to MMALIC.

MMALIC's annuity operations typically produce positive net operating cash flows as investment income exceeds acquisition costs and operating expenses. Interest credited on annuity policyholder funds is a non-cash increase in MMALIC's annuity reserves, and annuity premiums, benefits and withdrawals are considered financing activities due to the deposit-type nature of annuities. For the full year, net cash provided by operating activities was $6.82 billion in 2023 and net cash provided by operating activities was $5.76 billion in 2022.

MMALIC's financing activities consist primarily of transactions with annuity policyholders and dividend payments to its former parent company. Net cash used in financing activities was $2,619.3 million in 2023 compared to $1,121.8 million in 2022, an increase of $1,497.5 million. Net withdrawals on deposit-type contracts were $136.5 million in 2023 compared to deposits of $50.4 million in 2022, an increase of $186.9 million. In addition, MMALIC paid $200.0 million of cash dividends to its parent in 2023 compared to no dividend in 2022. The additional increase primarily relates to the change in funds held under reinsurance treaties partially offset by derivative collateral.

The Company is a member of the Federal Home Loan Bank ("FHLB"). The FHLB makes advances and provides other banking services to member institutions. The Company owned $20.0 million of FHLB Class B membership stock at December 31, 2023 and 2022. The Company has no membership stock eligible for

redemption. Through its association with the FHLB and by purchasing a set amount of FHLB stock, the Company can enter into deposit-type contracts with the FHLB known as funding agreements.

In 2022, the FHLB advanced MMALIC $300.0 million. At December 31, 2023 and 2022, MMALIC had $500.0 million in outstanding advances from the FHLB (included in Liability for deposit-type contracts), bearing interest at rates ranging from 1.35% to 1.97% (average rate of 1.72% at December 31, 2023). The Company paid interest of approximately $8.6 million and $8.4 million on these advances in 2023 and 2022, respectively. These advances must be repaid between 2025 and 2030 ($200.0 million in 2025 and $300.0 million in 2030). The Company has invested the proceeds from the advances in bonds for the purpose of earning a spread over the interest payments due to the FHLB. As required by the funding agreement, the Company purchased 215,252 shares ($21.5 million) of FHLB activity and excess stock.

The Company also posted collateral to the FHLB of assets with a fair value and carrying value of approximately $1,204.1 million and $1,279.2 million, respectively, as of December 31, 2023. The Company's FHLB borrowing capacity is based on the Company's estimate of collateral eligible to be pledged with the FHLB. The deposit contract liabilities, reported in liability for deposit-type contracts in the balance sheet, and related assets are accounted for in the Company's general account.

MMALIC has no material contractual purchase obligations or other long-term liabilities at December 31, 2023 or 2022.

Policyholder Liabilities

Liquidity needs vary by annuity and life product. Factors that impact a product's need for liquidity include interest rate levels, contract size, competitive products, termination or surrender charges, market value adjustments, federal income taxes, and benefit levels. To help assure that obligations will be met when they fall due, the Company uses asset/liability cash flow management techniques that take into consideration current and total investment return requirements, asset and liability durations, risk tolerance, and cash flow requirements. The fair values for liabilities under all insurance contracts are taken into consideration in the overall management of interest rate risk.

The Company's products include features that enhance the Company's liquidity position. Virtually all individual deferred annuity products contain surrender charges of varying durations, reducing the risk that customers will request a full surrender during the period charges are in effect. Surrender charges allow the Company to better plan the maturities of its invested assets by reducing the risk that future cash outflows will exceed anticipated levels. Also, 49% of the Company's in-force annuity products (measured by reserves) at December 31, 2023 had a market value adjustment ("MVA") that protects the Company when surrenders occur as a result of changes in market interest rates.

The following table provides a summary of statutory annuity reserves at December 31, 2023 by withdrawal characteristics:[1]

	Annuity Reserves Amount	% of Total
Subject to discretionary withdrawal:		
a. With market value adjustment	$ 22,517.3	48.6%
b. At book value less current surrender charge of 5% or more	5,395.5	11.7%
c. At fair value	387.5	0.8%
d. Total with market value adjustment or at fair value (total of a through c)	28,300.3	61.1%
e. At book value without adjustment (minimal or no charge or adjustment)	14,108.8	30.5%
Not subject to discretionary withdrawal	3,865.2	8.4%
Total (gross: direct + assumed)	46,274.3	100.0%
Reinsurance ceded	15,069.3	
Total (net)	$ 31,205.0	

(1) Annuity contract reserves and deposit fund liabilities are monetary amounts that an insurer must have available to provide for future obligations with respect to annuities and deposit funds. Reserves are liabilities on the balance sheets of financial statements prepared in conformity with statutory accounting practices. These amounts are at least equal to the value to be withdrawn by policyholders.

As indicated in the table above, 8.4% of policyholder funds at December 31, 2023 were not subject to discretionary withdrawal and another 61.1% were subject to adjustments and charges that are designed to protect the Company from early withdrawals in the event that they occur. We believe that this structure provides the Company with a relatively stable block of deposit liabilities which helps reduce the risk of unexpected cash withdrawals and the adverse financial effects cash withdrawals could cause.

Some MMALIC annuity products include guaranteed benefits, including guaranteed minimum death benefits and guaranteed minimum withdrawal benefits. These guarantees are designed to protect contract holders against significant downturns in securities markets and fluctuations in interest rates. Periods of significant and sustained downturns in securities markets, increased equity volatility, or reduced interest rates could result in an increase in the valuation of liabilities associated with products with guaranteed benefits. An increase in these liabilities would result in a decrease in MMALIC's net income.

MMALIC manages market risks by utilizing a comprehensive asset/liability management process involving the monitoring of asset and liability interest rate sensitivities for its various products. This process includes cash flow testing under various interest rate scenarios, including severe stress tests. Although cash flow testing includes many different scenarios, cash flow requirements are inherently unpredictable, as they are affected by external factors, such as changes in interest rates.

MMALIC also utilizes a variety of financial instruments as part of its efforts to efficiently hedge and manage fluctuations in the fair value of its investment portfolio attributable to changes in general interest rate levels and to manage duration mismatch of assets and liabilities. Those instruments may include interest rate exchange agreements, equity index options purchased in either the over-the-counter market or on the Chicago Board Options Exchange, payer swaptions, and commitments to extend credit. All instruments involve elements of credit and market risks in excess of the amounts recognized in the accompanying financial statements at a given point of time. The contract or notional amounts reflect the extent of involvement in the various types of financial instruments.

There can be no assurance that future experience regarding benefit payments and surrenders will be similar to historic experience because withdrawal and surrender levels are influenced by factors such as the interest rate environment and the Company's claims-paying and financial strength ratings.

Capital Resources

The NAIC's model law for risk based capital ("RBC") applies to life, accident and health companies. RBC formulas determine the amount of capital that an insurance company needs so that it has an acceptable expectation of not becoming financially impaired. At December 31, 2023, the capital ratios of MMALIC and its insurance subsidiaries substantially exceeded the applicable RBC requirements.

The maximum amount of dividends which can be paid to stockholders of life insurance companies domiciled in the State of Ohio without prior approval of the Ohio Insurance Director is the greater of 10% of surplus as regards to policyholders or net income as of the preceding December 31, but only to the extent of earned surplus as of the preceding December 31. The maximum amount of dividends payable by MMALIC in 2024 without prior approval is $304.9 million based on 10% of surplus as regards to policyholders as of the preceding December 31. At December 31, 2023, surplus as regards policyholders was $3,049.4 million, earned surplus was $1,962.7 million, and 2023 net loss was $5.1 million.

INVESTMENTS

MMALIC had total cash and invested assets of $44,732.1 million and $41,690.4 million at December 31, 2023 and 2022, respectively, as illustrated below (in millions):

	2023		**2022**	
	Carrying Value	% of Carrying Value	Carrying Value	% of Carrying Value
Cash and invested assets:				
Bonds	$ 34,972.3	78.2%	$ 33,331.9	79.9%
Preferred stocks	201.0	0.5%	185.0	0.4%
Common stocks	271.2	0.6%	281.4	0.7%
Investments in affiliates and subsidiaries	445.2	1.0%	401.9	1.0%
Mortgage loans	4,256.5	9.5%	3,088.8	7.4%
Cash, cash equivalents and short-term investments	2,211.3	4.9%	1,991.2	4.8%
Policy loans	30.0	0.1%	31.5	0.1%
Derivative instruments	771.4	1.7%	873.0	2.1%
Other invested assets	1,573.2	3.5%	1,505.7	3.6%
Total cash and invested assets	$ 44,732.1	100.0%	$ 41,690.4	100.0%

All investments held by the Company are monitored for conformity with the qualitative and quantitative limits prescribed by the applicable Ohio laws and regulations. MMALIC attempts to optimize investment income while building the value of its portfolio, placing emphasis upon total long-term performance. Management believes that a high quality investment portfolio should generate a stable and predictable investment return.

The following table summarizes the carrying values and estimated fair values of the Company's bond portfolio for the year ended December 31, 2023 (in millions):

	2023		
	Carrying Value	Fair Value	Unrealized Gain (Losses)
U.S. Government and agencies	$ 186.7	$ 156.8	$ (29.9)
All other governments	19.2	18.2	(1.0)
States, territories and possessions	180.4	175.5	(4.9)
Political subdivisions	231.5	228.7	(2.8)
Special Revenue	1,920.8	1,800.2	(120.6)
Industrial and miscellaneous	31,688.5	29,809.8	(1,878.7)
Parent, subsidiaries and affiliates	745.2	722.2	(23.0)
Total bonds	$ 34,972.3	$ 32,911.4	$ (2,060.9)

The following table summarizes the carrying values and estimated fair values of the Company's bond portfolio for the year ended December 31, 2022 (in millions):

	2022		
	Carrying Value	Fair Value	Unrealized Gain (Losses)
U.S. Government and agencies	$ 98.9	$ 64.0	$ (34.9)
All other governments	19.2	17.8	(1.4)
States, territories and possessions	190.7	183.1	(7.6)
Political subdivisions	272.7	268.7	(4.0)
Special Revenue	1,691.6	1,537.0	(154.6)
Industrial and miscellaneous	30,538.0	27,421.0	(3,117.0)
Parent, subsidiaries and affiliates	520.8	468.3	(52.5)
Total bonds	$ 33,331.9	$ 29,959.9	$ (3,372.0)

The Company's bond portfolio consisted of 94% investment grade securities at December 31, 2023 and 2022. The NAIC Securities Valuation Office ("SVO") is responsible for the day-to-day credit quality assessment and valuation of securities owned by state-regulated insurance companies. The NAIC assigns securities quality ratings and uniform valuations, which are used by insurers when preparing their annual statements to their state insurance regulators. The NAIC ratings are similar to the rating agency designations of the Nationally Recognized Statistical Rating Organizations ("NRSRO") for marketable bonds. NAIC ratings 1 and 2 include bonds generally considered investment grade. NAIC ratings 3 through 6 include bonds generally considered below investment grade. Typically, if a security has been rated by an NRSRO, the SVO utilizes that rating and assigns an NAIC designation based on the following system:

NAIC Rating	NRSRO Equivalent
1	Aaa/Aa/A
2	Baa
3	Ba
4	B
5	Caa and Lower
6	In or near default

The following table summarizes MMALIC's bond portfolio by NAIC ratings (in millions):

| | **2023** | | **2022** | |
	Carrying Value	% of Carrying Value	Carrying Value	% of Carrying Value
NAIC Rating				
1	$ 20,190.9	57.7%	$ 17,725.2	53.2%
2	12,704.0	36.3%	13,435.6	40.3%
3	1,253.2	3.6%	1,475.9	4.4%
4	495.3	1.4%	454.6	1.4%
5	287.0	0.8%	209.4	0.6%
6	41.9	0.1%	31.2	0.1%
Total Bonds	$ 34,972.3	100.0%	$ 33,331.9	100.0%

The table below sets out the expected maturities of MMALIC's bonds as of December 31, 2023 and 2022, respectively (in millions):

| | **2023** | | **2022** | |
	Carrying Value	% of Carrying Value	Carrying Value	% of Carrying Value
Maturity:				
One year or less	$ 2,522.4	7.2%	$ 2,834.3	8.5%
After one year through five years	14,032.5	40.1%	12,227.3	36.7%
After five years through ten years	10,975.9	31.4%	10,341.3	31.0%
After ten years	7,441.5	21.3%	7,929.0	23.8%
Total bonds by maturity	$ 34,972.3	100.0%	33,331.9	100.0%

The expected maturities in the foregoing tables may differ from the contractual maturities because certain borrowers have the right to call or prepay obligations with or without call or prepayment penalties.

Fair values for MMALIC's portfolio are determined by MMALIC's internal investment professionals using data from nationally recognized pricing services as well as non-binding broker quotes. Fair values of equity securities are generally based on published closing prices. When prices obtained for the same security vary, MMALIC's internal investment professionals select the price they believe is most indicative of an exit price.

The pricing services engaged by MMALIC's investment professionals use a variety of observable inputs to estimate fair value of bonds that do not trade on a daily basis. These inputs include, but are not limited to, recent reported trades, benchmark yields, issuer spreads, bids or offers, reference data, and measures of volatility.

The pricing of mortgage backed securities ("MBS") is unique as fair value includes estimates of the rate of future prepayments and defaults of principal over the remaining life of the underlying collateral. Due to the lack of transparency in the process that brokers use to develop MBS prices, valuations based on brokers' prices are classified as Level 3 in the hierarchy unless the price can be corroborated, for example, by comparison to similar securities priced using observable inputs.

Valuation techniques utilized by pricing services and prices obtained from external sources are reviewed by MMALIC's internal investment professionals who are familiar with the securities being priced and the markets in which they trade to ensure the fair value determination is representative of an exit price. To validate the appropriateness of the prices obtained, these investment professionals consider widely published indices (as benchmarks), recent trades, changes in interest rates, general economic conditions, and the credit quality of the specific issuers. In addition, MMALIC communicates directly with pricing services regarding the methods and assumptions used in pricing, including verifying, on a test basis, the inputs used by the services to value specific securities.

MBS are subject to significant prepayment risk because, in periods of declining interest rates, mortgages may be

repaid more rapidly than scheduled as borrowers refinance higher rate mortgages to take advantage of lower rates. MBS represented approximately 12% and 13% of MMALIC's bond portfolio at December 31, 2023 and 2022, respectively.

Municipal bonds represented approximately 5% of MMALIC's fixed maturity portfolio at December 31, 2023 and 2022. MMALIC's municipal bond portfolio is high quality, with the majority of the securities rated investment grade as of year-end 2023 and 2022. The portfolio is well diversified across the states of issuance and individual issuers.

When a decline in the value of a specific investment is considered to be other-than-temporary, an allowance for credit losses (impairment) is charged to earnings (accounted for as a realized loss). The determination of whether unrealized losses are other-than-temporary requires judgment based on subjective as well as objective factors. Factors considered and resources used by management include:

a) whether the unrealized loss is credit-driven or a result of changes in market interest rates,
b) the extent to which fair value is less than cost basis,
c) cash flow projections received from independent sources,
d) historical operating, balance sheet and cash flow data,
e) near-term prospects for improvement in the issuer or its industry,
f) third-party research and communications with industry specialists,
g) financial models and forecasts,
h) the continuity of interest payments, maintenance of investment grade ratings and hybrid nature of certain investments,
i) discussions with issuer management, and
j) ability and intent to hold the investment for a period sufficient to allow for anticipated recovery in fair value.

Based on its analysis of the factors listed above, management believes MMALIC will recover its cost basis in the bond securities with unrealized losses and that MMALIC has the ability to hold the securities until they recover in value and had no intent to sell them at December 31, 2023. Although MMALIC can continue holding its bond investments with unrealized losses, its intent to hold them may change due to deterioration in the issuers' creditworthiness, decisions to lessen exposure to a particular issuer or industry, asset/liability management decisions, market movements, changes in views about appropriate asset allocation or the desire to offset taxable realized gains. Should MMALIC's ability or intent change regarding a particular security, a charge for impairment would likely be required. Significant declines in the fair value of MMALIC's investment portfolio could have a significant adverse effect on MMALIC's liquidity. For information on MMALIC's realized gains (losses) on securities, see *"Realized Gains (Losses) Net of Federal Income Taxes."*

OTHER FINANCIAL INSTRUMENTS

The Company's derivative strategy employs a variety of derivative financial instruments including interest rate and currency swaps, options, financial futures, and forward contracts. Investment risk is assessed on a portfolio basis and individual derivative financial instruments are not generally designated in hedging relationships; therefore, as allowed by statutory accounting practices, the Company intentionally has not applied hedge accounting.

MMALIC utilizes a variety of financial instruments as part of its efforts to economically hedge and manage fluctuations in the fair value of its investment portfolio attributable to changes in general interest rate levels and

to manage duration mismatch of assets and liabilities. Those instruments may include interest rate exchange agreements, equity index options purchased in either over-the-counter market or on the Chicago Board Options Exchange, payer swaptions, and commitments to extend credit. All instruments involve elements of credit and market risks in excess of the amounts recognized in the accompanying financial statements at a given point of time. The contract or notional amounts of those instruments reflect the extent of involvement in the various types of financial instruments.

The following table presents the estimated fair value and admitted value for assets and reported value for liabilities of derivatives as of December 31, 2023 and 2022:

(dollars in millions)

Derivative instruments:	2023		2022	
	Carrying	**Estimated**	**Carrying**	**Estimated**
Assets:	**Value**	**Fair Value**	**Value**	**Fair Value**
Options*	$ 723.8	$ 822.9	$ 846.8	$ 287.4
Interest rate swaps	26.6	26.6	25.2	25.2
Financial futures	21.0	21.0	-	-
Currency swaps	-	-	0.9	0.9
Forward contracts	-	-	0.1	0.1
Total derivative instruments assets	$ 771.4	$ 870.5	$ 873.0	$ 313.6

	Carrying	**Estimated**	**Carrying**	**Estimated**
Liabilities:	**Value**	**Fair Value**	**Value**	**Fair Value**
Options*	$ 418.1	$ -	$ 598.6	$ -
Interest rate swaps	66.3	95.0	95.0	95.0
Currency swaps	38.8	4.8	4.8	4.8
Forward contracts	5.0	2.5	2.5	2.5
Total derivative instruments liabilities	$ 528.2	$ 102.3	$ 700.9	$ 102.3

*Effective 1/1/2022, Fixed-indexed options are carried at amortized cost per OAC 3901-1-67. Estimated Fair Value of options is reported net in the asset section for disclosure.

CRITICAL ACCOUNTING POLICIES

Significant accounting policies are summarized in *Note B — "Significant Accounting Policies"* to the financial statements. The preparation of financial statements in conformity with accounting practices prescribed or permitted by the NAIC and the Ohio Department of Insurance, which vary in some respects from GAAP. As more information becomes known, these estimates and assumptions will likely change and may impact amounts reported in the future. The areas where management believes the degree of judgment required to determine amounts recorded in the financial statements is most significant are as follows:

- calculation of statutory reserves, and
- the valuation of investments.

Qualitative and Quantitative Disclosures about Market Risk

Market risk represents the potential economic loss arising from adverse changes in the fair value of financial instruments. MMALIC's exposures to market risk relate primarily to its investment portfolio and annuity contracts, which are exposed to interest rate risk and, to a lesser extent, equity price risk.

MMALIC's exposures to interest rate risk relate primarily to the fair value of MMALIC's bond securities, which are inversely correlated to changes in interest rates. MMALIC's bond portfolio is comprised of primarily fixed-rate investments with intermediate-term maturities. Structuring the bond portfolio in this manner provides MMALIC with flexibility in reacting to interest rate fluctuations.

MMALIC's portfolios are managed with an objective of achieving an adequate risk-adjusted return while maintaining sufficient liquidity to meet policyholder obligations. The portfolios are managed in an effort to adequately position the duration and interest rate sensitivity of the assets against the projected cash flows of policyholder liabilities.

MassMutual Ascend Life Insurance Company

Statutory-Basis Financial Statements

*As of December 31, 2023 and 2022 and for each of the three years
ended December 31, 2023, 2022 and 2021
with Independent Auditors' Report*

MASSMUTUAL ASCEND LIFE INSURANCE COMPANY

Statutory-Basis Financial Statements

**As of December 31, 2023 and 2022 and for each of the three years ended
December 31, 2023, 2022 and 2021**

Contents

Independent Auditors' Report

The Board of Directors
MassMutual Ascend Life Insurance Company:

Opinions

We have audited the financial statements of MassMutual Ascend Life Insurance Company (the Company), which comprise the balance sheets statutory-basis as of December 31, 2023 and 2022, and the related statements of operations statutory-basis, statements of changes in capital and surplus statutory-basis, and statements of cash flow statutory-basis for the years then ended, and the related notes to the financial statements (collectively, financial statements).

Unmodified Opinion on Statutory Basis of Accounting

In our opinion, the accompanying financial statements present fairly, in all material respects, the balance sheets statutory-basis of the Company as of December 31, 2023 and 2022, and the results of its operations and its cash flow for the years then ended in accordance with accounting practices prescribed or permitted by the Ohio Department of Insurance described in Note B.

Adverse Opinion on U.S. Generally Accepted Accounting Principles

In our opinion, because of the significance of the matter discussed in the Basis for Adverse Opinion on U.S. Generally Accepted Accounting Principles section of our report, the financial statements do not present fairly, in accordance with U.S. generally accepted accounting principles, the financial position of the Company as of December 31, 2023 and 2022, or the results of its operations or its cash flows for the years then ended.

Basis for Opinions

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS). Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the Company and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Basis for Adverse Opinion on U.S. Generally Accepted Accounting Principles

As described in Note B to the financial statements, the financial statements are prepared by the Company using accounting practices prescribed or permitted by the Ohio Department of Insurance, which is a basis of accounting other than U.S. generally accepted accounting principles. Accordingly, the financial statements are not intended to be presented in accordance with U.S. generally accepted accounting principles. The effects on the financial statements of the variances between the statutory accounting practices described in Note B and
U.S. generally accepted accounting principles, although not reasonably determinable, are presumed to be material and pervasive.

Emphasis of Matter

As discussed in Note B to the financial statements, in 2022, the Company elected to apply a prescribed practice promulgated under Ohio Administrative Code Section 3901-1-67 ("OAC 3901-1-67") to its derivative

instruments hedging indexed products and indexed annuity reserve liabilities. Our opinions are not modified with respect to this matter.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting practices prescribed or permitted by the Ohio Department of Insurance. Management is also responsible for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for one year after the date that the financial statements are issued.

Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control. Accordingly, no such opinion is expressed.

- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.

- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control related matters that we identified during the audit.

Supplementary Information

Our audits were conducted for the purpose of forming an opinion on the financial statements as a whole. The supplementary information included in the supplemental schedule of selected statutory-basis financial data, supplemental investment disclosures, and supplemental schedule of life and health reinsurance disclosures is presented for purposes of additional analysis and is not a required part of the financial statements but is supplementary information required by the Ohio Department of Insurance. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audits of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with GAAS. In our opinion, the information is fairly stated in all material respects in relation to the financial statements as a whole.

/s/ KPMG LLP

Cincinnati, Ohio
April 23, 2024

MASSMUTUAL ASCEND LIFE INSURANCE COMPANY
BALANCE SHEETS
STATUTORY-BASIS
(Dollars in millions, except share data)

	December 31	
	2023	2022
ADMITTED ASSETS		
Cash and invested assets:		
Bonds - at amortized cost (fair value: $32,911.4 and $29,959.9)	$ 34,972.3	$ 33,331.9
Preferred stocks - principally at fair value (cost: $212.2 and $165.5)	201.0	185.0
Common stocks - at fair value (cost: $195.6 and $220.5)	271.2	281.4
Investments in affiliates and subsidiaries - at subsidiary capital and surplus		
(cost: $242.8 and $242.1)	445.2	401.9
Mortgage loans	4,256.5	3,088.8
Cash, cash equivalents and short-term investments	2,211.3	1,991.2
Policy loans	30.0	31.5
Derivatives	771.4	873.0
Other invested assets	1,573.2	1,505.7
Total cash and invested assets	44,732.1	41,690.4
Net deferred federal income tax asset	272.8	72.2
Deferred and uncollected premiums	5.6	7.7
Current federal income tax recoverable	16.0	89.6
Investment income due and accrued	528.5	414.7
Company-owned life insurance	223.1	218.7
Admitted disallowed interest maintenance reserve	271.5	-
Other admitted assets	495.8	286.0
Total general account admitted assets	46,545.4	42,779.3
Separate account assets	443.3	103.7
Total admitted assets	$ 46,988.7	$ 42,883.0
LIABILITIES, CAPITAL AND SURPLUS		
Liabilities:		
Policy benefit reserves	$ 30,212.2	$ 24,310.4
Liability for deposit-type contracts	788.0	779.8
Policy and contract claims	165.3	140.6
Asset valuation reserve	528.4	577.1
Funds held under reinsurance treaties	9,968.0	12,677.3
Interest maintenance reserve	-	93.3
Commissions, general expenses, taxes, licenses and fees due or accrued	63.3	59.4
Payable for securities	315.1	120.1
Collateral	763.9	209.5
Derivatives	528.2	700.9
Other liabilities	162.0	278.3
Total general account liabilities	43,494.4	39,946.7
Separate account liabilities	443.3	103.7
Total liabilities	43,937.7	40,050.4
Capital and surplus:		
Common stock - $7.50 par value; 1,200,000 shares authorized;		
201,000 shares issued and outstanding	1.5	1.5
Gross paid-in and contributed surplus	815.2	815.2
Unassigned funds	1,962.8	2,015.9
Aggregate write-in for special surplus funds	271.5	-
Total capital and surplus	3,051.0	2,832.6
Total liabilities, capital and surplus	$ 46,988.7	$ 42,883.0

See accompanying notes to statutory-basis financial statements.

MASSMUTUAL ASCEND LIFE INSURANCE COMPANY
STATEMENTS OF OPERATIONS
STATUTORY-BASIS
(Dollars in millions)

	Year Ended December 31		
	2023	2022	2021
Premiums and other revenues:			
Premiums and annuity considerations	$ 8,506.8	$ (7,198.3)	$ 5,027.0
Net investment income	1,918.4	1,019.0	1,951.0
Amortization of interest maintenance reserve	10.4	36.4	23.5
Commissions and expense allowances and reserve adjustments on reinsurance ceded	70.2	496.8	(50.8)
Charges and fees for deposit-type contracts and miscellaneous income	59.2	47.8	124.3
Total premiums and other revenues	10,565.0	(5,598.3)	7,075.0
Benefits and expenses:			
Policyholders' benefits	748.1	505.8	901.2
Surrender benefits	2,434.7	1,460.5	2,208.0
Change in policy and contract reserves	5,901.8	(8,743.9)	3,107.8
Interest and adjustments on deposit-type contracts	156.9	142.3	118.7
Direct commissions and commissions and expense allowances on reinsurance assumed	394.2	364.6	285.2
General insurance expenses	169.8	158.7	145.3
Insurance taxes, licenses and fees	12.7	12.2	12.6
Net transfers to or (from) separate accounts	356.8	(22.0)	36.8
Other	(0.4)	319.3	3.6
Total benefits and expenses	10,174.6	(5,802.5)	6,819.2
Income from operations before federal income taxes and net realized capital gains and losses	390.4	204.2	255.8
Federal income tax (expense) benefit on operations	(241.8)	(13.6)	(45.5)
Income from operations before net realized capital gains and losses	148.6	190.6	210.3
Net realized capital (losses) gains:			
Net realized capital (losses) gains before related federal income taxes and transfers to interest maintenance reserve	(531.5)	(12.6)	301.1
Federal income tax benefit (expense) on net realized capital gains	23.4	14.3	(118.3)
Interest maintenance reserve transfers, net of tax	354.4	(34.3)	(64.0)
Net realized capital (losses) gains	(153.7)	(32.6)	118.7
Net (loss) income	$ (5.1)	$ 158.0	$ 329.0

See accompanying notes to statutory-basis financial statements.

MASSMUTUAL ASCEND LIFE INSURANCE COMPANY
STATEMENTS OF CHANGES IN CAPITAL AND SURPLUS
STATUTORY-BASIS
(Dollars in millions)

| | Year Ended December 31 | | |
	2023	2022	2021
Common stock:			
Balance at beginning of year	$ 1.5	$ 1.5	$ 1.5
Balance at end of year	$ 1.5	$ 1.5	$ 1.5
Gross paid-in and contributed surplus:			
Balance at beginning of year	$ 815.2	$ 815.2	$ 814.0
Contributions from parent	-	-	1.2
Balance at end of year	$ 815.2	$ 815.2	$ 815.2
Unassigned funds:			
Balance at end of prior year	$ 2,015.9	$ 2,061.4	$ 2,081.7
Change in reserve on account of change in valuation basis*	-	236.2	-
Cumulative effect of change in accounting principle*	-	(454.4)	-
Adjusted beginning balance	2,015.9	1,843.2	2,081.7
Net income	(5.1)	158.0	329.0
Change in net unrealized gains (losses) on derivatives	217.1	(204.1)	(67.7)
Change in net unrealized foreign exchange capital gains	19.9	8.8	-
Change in net unrealized capital (losses) gains, net of deferred taxes	(51.8)	3.5	93.1
Change in net deferred tax asset*	214.6	(33.1)	39.4
Change in nonadmitted assets*	(22.8)	(4.6)	(20.7)
Change in admitted disallowed interest maintenance reserve	(271.5)	-	-
Change in asset valuation reserve	48.7	(73.0)	(93.4)
Change in surplus as a result of reinsurance	-	317.2	-
Dividends to parent	(200.0)	-	(300.0)
Correction of error, net of tax	(2.2)	-	-
Balance at end of year	$ 1,962.8	$ 2,015.9	$ 2,061.4
Special surplus funds:			
Balance at end of prior year	$ -	$ -	$ -
Change in admitted disallowed interest maintenance reserve	271.5	-	-
Balance at end of year	$ 271.5	$ -	$ -
Total capital and surplus	$ 3,051.0	$ 2,832.6	$ 2,878.1

* Effective January 1, 2022, the Company elected to apply Ohio Administrative Code 3901-1-67, Alternative Derivative and Reserve Accounting Practices (OAC 3901-1-67) to its derivative instruments hedging fixed-indexed products and fixed-indexed annuity reserve liabilities. At adoption, the decrease in statutory surplus of ($157.4 million) was comprised of $236.2 million in change in reserve on account of change in valuation basis, ($454.4 million) in cumulative effect of change in accounting principle, $46.2 million in change in net deferred income tax and $14.6 million in change in nonadmitted assets.

See accompanying notes to statutory-basis financial statements.

MASSMUTUAL ASCEND LIFE INSURANCE COMPANY
STATEMENTS OF CASH FLOW
STATUTORY-BASIS
(Dollars in millions)

	Year Ended December 31		
	2023	**2022**	**2021**
Operations:			
Premiums and annuity considerations	$ 8,509.2	$ 6,877.6	$ 5,028.1
Net investment income	2,279.3	1,244.9	2,392.4
Benefits paid	(3,375.1)	(2,266.8)	(3,052.6)
Commissions, expenses and other deductions	(570.4)	(551.5)	(408.9)
Federal income taxes paid	(144.6)	(103.8)	(140.3)
Other	119.1	562.2	33.1
Net cash provided by operations	6,817.5	5,762.6	3,851.8
Investing activities:			
Sales, maturities or repayments of investments, net:			
Bonds	8,046.0	14,058.5	6,454.7
Stocks	131.1	18.2	338.1
Mortgage loans	715.1	537.0	506.8
Real estate	-	-	65.8
Other invested assets	322.1	274.0	716.5
Net gains or (losses) on cash, cash equivalents and short-term investments	-	(0.1)	2.6
Miscellaneous proceeds	56.7	(22.3)	-
Purchases of investments:			
Bonds	(10,104.1)	(16,364.8)	(9,899.7)
Stocks	(128.7)	(109.2)	(78.6)
Mortgage loans	(1,881.1)	(1,107.7)	(1,074.4)
Real estate	-	-	(1.1)
Other invested assets	(340.0)	(300.9)	(232.4)
Miscellaneous applications	(796.7)	(673.9)	(389.3)
Net decrease in policy loans	1.5	32.7	5.8
Net cash used in investing activities	(3,978.1)	(3,658.5)	(3,585.2)
Financing and miscellaneous activities:			
Net (withdrawals) deposits on deposit-type contracts	(136.5)	50.4	(1,056.1)
Dividends to parent	(200.0)	-	(300.0)
Other	(2,282.8)	(1,172.2)	51.0
Net cash used in financing and miscellaneous activities	(2,619.3)	(1,121.8)	(1,305.1)
Net increase (decrease) in cash and short-term investments	220.1	982.3	(1,038.5)
Cash and short-term investments at beginning of year	1,991.2	1,008.9	2,047.4
Cash and short-term investments at end of year	$ 2,211.3	$ 1,991.2	$ 1,008.9
Cash flow information for non-cash transactions:			
Bond conversions and refinancing	$ 255.4	$ 453.1	$ -
Common stock conversions	34.4	0.2	-
Bonds transferred to other invested assets	18.6	119.7	-
Other invested assets transferred to common stocks	15.5	-	-
Common stocks transferred to other invested assets	6.4	-	-
Perferred stock conversions	0.4	-	-
Bonds transferred to mortgage loans	-	362.7	-
Other invested assets transferred to bonds	-	17.1	-
Net investment income payment-in-kind for bonds	-	1.1	-
Maturity extensions	-	-	385.9
Exchanges	-	-	162.0
Transfers	-	-	30.0
Securities acquired from dividends/return of capital distribution	-	-	7.1
Capitalized interest	-	-	5.6
Securities acquired as capital contributions	-	-	0.7

See accompanying notes to statutory-basis financial statements.

A. ORGANIZATION AND NATURE OF OPERATIONS

As of May 28, 2021, Great American Life Insurance Company ("GALIC" or "the Company"), a stock life insurance company domiciled in the State of Ohio, is a direct, wholly-owned subsidiary of Glidepath Holdings, Inc. ("Glidepath"), a financial services holding company wholly-owned by Massachusetts Mutual Life Insurance Company ("MassMutual"). Prior to that date, GALIC was a direct wholly-owned subsidiary of Great American Financial Resources, Inc. ("GAFRI"), a financial services holding company wholly-owned by American Financial Group, Inc. ("AFG"). In the fourth quarter of 2022 the Company's name was changed to MassMutual Ascend Life Insurance Company ("MMALIC"). MMALIC predominantly markets traditional fixed, fixed-indexed and registered index-linked annuities ("RILA") in the retail, financial institutions, broker-dealer and registered investment advisor markets, and maintains pension risk transfer business ("PRT"), which is a run-off block of business. MMALIC also has small blocks of long-term care products ("LTC"), other accident and health business, term and universal life in-force business, much of which is reinsured to third parties and are run-off blocks of business. MMALIC is licensed to write life, annuity and accident & health insurance in forty-nine states and the District of Columbia.

B. SIGNIFICANT ACCOUNTING POLICIES

BASIS OF PRESENTATION

The accompanying financial statements have been prepared in conformity with accounting practices prescribed or permitted by the National Association of Insurance Commissioners ("NAIC") and the Ohio Department of Insurance, which vary in some respects from U.S. generally accepted accounting principles ("GAAP"). Although the differences to GAAP have not been quantified, they are presumed to be material. The more significant of the differences using these statutory policies versus GAAP are as follows:

(a) annuity receipts are accounted for as revenues versus liabilities for GAAP,

(b) costs incurred in the acquisition of new business such as commissions, underwriting and policy issuance costs are expensed at the time incurred versus being capitalized for GAAP,

(c) reserves established for future policy benefits are calculated using more conservative assumptions for mortality and interest rates than would be used under GAAP. Beginning on January 1, 2022, certain indexed annuity reserves are calculated in accordance with a prescribed practice under the Ohio Administrative Code discussed elsewhere in this footnote,

(d) for statutory reporting, an Interest Maintenance Reserve ("IMR") is provided whereby portions of certain realized gains and losses from fixed income investments are deferred and amortized into investment income as prescribed by the NAIC,

(e) investments in bonds considered "available for sale" (as defined under GAAP) are generally recorded at amortized cost versus fair value for GAAP, except those with an NAIC designation of "6," which are stated at the lower of amortized cost or fair value,

(f) investments in non-affiliated common stocks are carried at fair value. Redeemable preferred stocks rated RP1 through RP3 are stated at book value. All other redeemable preferred stocks are stated at the lower of book value or fair value. Perpetual preferred stocks are stated at fair value, not to exceed any effective call price. GAAP requires that equity securities are carried at fair value with holding gains and losses reported in realized gains,

(g) for statutory reporting, surplus notes are carried at book value. Under GAAP, surplus notes are considered investments in bonds "available for sale" recorded at fair value,

(h) investments in equity securities of wholly-owned subsidiaries are carried at statutory and GAAP equity, in accordance with Statement of Statutory Accounting Principle No. 97, *Investments in Subsidiary, Controlled and Affiliated Entities* ("SSAP No. 97"), versus being consolidated for GAAP,

(i) for statutory reporting, an Asset Valuation Reserve ("AVR") is provided under a formula prescribed by the NAIC as a valuation allowance for invested assets, which reclassifies a portion of surplus to liabilities,

(j) the cost of certain assets designated as "nonadmitted assets" (principally advance commissions paid to agents, inventory and prepaid assets on real estate holdings, deferred tax assets ("DTA") and certain investment income due and accrued in excess of statutory limitations) is charged against surplus,

(k) policy liabilities and accruals in the statutory-basis balance sheets are reported net of reinsurance credits and recoverable unpaid losses. Under GAAP, balance sheet amounts are reported gross of reinsurance,

(l) commissions allowed by reinsurers on business ceded are reported as income when incurred rather than being deferred and amortized with deferred policy acquisition costs as required under GAAP. Gains on reinsurance transactions are recorded to surplus when incurred rather than being deferred as required under GAAP,

B. SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

(m) for statutory reporting, reinsurance agreements are reported in accordance with Statement of Statutory Accounting Principle No. 61R, *Life, Deposit-Type and Accident and Health Reinsurance*; certain reinsurance agreements are accounted for using deposit accounting for GAAP,

(n) the mark to market on RILA options, forward contracts, currency swaps and interest rate swaps is included as an unrealized gain/(loss) in unassigned surplus versus income for GAAP. Prior to January 1, 2022, fixed-indexed annuity options were carried at fair value and the mark to market was included as an unrealized gain/(loss) in unassigned funds versus income for GAAP,

(o) the fixed-indexed annuity options are carried at amortized cost versus fair value for GAAP. Prior to January 1, 2022, fixed-indexed annuity options were carried at fair value,

(p) in accordance with SSAP No. 101 – Income Taxes, DTAs are limited to: 1) the amount of federal income taxes paid in prior years that can be recovered through loss carrybacks for existing temporary differences that reverse during a timeframe corresponding with Internal Revenue Service ("IRS") tax loss carryback provisions, not to exceed three years, including amounts established in accordance with the provision of SSAP No. 5R, plus 2) for entities who meet the required realization threshold in SSAP No. 101, the lesser of the remaining gross DTAs expected to be realized within three years of the balance sheet date or 15% of capital and surplus excluding any net DTAs, EDP equipment and operating software and any net positive goodwill, plus 3) the amount of remaining gross DTAs that can be offset against existing gross deferred tax liabilities ("DTL"). The remaining DTAs are nonadmitted. Deferred taxes do not include amounts for state taxes. Under GAAP, a DTA is recorded for the amount of gross DTAs expected to be realized in future years, and a valuation allowance is established for DTAs not realizable,

(q) for statutory reporting, cash, cash equivalents, and short-term investments represent cash balances and investments with initial maturities of one year or less. Under GAAP, cash and cash equivalents include cash balances and investments with initial maturities of three months or less, and negative cash balances are reported as negative assets,

(r) changes in deferred taxes are recognized in operations under GAAP versus a change in surplus for statutory reporting,

(s) statutory financial statements are prepared using language and groupings substantially the same as the annual statements of the Company filed with the Ohio Department of Insurance,

(t) statutory statements of cash flows are presented on the basis prescribed by the NAIC, and

(u) statutory financial statements do not include accumulated other comprehensive income.

INTEREST RATE RISK

Significant changes in interest rates expose the Company to the risk of not earning income or experiencing losses based on the differences between the interest rates earned on investments and the credited interest rates paid on outstanding fixed annuity contracts and life insurance products with account values. Significant changes in interest rates may affect:

- the unrealized gains and losses in the investment portfolio;
- the book yield of the investment portfolio; and
- the ability of the Company to maintain appropriate interest rate spreads over the fixed rates guaranteed in life and annuity products.

CREDIT RISK

Third party debtors may not pay or perform their obligations. These parties may include the issuers of securities, customers, reinsurers, and other financial intermediaries.

B. SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

PRESCRIBED OR PERMITTED PRACTICES

The Ohio Department of Insurance recognizes only statutory accounting practices prescribed or permitted by the State of Ohio for determining and reporting the financial condition and results of operations of an insurance company, for determining its solvency under the Ohio Insurance Law. The NAIC's *Accounting Practices and Procedures Manual* ("NAIC SAP") has been adopted as a component of prescribed or permitted practices by the State of Ohio. The Company has no prescribed practices or permitted practices that would result in differences between NAIC SAP and the State of Ohio with the exception of OAC 3901-1-67.

Effective January 1, 2022, the Company elected to apply OAC 3901-1-67 to its derivative instruments hedging fixed-indexed products and fixed-indexed reserve liabilities. Under OAC 3901-1-67, derivative instruments are carried at amortized cost with the initial hedge cost amortized over the term and asset payoffs realized at the end of the term being reported through net investment income. Additionally, the cash surrender value reserves for fixed-indexed products only reflect index interest credits at the end of the crediting term as compared to partial index interest credits accumulating throughout the crediting term through change in policy and contract reserves.

If the prescribed practices were not applied, the Company's risk-based capital would continue to be above regulatory action levels. A reconciliation of the Company's net income (loss) between NAIC SAP and prescribed practice is shown below:

| | | | State of | Year Ended December 31 | | |
Net Income (*in millions*)	SSAP #	F/S Page	Domicile	2023	2022	2021
(1) State basis	XXX	XXX	XXX	$ (5.1)	$ 158.0	$ 329.0
(2) State prescribed practices that are an increase/(decrease) from NAIC SAP	XXX	XXX	XXX			
OAC 3901-1-67:						
Derivative instruments	86	4	OH	(49.3)	(26.4)	-
Reserves for fixed indexed annuities	51	4	OH	306.6	(188.0)	-
Tax impact	101	4	OH	0.7	0.4	-
(3) State permitted practices that are an increase/(decrease) from NAIC SAP	XXX	XXX	XXX	-	-	-
(4) NAIC SAP (1-2-3=4)	XXX	XXX	XXX	$ (263.1)	$ 372.0	$ 329.0

A reconciliation of the Company's capital and surplus between the NAIC SAP and prescribed practice is shown below:

| | | | State of | Year Ended December 31 | | |
Surplus (*in millions*)	SSAP #	F/S Page	Domicile	2023	2022	2021
(5) Statutory surplus state basis	XXX	XXX	XXX	$ 3,051.0	$ 2,832.6	$ 2,878.1
(6) State prescribed practices that are an increase/(decrease) from NAIC SAP						
OAC 3901-1-67:						
Derivative instruments	86	2, 4	OH	(525.3)	(39.2)	-
Reserves for fixed indexed annuities	51	3, 4	OH	354.8	48.2	-
Tax impact	101	2, 4	OH	50.8	13.1	-
(7) State permitted practices that are an increase/(decrease) from NAIC SAP	XXX	XXX	XXX	-	-	-
(8) NAIC SAP (5-6-7=8)	XXX	XXX	XXX	$ 3,170.7	$ 2,810.5	$ 2,878.1

On February 17, 2022, MMALIC entered into a Funds Withheld Coinsurance agreement effective February 1, 2022, with Martello Re Limited, a Bermuda-domiciled Class E life and annuity reinsurer launched in 2022. MMALIC ceded statutory reserves of approximately $14.2 billion on a closed block of fixed, fixed-indexed and payout annuity policies, in exchange for a $320 million ceding commission paid by Martello Re. The transaction resulted in a significant increase to MMALIC's Risk Based Capital ratio. See "Note F - Reinsurance" for additional disclosure.

Preparation of the statutory-basis financial statements requires management to make estimates and assumptions that affect amounts reported in the financial statements and accompanying notes. Such estimates and assumptions could change in the future as more information becomes known, which could impact the amounts reported and disclosed herein.

B. SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

INVESTMENTS

Investments are generally stated as follows:

a)   bonds with a NAIC rating 1 through 5 are stated at amortized cost using the interest method; all others are stated at the lower of amortized cost or fair value. For residential mortgage-backed securities ("MBS"), commercial MBS and loan-backed and structured securities ("LBASS"), the NAIC has retained a third-party investment management firm to assist in the determination of the appropriate NAIC designations and Book Adjusted Carrying Values based on not only the probability of loss, but also the severity of loss. Those residential MBS, commercial MBS and LBASS securities that are not modeled but receive a current year NAIC Credit Rating Provider rating equal to NAIC 1 and 2 are stated at amortized cost and NAIC 3-6 are stated at lower of amortized cost or fair value. Dealer modeled prepayment assumptions are used for mortgage-backed and asset-backed securities at the date of purchase to determine effective yields; significant changes in estimated cash flows from the original purchase assumptions are accounted for on a prospective basis,

b)   short-term investments are carried at cost,

c)   redeemable preferred stocks rated RP1 through RP3 are stated at book value. All other redeemable preferred stocks are stated at the lower of book value or fair value. Perpetual preferred stocks are stated at fair value, not to exceed any effective call price,

d)   common stocks are carried at fair value except investments in stocks of unconsolidated subsidiaries and affiliates in which the Company has an interest of 10% or more are carried on the equity basis in accordance with SSAP No. 97,

e)   RILA options, forward contracts, financial futures, currency swaps and interest rate swaps are carried at fair value,

f)   fixed-indexed annuity options are carried at amortized cost. Prior to adoption of OAC 3901-1-67, fixed-indexed annuity options were carried at fair value,

g)   other invested assets include limited partnerships, limited liability companies and surplus notes. Surplus notes are stated at the lower of amortized cost or fair value. Investments in limited partnerships and limited liability companies are accounted for using the equity method,

h)   mortgage loans on real estate are carried at amortized cost less an allowance, and

i)   policy loans are stated at the aggregate unpaid balance.

If it is determined that a decline in fair value of a specific investment is other-than-temporary, an impairment is recognized as a realized capital loss. Investments that are in an unrealized loss position that the Company intends to sell, or does not have the intent and ability to hold until recovery, are written down to fair value. Loan-backed and structured securities (included in bonds) that are in an unrealized loss position that the Company has the intent and ability to hold until recovery, are written down only to the extent the present value of expected future cash flows using the security's effective yield is lower than the amortized cost. All other bonds that are in an unrealized loss position that the Company has the intent and ability to hold until recovery are written down to fair value if declines are credit-related and not written down for interest-related declines. When a decline in the value of a specific investment is considered to be other-than-temporary, a provision for impairment is charged to earnings (included in net realized capital gains (losses)) and the cost basis of that investment is reduced by the amount of the charge.

The Company's derivative strategy employs a variety of derivative financial instruments including interest rate and currency swaps, options, financial futures, and forward contracts. Investment risk is assessed on a portfolio basis and individual derivative financial instruments are not generally designated in hedging relationships; therefore, as allowed by statutory accounting practices, the Company intentionally has not applied hedge accounting. Subsequent to the adoption of OAC on January 1, 2022, options related to fixed-indexed annuities are recorded at amortized cost with amortization and expirations recorded in Net investment income. All other derivative instruments are recorded at fair value with the related changes reported in Unassigned funds and settlements and expirations reported in Net realized capital gains (losses).

B. SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Counterparties to financial instruments expose the Company to credit-related losses in the event of nonperformance, but the Company does not expect any counterparties to fail to meet their obligations and expects any nonperformance to not have a material impact on the Company's financial statements. The Company receives collateral from certain counterparties to support its purchased equity index call option assets (net of collateral required under put option contracts with the same counterparties).

Investments having maturities of three months or less when purchased are considered to be cash equivalents for purposes of the statutory-basis financial statements. The carrying values of cash and short-term investments approximate their fair values.

Gains or losses on sales of securities are recognized at the time of disposition with the amount of gain or loss determined on the specific identification basis.

The IMR applies to interest-related realized capital gains and losses (net of tax) and is intended to defer realized gains and losses resulting from changes in the general level of interest rates. Gains and losses deferred from realized capital gains and losses are reported in interest maintenance reserve transfers, net of tax on the Statement of Operations. The IMR is amortized into investment income over the approximate remaining life of the investments sold.

The AVR provides for possible credit-related losses on securities and is calculated according to a specified formula as prescribed by the NAIC for the purpose of stabilizing surplus against fluctuations in the fair value of investment securities. Changes in the required reserve balances are made by direct credits or charges to surplus.

During 2023 and 2022, the Company did not reduce the interest rates on any of the outstanding mortgage loans due to credit concerns. Fire insurance, at least equal to the excess of the loan over the maximum loan that would be permitted by law on the land without the buildings, is required on all properties covered by mortgage loans.

Investments in the capital stock of MMALIC's wholly-owned insurance subsidiaries, Annuity Investors Life Insurance Company ("AILIC") and Manhattan National Life Insurance Company ("MNLIC"), are carried at the subsidiary's statutory equity in accordance with SSAP No. 97.

PREMIUMS

Annuity premiums and considerations are recognized as revenue when received. Life and accident and health premiums are recognized as revenue when due and premiums over 90 days past due are nonadmitted and charged against surplus. Additionally, life and accident and health premiums include deferred premiums on in-force business.

SEPARATE ACCOUNT

Separate account assets and liabilities reported in the accompanying statutory-basis balance sheet represent funds that are separately administered to hedge the Company's registered index-linked annuity contracts. Separate account assets are reported at fair value and include equity index call options. Separate account liabilities are reported at fair value and include equity index put options and registered index-linked annuity reserves. The operations of the separate account are not included in the accompanying statutory-basis financial statements.

B. SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

POLICY BENEFIT RESERVES

Life, annuity, and accident and health disability benefit reserves are developed by actuarial methods and are determined based on published tables using statutorily specified interest rates and valuation methods that will provide, in the aggregate, reserves that are greater than or equal to the minimum or guaranteed policy cash values or the amounts required by the Ohio Department of Insurance. MMALIC waives deduction of deferred fractional premiums on the death of life and annuity policy insureds and returns any premium beyond the date of death. Surrender values on policies do not exceed the corresponding benefit reserves.

For life insurance policies extra premiums are charged for substandard lives. Additional reserves are established when the results of cash flow testing under various interest rate scenarios indicate the need for such reserves or, where required by the valuation standards, when the net premiums exceed the gross premiums. The net deficiency reserve at December 31, 2023 and December 31, 2022, was $1.7 million and $1.9 million, respectively. The net amount of insurance in force for these reserves at December 31, 2023 and December 31, 2022 was approximately $13.9 million and $16.1 million, respectively. Much of the deficiency reserve is related to a cash endowment rider.

The valuation mortality table and interest assumptions being used on the vast majority of life policies in force is the 1980 Commissioners Standard Ordinary Table with 2.0% to 6.0% interest. Approximately one-sixth of the future life insurance benefits are based on a net level reserve basis and the remaining are based on a modified reserve basis. The effect of using a modified reserve basis is to partially offset the effect of immediately expensing acquisition costs by providing a reserve increase in the first policy year which is less than the increase in the renewal years.

For life insurance policies the mean reserve method is used to adjust the calculated terminal reserve to the appropriate reserve at December 31. Mean reserves for substandard lives are determined by computing the regular mean reserve for the plan at the rated age and holding, in addition, one-half of the extra premium charge for the year. An asset is recorded for deferred premiums net of loading to adjust the reserve for modal premium payments.

Life insurance deferred and uncollected premiums represent annual or fractional premiums, either due and uncollected or not yet due, whereby policy reserves have been provided on the assumption that the full premium for the current policy year has been collected.

Annuity policy and deposit fund reserves are based on principles underlying the Commissioners Annuity Reserve Valuation Method. Valuation interest rates range from 0.75% to 11.25%. Valuation mortality rates are from the 1971 Individual Annuity Mortality ("IAM") table, the 1983 IAM table, 1994 Group Annuity Mortality table, Annuity 2000 mortality table and the 2012 Individual Annuity Reserving mortality table. Reserves for fixed-indexed annuities are calculated using the market value reserve method as defined in NAIC Actuarial Guideline 35, adjusted in accordance with OAC 3901-1-67. The fixed-indexed reserves will only reflect index interest credits at the end of the crediting term as compared to partially reflecting the index interest credits throughout the crediting term in aggregate reserves for life and accident and health contracts. Prior to 2022, reserves for fixed-indexed annuities were calculated using the market value reserve method as defined in NAIC Actuarial Guideline 35. Reserves for registered index-linked annuities are calculated using the reserve method defined in the Valuation Manual (VM-21), including the use of the Alternative Methodology for calculating the Conditional Tail Expectation Amount. Rates determined by section VM-22 of the Valuation Manual were used for pension risk transfer contracts and single premium immediate annuities with issue years after 2017 and payout annuities issued as an annuitization of a deferred annuity originally issued after 2017.

Tabular interest, tabular less actual reserves released and tabular costs have been determined by formula. Tabular interest on funds not involving life contingencies is calculated as the product of such valuation rate of interest times the mean of the amount of funds subject to such valuation rate of interest held at the beginning and end of the year of valuation.

The nature of significant other reserve changes primarily relates to annuity reserves ceded to both Martello Re Limited and Commonwealth Annuity and Life Insurance Company ("Commonwealth"). The Company has ceded approximately $15.0 billion and $18.3 billion of annuity reserves in aggregate to Martello Re Limited and Commonwealth at December 31, 2023 and 2022, respectively.

B. SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

The liability for unreported claims is based on actual, recent Company experience of unreported life and annuity claim development. This experience is monitored and the liability is adjusted accordingly each quarter.

The Company is required to perform an annual asset adequacy test of reserves, to determine if they are adequate under moderately adverse conditions. The Appointed Actuary oversees the analysis and determines if and how much additional reserves are required. As of December 31, 2023 and 2022 additional reserves were not required.

FEDERAL INCOME TAXES

Through the first five months of 2021, the Company had an intercompany tax allocation agreement with AFG. Pursuant to the agreement, the Company's tax expense was determined based upon its inclusion in the consolidated tax return of AFG and its includable subsidiaries. Estimated payments were made quarterly during the year. Following year-end, additional settlements would be made on the original due date of the return and, when extended, at the time the return was filed. The method of allocation among the companies under the agreement was based upon separate return calculations with current credit for net losses to the extent the losses provide a benefit in the consolidated return.

Beginning in June of 2021, MMALIC and its subsidiaries entered into a separate intercompany tax allocation agreement (the Tax Agreement). The Tax Agreement sets forth the manner in which the total combined federal income is allocated among the subsidiaries. The Tax Agreement provides MMALIC with the enforceable right to recoup federal income taxes paid in prior years in the event of future net capital losses, which it may incur. Further, the Tax Agreement provides MMALIC with the enforceable right to utilize its net losses carried forward as an offset to future net income subject to federal income taxes. Estimated payments are made quarterly during the year. Following year-end, additional settlements are made on the original due date of the return and, when extended, at the time the return is filed.

ADOPTION OF NEW ACCOUNTING STANDARDS

In June 2022, the NAIC adopted modifications to SSAP No. 25, *Affiliates and Other Related Parties* and SSAP No. 43R, *Loan-Backed and Structured Securities*, effective December 31, 2022. The modifications clarify application of the existing affiliate definition and incorporate disclosure requirements for all investments that involve related parties, regardless of whether they meet the affiliate definition. The revisions to SSAP No. 43R also included additional clarifications that the investments from any arrangements that results in direct or indirect control, which include but are not limited to control through a servicer, shall be reported as affiliated investments. The modifications did not have a material effect on the Company's financial statements.

In August 2023, the NAIC adopted INT 23-01T — *Disallowed IMR* ("INT 23-01T"). INT 23-01T provides optional, limited-term guidance for the assessment of disallowed IMR for up to 10% of adjusted general account capital and surplus. An insurer's capital and surplus must first be adjusted to exclude certain "soft assets" including net positive goodwill, electronic data processing equipment and operating system software, net deferred tax assets and admitted disallowed IMR. An insurer will only be able to admit the negative IMR if the insurer's risk-based capital is over 300% authorized control level after adjusting to remove the assets described above.

As adopted, negative IMR may be admitted first in the insurer's general account and then, if all disallowed IMR in the general account is admitted and the percentage limit is not reached, to the separate account proportionately between insulated and noninsulated accounts. If the insurer can demonstrate historical practice in which acquired gains from derivatives were also reversed to IMR (as liabilities) and amortized, there is no exclusion for derivatives losses. INT 23-01T was adopted by the Company as of September 30, 2023 and will be effective through December 31, 2025. To the extent the Company's IMR balance is a net negative, the effects of INT 23-01T will be reflected in the Company's financial position, results of operations, and financial statement disclosures. The Company has adopted this guidance and the adoption resulted in an admitted disallowed IMR of $271.5 million.

B. SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

In March 2023, the NAIC adopted modifications to SSAP No. 34 – *Investment Income Due and Accrued*, effective December 31, 2023. The modifications require additional disclosures and data capture related to gross, non-admitted and admitted amounts for interest income due and accrued, deferred interest, and paid-in-kind ("PIK") interest.

In August 2023, the NAIC adopted revisions to further clarify the PIK interest disclosure in SSAP No. 34, effective December 31, 2023. The revisions clarify that decreasing amounts to principal balances are first applied to any PIK interest included in the principal balance. The original principal would not be reduced until the PIK interest had been fully eliminated from the balance. The revisions also provide a practical expedient for determining the PIK interest in the cumulative balance by subtracting the original principal/ par value from the current principal/ par value, with the resulting PIK interest not to go less than zero. The modifications did not have a material effect on the Company's impact of PIK in relation to the financial statements.

In August 2023, the NAIC adopted revisions to clarify and incorporate a new bond definition within disclosures SSAP No. 26 – *Bonds*, SSAP No. 43 – *Asset-Backed Securities*, and other related SSAPs, effective January 1, 2025. The revisions were issued in connection with its principle-based bond definition project, the Bond Project.

The Bond Project began in October 2020 through the development of a principle-based bond definition to be used for all securities in determining whether they qualify for reporting on the statutory annual statement Schedule D. Within the new bond definition, bonds are classified as an "issuer credit obligation" or an "asset-backed security." An "issuer credit obligation" is defined as a bond where repayment is supported by the general creditworthiness of an operating entity, and an "asset-backed security" is defined as a bond issued by an entity created for the primary purpose of raising capital through debt backed by financial assets. The revisions to SSAP No. 26 reflect the principle-based bond definition, and SSAP No. 43 provides accounting and reporting guidance for investments that qualify as asset-backed securities under the new bond definition. Upon adoption, investments that do not qualify as bonds will not be permitted to be reported as bonds on Schedule D, Part 1 thereafter as there will be no grandfathering for existing investments that do not qualify under the revised SSAPs. The Company is currently assessing the impacts of the adopted SSAP No. 26, SSAP No. 43 and other related SSAPs in relation to the financial statements.

SUBSEQUENT EVENTS

Management has evaluated all events occurring after December 31, 2023, through the date the financial statements were available to be issued, to determine whether any event required either recognition or disclosure in the financial statements.

C. FAIR VALUE MEASUREMENTS

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Fair value measurements are based upon observable and unobservable inputs. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect the Company's view of market assumptions in the absence of observable market information. The Company utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs. In determining fair value, the Company uses various methods, including market, income and cost approaches.

The Company categorizes its financial instruments into a three-level hierarchy based on the priority of the inputs to the valuation technique. The fair value hierarchy gives the highest priority to quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). If the inputs used to measure fair value fall within different levels of the hierarchy, the category level is based on the lowest priority level input that is significant to the fair value measurement of the instrument in its entirety.

The three levels of the hierarchy are as follows:

Level 1 - Quoted prices for identical assets or liabilities in active markets (markets in which transactions occur with sufficient frequency and volume to provide pricing information on an ongoing basis). MMALIC's Level 1 financial instruments consist primarily of cash, cash equivalents and short-term investments and publicly traded equity securities for which quoted market prices in active markets are available.

Level 2 - Quoted prices for similar instruments in active markets; quoted prices for identical or similar assets or liabilities in inactive markets (markets in which there are few transactions, the prices are not current, price quotations vary substantially over time or among market makers, or in which little information is released publicly); and valuations based on other significant inputs that are observable in active markets. MMALIC's Level 2 financial instruments include fixed maturities, non-affiliated preferred stocks, separate account assets and liabilities, funds held as collateral and derivative instruments priced using observable inputs. Level 2 inputs include benchmark yields, reported trades, corroborated broker/dealer quotes, issuer spreads and benchmark securities. When non-binding broker quotes can be corroborated by comparison to similar securities priced using observable inputs, they are classified as Level 2.

Level 3 - Valuations derived from market valuation techniques generally consistent with those used to estimate the fair value of Level 2 financial instruments in which one or more significant inputs are unobservable or when the market for a security exhibits significantly less liquidity relative to markets supporting the Level 2 fair value measurements. The unobservable inputs may include management's own assumptions about the assumptions market participants would use based on the best information available in the circumstances. MMALIC's Level 3 is comprised of financial instruments whose fair value is estimated based on non-binding broker quotes or internally developed using significant inputs not based on, or corroborated by, observable market information.

Management is responsible for the valuation process and uses data from outside sources (including nationally recognized pricing services and broker/dealers) in establishing fair value. Valuation techniques utilized by pricing services and prices obtained from external sources are reviewed by internal investment professionals who are familiar with the securities being priced and the markets in which they trade to ensure the fair value determination is representative of an exit price. To validate the appropriateness of the prices obtained, the investment manager considers widely published indices (as benchmarks), recent trades, changes in interest rates, general economic conditions and the credit quality of the specific issuers. In addition, management communicates directly with the pricing service regarding the methods and assumptions used in pricing, including verifying, on a test basis, the inputs used by the service to value specific securities. See "Note D - Investments" for fair value of investment securities.

C. FAIR VALUE MEASUREMENTS (CONTINUED)

Financial assets and liabilities measured at fair value on a recurring basis categorized into the three-level fair value hierarchy at December 31, 2023 are summarized below (in millions):

Description	Level 1	Level 2	Level 3	Total
Assets:				
Bonds:				
Industrial and miscellaneous	$ -	$ 8.0	$ 6.3	$ 14.3
Total bonds	-	8.0	6.3	14.3
Non-affiliated preferred stocks	45.2	16.4	67.7	129.3
Non-affiliated common stocks	113.0	-	158.2	271.2
Financial Futures	21.0	-	-	21.0
Interest rate swaps	-	26.6	-	26.6
Separate account assets	5.2	438.1	-	443.3
Total assets accounted for at fair value	$ 184.4	$ 489.1	$ 232.2	$ 905.7
Liabilities:				
Currency swaps	$ -	$ 38.8	$ -	$ 38.8
Currency forwards	-	5.0	-	5.0
Interest rate swaps	-	66.3	-	66.3
Separate account liabilities	5.2	438.1	-	443.3
Total liabilities accounted for at fair value	$ 5.2	$ 548.2	$ -	$ 553.4

Financial assets and liabilities measured at fair value on a recurring basis categorized into the three-level fair value hierarchy at December 31, 2022 are summarized below (in millions):

Description	Level 1	Level 2	Level 3	Total
Assets:				
Bonds:				
Industrial and miscellaneous	$ -	$ 8.6	$ 12.7	$ 21.3
Total bonds	-	8.6	12.7	21.3
Non-affiliated preferred stocks	24.0	-	127.3	151.3
Non-affiliated common stocks	142.3	-	139.1	281.4
Currency swaps	-	1.0	-	1.0
Currency forwards	-	0.1	-	0.1
Interest rate swaps	-	25.2	-	25.2
Separate account assets	1.1	102.6	-	103.7
Total assets accounted for at fair value	$ 167.4	$ 137.5	$ 279.1	$ 584.0
Liabilities:				
Currency swaps	$ -	$ 4.8	$ -	$ 4.8
Currency forwards	-	2.5	-	2.5
Interest rate swaps	-	95.0	-	95.0
Separate account liabilities	1.1	102.6	-	103.7
Total liabilities accounted for at fair value	$ 1.1	$ 204.9	$ -	$ 206.0

The Company had no material assets or liabilities measured at fair value on a nonrecurring basis as of December 31, 2023 and 2022.

C. FAIR VALUE MEASUREMENTS (CONTINUED)

The Company recognizes and records the transfer of securities into and out of Level 3 due to changes in availability of market observable inputs. All transfers are reflected in the tables below at fair values as of the end of the reporting periods (in millions):

	Balance as of 1/1/2023	Gain (Losses) in Net Income	Losses (Gains) in Surplus	Purchases	Issuances	Settlements	Sales	Transfers In	Out	Other	Balance as of 12/31/2023
Financial assets:											
Industial and miscellaneous	$ 12.7	$ 2.7	$ (6.8)	$ 0.8	$ -	$ -	$ -	$ -	$ -	$ (3.1)	$ 6.3
Preferred stocks - unaffiliated	127.3	-	(10.9)	-	0.9	(0.5)	-	-	-	(49.1)	67.7
Common stocks - unaffiliated	139.1	6.1	(15.9)	-	-	(40.7)	(0.3)	-	-	69.9	158.2
Total financial assets	$ 279.1	$ 8.8	$ (33.6)	$ 0.8	$ 0.9	$ (41.2)	$ (0.3)	$ -	$ -	$ 17.7	$ 232.2

	Balance as of 1/1/2022	Gain (Losses) in Net Income	Losses (Gains) in Surplus	Purchases	Issuances	Settlements	Sales	Transfers In	Out	Other	Balance as of 12/31/2022
Financial assets:											
Industial and miscellaneous	$ 8.4	$ (9.3)	$ (3.0)	$ -	$ -	$ (4.9)	$ -	$ -	$ -	$ 21.5	$ 12.7
Preferred stocks - unaffiliated	143.4	-	59.8	-	-	-	-	-	-	(75.9)	127.3
Common stocks - unaffiliated	172.0	(0.6)	83.8	6.4	48.3	(52.5)	-	9.0	-	(127.3)	139.1
Total financial assets	$ 323.8	$ (9.9)	$ 140.6	$ 6.4	$ 48.3	$ (57.4)	$ -	$ 9.0	$ -	$ (181.7)	$ 279.1

C. FAIR VALUE MEASUREMENTS (CONTINUED)

The following table categorizes all the financial assets and liabilities in the financial statements into the three-level fair value hierarchy at December 31, 2023 (in millions):

Description	Fair Value	Carrying Value	Level 1	Level 2	Level 3
Financial assets:					
Bonds:					
U.S. Government and agencies	$ 156.8	$ 186.7	$ -	$ 156.8	$ -
All other governments	18.2	19.2	-	18.2	-
States, territories and possessions	175.5	180.4	-	175.5	-
Political subdivisions	228.7	231.5	-	228.7	-
Special Revenue	1,800.2	1,920.8	-	1,784.9	15.3
Industrial and miscellaneous	29,809.8	31,688.5	-	21,914.2	7,895.6
Parent, subsidiaries and affiliates	722.2	745.2	-	583.4	138.8
Total bonds	$ 32,911.4	$ 34,972.3	$ -	$ 24,861.7	$ 8,049.7
Non-affiliated preferred stocks	217.9	201.0	89.8	16.4	111.7
Non-affiliated common stocks	271.2	271.2	113.0	-	158.2
Mortgage loans	4,053.2	4,256.5	-	-	4,053.2
Fixed-indexed annuity options**	822.9	723.8	317.9	505.0	-
Interest rate swaps	26.6	26.6	-	26.6	-
Financial futures	21.0	21.0	-	21.0	-
Separate account assets	443.3	443.3	5.2	438.1	-
Cash, cash equivalents and short-term investments	2,211.3	2,211.3	2,211.3	-	-
Policy loans	30.0	30.0	-	-	30.0
Total financial assets	$ 41,008.8	$ 43,157.0	$ 2,737.2	$ 25,868.8	$ 12,402.8
Financial liabilities:					
Currency swaps	$ 38.8	$ 38.8	$ -	$ 38.8	$ -
Currency forwards	5.0	5.0	-	5.0	-
Interest rate swaps	66.3	66.3	-	66.3	-
Fixed-indexed annuity options**	-	418.1	-	-	-
Separate account liabilities	443.3	443.3	5.2	438.1	-
Total financial liabilities	$ 553.4	$ 971.5	$ 5.2	$ 548.2	$ -

*Separate account liabilities incorporates the fair value of the separate account reserve and equity index put options.

**Effective 1/1/2022, Fixed-indexed annuity options are carried at amortized cost per OAC 3901-1-67. Fair Value of options is reported net in the asset section for disclosure.

C. FAIR VALUE MEASUREMENTS (CONTINUED)

The following table categorizes all the financial assets and liabilities in the financial statements into the three-level fair value hierarchy at December 31, 2022 (in millions):

Description	Fair Value	Carrying Value	Level 1	Level 2	Level 3
Financial assets:					
Bonds:					
U.S. Government and agencies	$ 64.0	$ 98.9	$ -	$ 64.0	$ -
All other governments	17.8	19.2	-	17.8	-
States, territories and possessions	183.1	190.7	-	183.1	-
Political subdivisions	268.7	272.7	-	268.7	-
Special Revenue	1,537.0	1,691.6	-	1,537.0	-
Industrial and miscellaneous	27,421.0	30,538.0	-	20,029.5	7,391.5
Parent, subsidiaries and affiliates	468.3	520.8	-	347.8	120.5
Total bonds	$ 29,959.9	$ 33,331.9	$ -	$ 22,447.9	$ 7,512.0
Non-affiliated preferred stocks	198.3	185.0	38.5	-	159.8
Non-affiliated common stocks	281.4	281.4	142.3	-	139.1
Mortgage loans	2,846.5	3,088.8	-	-	2,846.5
Currency forwards	0.1	0.1	-	0.1	-
Fixed-indexed annuity options**	287.4	846.8	102.6	184.8	-
Interest rate swaps	25.2	25.2	-	25.2	-
Currency swaps	0.9	0.9	-	0.9	-
Separate account assets	103.7	103.7	1.1	102.6	-
Cash, cash equivalents and short-term investments	1,991.2	1,991.2	1,991.2	-	-
Policy loans	31.5	31.5	-	-	31.5
Total financial assets	$ 35,726.1	$ 39,886.5	$ 2,275.7	$ 22,761.5	$ 10,688.9
Financial liabilities:					
Currency swaps	$ 4.8	$ 4.8	$ -	$ 4.8	$ -
Currency forwards	2.5	2.5	-	2.5	-
Interest rate swaps	95.0	95.0	-	95.0	-
Fixed-indexed annuity options**	-	598.6	-	-	-
Separate account liabilities	103.7	103.7	1.1	102.6	-
Total financial liabilities	$ 206.0	$ 804.6	$ 1.1	$ 204.9	$ -

*Separate account liabilities incorporates the fair value of the separate account reserve and equity index put options.

**Effective 1/1/2022, Fixed-indexed annuity options are carried at amortized cost per OAC 3901-1-67. Fair Value of options is reported net in the asset section for disclosure.

C. FAIR VALUE MEASUREMENTS (CONTINUED)

FAIR VALUE OF FINANCIAL INSTRUMENTS

The following methods and assumptions were used to estimate the fair values of financial instruments:

Bonds: Fair values for investments in publicly traded bonds are obtained from nationally recognized pricing services. Fair values for privately placed investment grade bonds are obtained from broker quotes or determined internally by security analysts of the Company's affiliated investment portfolio manager.

Non-affiliated preferred and common stock: Fair values of equity securities are generally based on closing prices obtained from the exchanges on which the securities are traded. For the remainder of these securities, fair values are determined by management's internal investment professionals using data from nationally recognized pricing services as well as non-binding broker quotes.

Mortgage Loans: The fair values for the Company's mortgage loans are estimated by discounting the future contractual cash flows using the current rates at which similar loans would be made to borrowers with similar credit ratings.

Derivative instruments: The fair values for MMALIC's derivative instruments are based on settlement values, quoted market prices of comparable instruments, fees currently charged to enter into similar agreements, taking into account the remaining terms of the agreements and the counterparties' credit standing (guarantees, loan commitments), or, if there are no relevant comparables, on pricing models or formulas using current assumptions.

Separate Account: The separate account consists of derivative instruments in both asset and liability positions and registered index-linked annuity reserves. The reserves are set equal to the net fair value of the separate account derivative instruments. The methods and assumptions used for the separate account derivatives and reserves are described in more detail above.

Policy Loans: The Company states policy loans at the aggregate unpaid balance, which approximates fair value.

Cash, cash equivalents and short-term investments: Cash and cash equivalents, which are carried at amortized cost, consist of all highly liquid investments purchased with original maturities of three months or less. Short-term investments, which are carried at amortized cost, consist of short-term bonds, money market mutual funds and all highly liquid investments purchased with maturities of greater than three months and less than or equal to 12 months. The carrying value reported in the Statutory Balance Sheet for cash, cash equivalents and short-term investment instruments approximates the fair value.

D. INVESTMENTS

Bonds at December 31 consisted of the following (in millions):

	2023			
	Carrying Value	Fair Value	Gross Unrealized Gains	Gross Unrealized Losses
U.S. Government and agencies	$ 186.7	$ 156.8	$ 3.9	$ 33.8
All other governments	19.2	18.2	-	1.0
States, territories and possessions	180.4	175.5	0.5	5.4
Political subdivisions	231.5	228.7	3.7	6.5
Special Revenue	1,920.8	1,800.2	10.5	131.1
Industrial and miscellaneous	31,688.5	29,809.8	247.6	2,126.3
Parent, subsidiaries and affiliates	745.2	722.2	4.2	27.2
Total bonds	$ 34,972.3	$ 32,911.4	$ 270.4	$ 2,331.3

The December 31, 2023 gross unrealized losses exclude $12.8 million of losses included in the carrying value. These losses include $12.5 million from NAIC Class 6 bonds and $0.3 million from residential mortgage-backed securities (RMBS) whose ratings were obtained from outside modelers. These losses were primarily included in industrial and miscellaneous.

Bonds at December 31 consisted of the following (in millions):

	2022			
	Carrying Value	Fair Value	Gross Unrealized Gains	Gross Unrealized Losses
U.S. Government and agencies	$ 98.9	$ 64.0	$ 0.9	$ 35.8
All other governments	19.2	17.8	-	1.4
States, territories and possessions	190.7	183.1	0.6	8
Political subdivisions	272.7	268.7	4.9	8.9
Special Revenue	1,691.6	1,537.0	4.0	158.6
Industrial and miscellaneous	30,538.0	27,421.0	99.6	3,216.6
Parent, subsidiaries and affiliates	520.8	468.3	3.6	56.1
Total bonds	$ 33,331.9	$ 29,959.9	$ 113.6	$ 3,485.6

The December 31, 2022 gross unrealized losses exclude $15.7 million of losses included in the carrying value. These losses include $15.4 million from NAIC Class 6 bonds and $0.3 million from residential mortgage-backed securities (RMBS) whose ratings were obtained from outside modelers. These losses were primarily included in industrial and miscellaneous.

At December 31, 2023 and 2022, the Company held unrated or less-than-investment grade bonds of $2,077.4 million and $2,171.2 million, respectively, with an aggregate fair value of $1,950.7 million and $1,968.2 million, respectively. Those holdings amounted to 5.9% and 6.5% of the Company's investments in bonds and approximately 4.4% and 5.1% of the Company's total admitted assets at December 31, 2023 and 2022, respectively. The Company performs periodic evaluations of the relative credit standing of the issuers of these bonds.

Mortgage loans are collateralized by underlying real estate properties, with geographic diversification across the United States. The Company monitors loan-to-value ratios and debt-service coverage ratios in assessing the credit quality of the underlying mortgage loans. There have been no material losses related to commercial mortgage loans historically or in 2023, 2022 or 2021.

D.   INVESTMENTS (CONTINUED)

The carrying value and fair value of the Company's mortgage loans at December 31 were as follows (in millions):

	2023		2022	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Commercial mortgage loans:				
Primary lender	$ 1,431.9	$ 1,343.4	$ 1,263.5	$ 1,160.4
Mezzanine loans	47.6	47.6	22.6	22.6
Total commercial mortgage loans	1,479.5	1,391.0	1,286.1	1,183.0
Residential mortgage loans:				
FHA insured and VA guranteed	428.1	393.0	486.6	439.5
Other residential mortgage loans	2,348.9	2,269.2	1,316.1	1,224.0
Total residential mortgage loans	2,777.0	2,662.2	1,802.7	1,663.5
Total mortgage loans	$ 4,256.5	$ 4,053.2	$ 3,088.8	$ 2,846.5

The loan-to-value ratios by property type of the Company's commercial mortgage loans at December 31 were as follows (in millions):

	2023				
	Less Than 81%	81% to 95%	Above 95%	Total	% of Total
Office	$ 53.5	$ 17.6	$ 25.1	$ 96.2	7%
Apartments	597.8	65.5	-	663.3	45%
Industrial and other	238.9	-	-	238.9	16%
Hotels	382.1	47.4	51.6	481.1	32%
Retail	-	-	-	-	0%
Total	$ 1,272.3	$ 130.5	$ 76.7	$ 1,479.5	100%

More than 85% of the Company's commercial mortgage loans' loan-to-value ratios are below 81% for the year ended December 31, 2023.

	2022				
	Less Than 81%	81% to 95%	Above 95%	Total	% of Total
Office	$ 79.1	$ -	$ 30.8	$ 109.9	9%
Apartments	441.5	82.9	-	524.4	41%
Industrial and other	224.7	-	-	224.7	17%
Hotels	351.3	75.8	-	427.1	33%
Retail	-	-	-	-	0%
Total	$ 1,096.6	$ 158.7	$ 30.8	$ 1,286.1	100%

More than 85% of the Company's commercial mortgage loans' loan-to-value ratios were below 81% for the year ended December 31, 2022.

D. INVESTMENTS (CONTINUED)

The Company uses an internal rating system as its primary method of monitoring credit quality. The following illustrates the Company's mortgage loan portfolio rating at December 31, translated into the equivalent rating agency designation (in millions):

	2023					
	AAA/AA/A	BBB	BB	B	CCC and Lower	Total
Commercial mortgage loans:						
Primary lender	$ 178.0	$ 947.7	$ 288.5	$ 17.7	$ -	$ 1,431.9
Mezzanine loans	-	22.6	25.0	-	-	47.6
Total commercial mortgage loans	178.0	970.3	313.5	17.7	-	1,479.5
Residential mortgage loans:						
FHA insured and VA guranteed	428.1	-	-	-	-	428.1
Other residential mortgage loans	-	2,325.1	23.8	-	-	2,348.9
Total residential mortgage loans	428.1	2,325.1	23.8	-	-	2,777.0
Total mortgage loans	$ 606.1	$ 3,295.4	$ 337.3	$ 17.7	$ -	$ 4,256.5

	2022					
	AAA/AA/A	BBB	BB	B	CCC and Lower	Total
Commercial mortgage loans:						
Primary lender	$ 174.8	$ 798.4	$ 276.1	$ -	$ 14.2	$ 1,263.5
Mezzanine loans	-	22.6	-	-	-	22.6
Total commercial mortgage loans	174.8	821.0	276.1	-	14.2	1,286.1
Residential mortgage loans:						
FHA insured and VA guranteed	481.6	5.0	-	-	-	486.6
Other residential mortgage loans	56.3	1,259.8	-	-	-	1,316.1
Total residential mortgage loans	537.9	1,264.8	-	-	-	1,802.7
Total mortgage loans	$ 712.7	$ 2,085.8	$ 276.1	$ -	$ 14.2	$ 3,088.8

The maximum percentage of any one commercial mortgage loan to the estimated value of secured collateral at the time the loan was originated, exclusive of mezzanine, insured, guaranteed or purchase money mortgages, was 100% as of December 31, 2023 and 100% as of December 31, 2022.

D. INVESTMENTS (CONTINUED)

The geographic distribution of commercial mortgage loans as of December 31 was as follows (in millions):

	2023	
	Carrying Value	Average Loan-to-Value Ratio
Colorado	$ 175.8	68%
Florida	170.5	67%
New York	142.3	50%
Texas	128.8	61%
California	126.2	51%
Virginia	104.7	61%
All other	631.2	69%
Total commercial mortgage loans	$ 1,479.5	64%

All other consists of 19 jurisdictions, with no individual exposure exceeding $83.1 million.

The geographic distribution of commercial mortgage loans as of December 31 was as follows (in millions):

	2022	
	Carrying Value	Average Loan-to-Value Ratio
Florida	$ 194.3	76%
Colorado	175.8	67%
Texas	174.1	54%
New York	104.1	43%
Virginia	87.3	64%
Indiana	70.4	60%
All other	480.1	60%
Total commercial mortgage loans	$ 1,286.1	61%

All other consists of 18 jurisdictions, with no individual exposure exceeding $70.4 million.

D. INVESTMENTS (CONTINUED)

Interest rates, including fixed and variable, on the Company's portfolio of mortgage loans at December 31 were:

	2023		2022	
	Low	High	Low	High
Commercial mortgage loans:	2.6%	12.9%	2.6%	11.7%
Residential mortgage loans	4.8%	11.8%	2.2%	11.7%
Mezzanine mortgage loans	11.0%	14.4%	10.0%	13.3%

Interest rates, including fixed and variable, on new mortgage loans at December 31 were:

	2023		2022	
	Low	High	Low	High
Commercial mortgage loans:	4.7%	11.0%	2.6%	11.7%
Residential mortgage loans	7.1%	11.8%	2.5%	11.7%
Mezzanine mortgage loans	11.0%	11.0%	10.0%	13.3%

As of December 31, 2023 and 2022, the Company had no impaired mortgage loans with or without a valuation allowance or mortgage loans derecognized as a result of foreclosure, including mortgage loans subject to a participant or co-lender mortgage loan agreement with a unilateral mortgage loan foreclosure restriction or mortgage loan derecognized as a result of a foreclosure.

D. INVESTMENTS (CONTINUED)

Unrealized gains and losses on investments in non-affiliated preferred and common stocks are reported directly in unassigned funds and do not affect operations. The cost, gross unrealized gains and losses and fair value of those investments are summarized as follows (in millions):

	Cost	Fair Value	Gross Unrealized Gains	Gross Unrealized Losses
At December 31, 2023				
Non-affiliated preferred stocks	$ 212.2	$ 217.9	$ 31.2	$ 25.5
Non-affiliated common stocks	195.6	271.2	102.4	26.8
Total	$ 407.8	$ 489.1	$ 133.6	$ 52.3

	Cost	Fair Value	Gross Unrealized Gains	Gross Unrealized Losses
At December 31, 2022				
Non-affiliated preferred stocks	$ 165.5	$ 198.3	$ 58.5	$ 25.7
Non-affiliated common stocks	220.5	281.4	87.8	26.9
Total	$ 386.0	$ 479.7	$ 146.3	$ 52.6

D. INVESTMENTS (CONTINUED)

The following tables present gross unrealized losses and fair values on bonds and non-affiliated preferred and common stocks by investment category and length of time that individual securities have been in a continuous unrealized loss position as of December 31 (in millions):

| | 2023 | | | | | |
| | Twelve Months or Less | | | More Than Twelve Months | | |
	Fair Value	Gross Unrealized Loss	Number of Issuers	Fair Value	Gross Unrealized Loss	Number of Issuers
U.S. Government and agencies	$ 24.6	$ 0.2	2	$ 45.4	$ 33.6	3
All other governments	-	-	0	18.2	1.0	11
States, territories and possessions	17.8	0.1	3	120.8	5.3	8
Political subdivisions	25.5	0.5	5	113.0	6.0	13
Special Revenue	134.5	2.1	25	1,132.3	129.0	104
Industrial and miscellaneous	2,181.0	55.7	322	16,931.4	2,083.4	1,585
Parent, subsidiaries and affiliates	132.7	0.4	6	369.4	26.8	10
Total bonds	$ 2,516.1	$ 59.0	363	$ 18,730.5	$2,285.1	1,734
Non-affiliated preferred stocks	$ 11.6	$ 22.1	3	$ -	$ 3.4	-
Non-affiliated common stocks	5.0	4.6	31	9.0	22.2	18
Total non-affiliated preferred and common stocks	$ 16.6	$ 26.7	34	$ 9.0	$ 25.6	18

The December 31, 2023 gross unrealized losses exclude $12.8 million of losses included in the carrying value. These losses include $12.5 million from NAIC Class 6 bonds and $0.3 million from residential mortgage-backed securities (RMBS) whose ratings were obtained from outside modelers. These losses were primarily included in industrial and miscellaneous.

| | 2022 | | | | | |
| | Twelve Months or Less | | | More Than Twelve Months | | |
	Fair Value	Gross Unrealized Loss	Number of Issuers	Fair Value	Gross Unrealized Loss	Number of Issuers
U.S. Government and agencies	$ 49.5	$ 35.8	2	$ -	$ -	-
All other governments	17.8	1.4	11	-	-	-
States, territories and possessions	160.6	8.2	10	-	-	-
Political subdivisions	157.9	8.9	22	-	-	-
Special Revenue	1,378.7	158.6	118	-	-	-
Industrial and miscellaneous	23,786.8	3,212.8	2,170	101.2	19.4	28
Parent, subsidiaries and affiliates	444.6	56.1	13	-	-	-
Total bonds	$ 25,995.9	$ 3,481.8	2,346	$ 101.2	$ 19.4	28
Non-affiliated preferred stocks	$ 1.3	$ 25.7	2	$ -	$ -	-
Non-affiliated common stocks	36.8	26.9	53	-	-	-
Total non-affiliated preferred and common stocks	$ 38.1	$ 52.6	55	$ -	$ -	-

The December 31, 2022, gross unrealized losses include $15.7 million of losses included in the carrying value. These losses include $15.4 million from NAIC Class 6 bonds and $0.3 million from RMBS whose ratings were obtained from outside modelers. These losses were primarily included in industrial and miscellaneous.

D. INVESTMENTS (CONTINUED)

The quality of the bond portfolio is determined by the use of SVO ratings and the equivalent rating agency designations, except for RMBS and CMBS that use third-party modelers. The following sets forth the NAIC class ratings for the bond portfolio (in millions):

NAIC Class	Equivalent Rating Agency Designation	2023 Carrying Value	2023 % of Total	2022 Carrying Value	2022 % of Total
1	Aaa/Aa/A	$ 20,190.9	57.8%	$ 17,729.1	53.2%
2	Baa	12,704.0	36.3%	13,435.0	40.3%
3	Ba	1,253.2	3.6%	1,473.9	4.4%
4	B	495.3	1.4%	454.6	1.4%
5	Caa and lower	287.0	0.8%	209.4	0.6%
6	In or near default	41.9	0.1%	29.9	0.1%
	Total	$ 34,972.3	100.0%	$ 33,331.9	100.0%

When a decline in the fair value of a specific investment is considered to be other-than-temporary, a provision for impairment is charged to earnings (accounted for as realized capital loss) and the cost basis of that investment is reduced by the amount of the charge. The determination of whether unrealized losses are other-than-temporary requires judgment based on subjective as well as objective factors. Factors considered and resources used by management include:

(a) whether the unrealized loss is credit-driven or a result of changes in market interest rates,
(b) the extent to which fair value is less than cost basis,
(c) cash flow projections received from independent sources,
(d) historical operating, balance sheet and cash flow data contained in issuer Securities and Exchange Commission filings and news releases,
(e) near-term prospects for improvement in the issuer and/or its industry,
(f) third party research and communications with industry specialists,
(g) financial models and forecasts,
(h) the continuity of dividend payments, maintenance of investment grade ratings and hybrid nature of certain investments,
(i) discussions with issuer management, and
(j) the ability and intent to hold investment for a period of time sufficient to allow for any anticipated recovery in fair value.

Based on its analysis of the factors enumerated above, management believes (i) MMALIC will recover its cost basis in the securities with unrealized losses and (ii) that MMALIC has the ability and intent to hold securities until they recover in value. Although MMALIC has the ability to continue holding its investments with unrealized losses, its intent to hold them may change due to deterioration in the issuers' creditworthiness, decisions to lessen exposure to a particular issuer or industry, asset/liability management decisions, market movements, changes in views about appropriate asset allocation or the desire to offset taxable realized gains. Should MMALIC's ability or intent change with regard to a particular security, a charge for impairment would likely be required. While it is not possible to accurately predict if or when a specific security will become impaired, charges for other-than-temporary impairment ("OTTI") could be material to results of operations in future periods.

Net realized gains (losses) on investments sold and charges for OTTI on investments held were as follows for the years ended December 31 (dollars in millions):

Year	Net Realized (Losses) Gains (Net of IMR Transfers and Taxes)	Charges for Impairment	Total	Number of Investments with Impairment Charges
2023	$ (64.3)	$ (89.4)	$ (153.7)	137
2022	$ 8.4	$ (41.0)	$ (32.6)	138
2021	$ 170.7	$ (52.0)	$ 118.7	31

D. INVESTMENTS (CONTINUED)

The following is a summary of the carrying value and fair value of bonds as of December 31, 2023 and 2022 (in millions) by contractual maturity. Expected maturities may differ from contractual maturities because issuers may have the right to call or prepay obligations with or without prepayment penalties. Securities with more than one maturity date are included in the table using the final maturity date:

	2023		2022	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Maturity:				
One year or less	$ 477.7	$ 461.8	$ 662.3	$ 657.9
After one year through five years	7,313.4	7,226.3	5,118.2	4,925.2
After five years through ten years	10,259.6	9,804.4	9,902.5	9,068.6
After ten years	16,921.6	15,418.9	17,648.9	15,308.2
Total bonds by maturity	$ 34,972.3	$ 32,911.4	$ 33,331.9	$ 29,959.9

The aggregate amount of investment income generated as a result of prepayment penalties and acceleration fees was $0.0 million, $0.6 million, and $35.9 million during 2023, 2022, and 2021, respectively.

Proceeds from sales of bonds were $5,146.6 million, $10,640.3 million, and $686.8 million for 2023, 2022, and 2021, respectively. Gross realized gains of $21.3 million, $282.1 million, and $87.4 million and gross realized losses of $491.4 million, $232.4 million, and $11.9 million were realized on bonds during 2023, 2022, and 2021, respectively. The number of securities disposed of with a callable feature in 2023 and 2022 was 136 and 182, respectively.

MMALIC's $4,365.1 million investment in MBS represents approximately 12% of the carrying value of its bonds at December 31, 2023. The Company's indirect exposure to subprime mortgage risk as of December 31, 2023 had a total actual cost and book adjusted carrying value of approximately $1,185.0 million and $1,184.6 million, respectively, and a total fair value of approximately $1,083.9 million. MMALIC's $4,253.5 million investment in MBS represents approximately 13% of the carrying value of its bonds at December 31, 2022. The Company's indirect exposure to subprime mortgage risk as of December 31, 2022 had a total actual cost and book adjusted carrying value of approximately $551.0 million and $546.9 million, respectively, and a total fair value of approximately $515.7 million.

The Company has no aggregate loan-backed securities with an OTTI in which the Company has the intent to sell or the inability or lack of intent to retain the investment in the security for a period of time to recover the amortized cost basis.

D. INVESTMENTS (CONTINUED)

The following table shows each loan-backed security with an OTTI recognized in 2023, as the present value of cash flows expected to be collected is less than the amortized cost basis of the security (in whole dollars):

CUSIP	Amortized Cost Before OTTI	Present Value of Projected Cash Flows	OTTI Charge Recognized in Statement of Operations	Amortized Cost After OTTI	Fair Value at Time of OTTI	Date Reported
00176BAM5	$ 202,546	$ 110,277	$ 92,269	$ 110,277	$ 116,065	03/31/2023
001406AA5	1,763,035	1,274,229	488,807	1,274,229	1,285,767	03/31/2023
26827EAC9	9,193,316	4,723,119	4,470,196	4,723,119	6,207,776	03/31/2023
3622EAAA8	3,756,795	3,647,858	108,936	3,647,858	3,611,452	03/31/2023
61751DAE4	1,645,601	1,578,836	66,764	1,578,836	1,967,072	03/31/2023
617526AD0	2,356,207	2,115,198	241,009	2,115,198	2,354,557	03/31/2023
86358RXZ5	421,445	412,256	9,189	412,256	413,530	03/31/2023
05951KAN3	622,182	623,350	(1,169)	623,350	601,336	03/31/2023
059522AU6	2,269,369	2,102,631	166,738	2,102,631	2,176,835	03/31/2023
12628LAD2	785,041	763,053	21,988	763,053	660,429	03/31/2023
12667F4N2	2,210,900	2,186,739	24,161	2,186,739	2,182,686	03/31/2023
12667F5E1	1,062,067	1,059,207	2,860	1,059,207	995,081	03/31/2023
12668APC3	896,073	883,009	13,065	883,009	857,687	03/31/2023
17307GED6	1,409,643	1,393,308	16,335	1,393,308	1,455,502	03/31/2023
17309BAB3	220,495	214,662	5,834	214,662	195,222	03/31/2023
32051GSQ9	1,814,597	1,786,038	28,559	1,786,038	1,836,075	03/31/2023
32051GT70	663,419	662,609	810	662,609	596,313	03/31/2023
46627MAD9	589,002	581,089	7,914	581,089	518,389	03/31/2023
46627MEJ2	1,138,638	1,136,631	2,006	1,136,631	957,220	03/31/2023
59020UW43	223,543	223,584	(41)	223,584	245,108	03/31/2023
643529AC4	537,761	506,075	31,686	506,075	563,770	03/31/2023
74923GAC7	1,432,936	1,431,302	1,634	1,431,302	1,521,208	03/31/2023
74923HAQ4	538,028	538,123	(95)	538,123	480,166	03/31/2023
74928RAB0	248,088	241,996	6,091	241,996	266,975	03/31/2023
74928XBB6	4,436,827	3,886,418	550,409	3,886,418	4,352,809	03/31/2023
75115BAC3	1,010,823	1,015,108	(4,285)	1,015,108	1,087,275	03/31/2023
75115DAA3	195,780	193,598	2,183	193,598	182,546	03/31/2023
761118BU1	717,506	688,322	29,183	688,322	756,457	03/31/2023
761118FM5	2,089,659	1,852,770	236,889	1,852,770	1,945,475	03/31/2023
761118GS1	1,139,848	1,138,816	1,032	1,138,816	1,041,063	03/31/2023
761118SC3	1,581,486	1,581,588	(103)	1,581,588	1,360,351	03/31/2023
761118UG1	506,268	503,201	3,067	503,201	428,316	03/31/2023
76112BNM8	4,707,569	4,708,889	(1,320)	4,708,889	4,941,288	03/31/2023
855541AC2	854,276	851,419	2,857	851,419	808,830	03/31/2023
863579J90	344,828	339,476	5,352	339,476	355,595	03/31/2023
86360BAG3	1,782,553	1,688,545	94,008	1,688,545	1,858,413	03/31/2023
86360BAJ7	684,793	671,937	12,855	671,937	700,892	03/31/2023
87222EAB4	838,918	811,788	27,130	811,788	736,793	03/31/2023
87222EAC2	971,562	933,068	38,494	933,068	795,832	03/31/2023
45660LCK3	2,673,423	2,598,842	74,581	2,598,842	2,689,571	03/31/2023

D. INVESTMENTS (CONTINUED)

CUSIP	Amortized Cost Before OTTI	Present Value of Projected Cash Flows	OTTI Charge Recognized in Statement of Operations	Amortized Cost After OTTI	Fair Value at Time of OTTI	Date Reported
939336X99	1,829,627	1,670,689	158,938	1,670,689	1,792,660	03/31/2023
05949CHM1	768,548	755,812	12,736	755,812	773,623	03/31/2023
05949CKX3	1,213,201	1,188,146	25,055	1,188,146	1,243,199	03/31/2023
05990HAT0	934,146	930,177	3,969	930,177	940,458	03/31/2023
073880AD8	1,121,205	1,122,339	(1,134)	1,122,339	1,064,409	03/31/2023
07401CAS2	3,138,214	3,078,739	59,474	3,078,739	3,132,170	03/31/2023
12543XAD8	1,165,771	1,150,483	15,288	1,150,483	1,070,971	03/31/2023
12544DAG4	85,474	83,364	2,109	83,364	73,861	03/31/2023
12545EAK2	1,406,029	1,363,895	42,134	1,363,895	1,226,917	03/31/2023
12638PAB5	719,347	697,335	22,011	697,335	549,668	03/31/2023
126694CS5	2,842,754	2,832,174	10,581	2,832,174	2,292,959	03/31/2023
126694HP6	421,087	419,930	1,157	419,930	402,076	03/31/2023
12669G3S8	1,254,365	1,250,349	4,015	1,250,349	1,124,398	03/31/2023
16165MAG3	1,841,254	1,776,091	65,163	1,776,091	1,597,907	03/31/2023
2254582Y3	1,208,346	1,200,002	8,344	1,200,002	1,082,976	03/31/2023
225458L55	539,692	536,533	3,159	536,533	500,154	03/31/2023
225470VF7	1,460,576	1,422,984	37,592	1,422,984	1,400,985	03/31/2023
36185N6N5	4,571,722	4,071,935	499,788	4,071,935	4,514,039	03/31/2023
362341FN4	774,099	765,095	9,005	765,095	702,117	03/31/2023
362341XC8	857,596	848,675	8,921	848,675	768,173	03/31/2023
36242DQY2	99,752	97,979	1,772	97,979	93,530	03/31/2023
41161PCX9	191,672	191,284	388	191,284	190,228	03/31/2023
466247J46	74,610	73,055	1,554	73,055	73,519	03/31/2023
466247UG6	526,361	514,800	11,561	514,800	510,820	03/31/2023
46630WAB6	872,431	866,888	5,543	866,888	808,108	03/31/2023
46630WAL4	506,494	500,786	5,709	500,786	479,625	03/31/2023
46631NAA7	719,259	693,483	25,776	693,483	569,822	03/31/2023
576433D52	503,578	493,400	10,178	493,400	450,563	03/31/2023
57643MLZ5	284,150	280,753	3,397	280,753	269,995	03/31/2023
59023PAB9	508,302	498,819	9,484	498,819	517,983	03/31/2023
74958YAE2	287,181	287,688	(507)	287,688	287,680	03/31/2023
78473TAJ9	198,841	177,853	20,989	177,853	154,392	03/31/2023
863579RP5	609,579	590,361	19,218	590,361	577,909	03/31/2023
863579UL0	263,373	261,997	1,377	261,997	256,211	03/31/2023
92979DAC9	2,710,529	2,629,297	81,232	2,629,297	2,800,364	03/31/2023
94984DAC8	342,454	342,081	373	342,081	345,646	03/31/2023
94986CAA2	264,625	265,827	(1,202)	265,827	262,986	03/31/2023
001406AA55	27,755	-	27,755	-	-	06/30/2023
61751DAE4	1,614,822	1,548,177	66,645	1,548,177	1,908,732	06/30/2023
86358RXZ5	381,361	332,609	48,752	332,609	337,433	06/30/2023
02146TAL1	361,912	345,869	16,042	345,869	366,804	06/30/2023
02147XAR8	617,209	612,988	4,221	612,988	505,733	06/30/2023
059522AU6	2,107,010	2,107,010	-	2,107,010	2,147,399	06/30/2023

D. INVESTMENTS (CONTINUED)

CUSIP	Amortized Cost Before OTTI	Present Value of Projected Cash Flows	OTTI Charge Recognized in Statement of Operations	Amortized Cost After OTTI	Fair Value at Time of OTTI	Date Reported
07386XAH9	984,857	984,374	483	984,374	807,325	06/30/2023
12566UAN4	572,055	570,484	1,571	570,484	586,599	06/30/2023
12628LAD2	766,444	716,904	49,540	716,904	624,798	06/30/2023
12667F5E1	1,039,544	1,031,360	8,184	1,031,360	960,648	06/30/2023
12667GAC7	662,986	611,428	51,558	611,428	628,342	06/30/2023
12668APC3	845,763	838,619	7,144	838,619	804,549	06/30/2023
17309BAB3	213,365	208,774	4,591	208,774	183,775	06/30/2023
32051GSQ9	1,688,266	1,682,972	5,294	1,682,972	1,728,278	06/30/2023
32051GT70	654,707	650,913	3,793	650,913	584,241	06/30/2023
36244SAD0	2,252,386	2,071,962	180,424	2,071,962	2,271,187	06/30/2023
43739EAP2	616,209	611,759	4,449	611,759	570,177	06/30/2023
46627MAD9	572,129	572,115	13	572,115	503,882	06/30/2023
46627MEC7	377,567	371,830	5,737	371,830	339,925	06/30/2023
46627MEJ2	1,118,100	1,113,603	4,497	1,113,603	921,828	06/30/2023
643529AC4	520,520	491,053	29,467	491,053	557,549	06/30/2023
65535VNL8	2,089,478	2,081,888	7,590	2,081,888	2,063,447	06/30/2023
65535VSJ8	1,285,712	1,246,997	38,715	1,246,997	1,115,827	06/30/2023
74923HAQ4	525,772	519,269	6,502	519,269	443,687	06/30/2023
75116FBH1	1,485,771	1,465,650	20,121	1,465,650	1,253,422	06/30/2023
761118SC3	1,528,680	1,515,672	13,008	1,515,672	1,309,921	06/30/2023
761118UG1	485,611	483,232	2,379	483,232	409,243	06/30/2023
863579J90	326,147	321,439	4,707	321,439	331,247	06/30/2023
86360BAJ7	664,426	663,728	698	663,728	678,337	06/30/2023
87222EAB4	814,203	791,937	22,266	791,937	715,293	06/30/2023
87222EAC2	944,500	906,175	38,325	906,175	780,900	06/30/2023
05949CHM1	754,991	752,303	2,689	752,303	770,786	06/30/2023
05949CKX3	1,233,035	1,190,687	42,348	1,190,687	1,225,158	06/30/2023
07386YAE4	1,919,895	1,890,046	29,849	1,890,046	1,717,512	06/30/2023
073880AD8	1,095,079	1,087,921	7,158	1,087,921	1,010,811	06/30/2023
12543XAD8	1,146,866	1,132,734	14,132	1,132,734	1,025,398	06/30/2023
12544DAG4	82,048	82,482	(434)	82,482	72,144	06/30/2023
12638PAB5	704,325	687,341	16,984	687,341	538,077	06/30/2023
12669G3S8	1,216,352	1,205,920	10,432	1,205,920	1,077,627	06/30/2023
16165MAG3	1,698,141	1,698,815	(675)	1,698,815	1,501,094	06/30/2023
17025AAH5	866,588	804,309	62,279	804,309	831,165	06/30/2023
2254582Y3	239,471	239,472	(2)	239,472	214,686	06/30/2023
225458L55	535,805	532,092	3,713	532,092	459,983	06/30/2023
225470VF7	1,403,814	1,403,895	(81)	1,403,895	1,341,332	06/30/2023
45669AAD6	3,387,280	3,358,005	29,274	3,358,005	3,217,657	06/30/2023
466247J46	71,231	71,237	(5)	71,237	69,271	06/30/2023
466247ZP1	550,885	540,659	10,226	540,659	482,855	06/30/2023
46628LAB4	41,586	40,556	1,030	40,556	41,521	06/30/2023
46630WAL4	515,281	485,878	29,403	485,878	468,594	06/30/2023

D. INVESTMENTS (CONTINUED)

CUSIP	Amortized Cost Before OTTI	Present Value of Projected Cash Flows	OTTI Charge Recognized in Statement of Operations	Amortized Cost After OTTI	Fair Value at Time of OTTI	Date Reported
46631NAA7	691,427	678,636	12,791	678,636	532,232	06/30/2023
46631NDT3	6,223,773	6,162,743	61,029	6,162,743	6,052,651	06/30/2023
576433D52	492,252	487,446	4,806	487,446	417,672	06/30/2023
57643MLZ5	269,334	264,924	4,410	264,924	253,589	06/30/2023
59023PAB9	497,202	495,714	1,488	495,714	511,575	06/30/2023
74958YAE2	281,262	262,418	18,844	262,418	270,970	06/30/2023
863579XC7	1,084,387	1,062,034	22,353	1,062,034	1,101,633	06/30/2023
863579XR4	2,120,615	2,023,213	97,402	2,023,213	2,051,084	06/30/2023
86363GAF1	1,315,519	1,224,816	90,703	1,224,816	1,244,515	06/30/2023
885220KW2	1,906,234	1,901,275	4,960	1,901,275	1,823,623	06/30/2023
00176BAM54	101,071	71	101,000	71	78,651	09/30/2023
57430U301	1,207,914	922,371	285,543	922,371	815,210	09/30/2023
07325DAF1	214,725	211,984	2,742	211,984	195,404	09/30/2023
3622EAAA8	3,564,775	3,424,094	140,681	3,424,094	3,261,277	09/30/2023
61751DAE4	1,569,635	1,508,933	60,702	1,508,933	1,731,342	09/30/2023
86358RXY8	199,869	182,391	17,478	182,391	196,421	09/30/2023
86358RXZ5	297,911	283,221	14,691	283,221	280,466	09/30/2023
02146TAL1	356,025	334,459	21,566	334,459	347,841	09/30/2023
02147XAR8	595,098	598,203	(3,104)	598,203	483,800	09/30/2023
058933AN2	801,762	795,980	5,782	795,980	738,147	09/30/2023
059522AU6	2,113,373	2,046,846	66,528	2,046,846	2,043,226	09/30/2023
07386XAH9	967,729	884,778	82,951	884,778	783,965	09/30/2023
12628LAD2	722,914	702,073	20,842	702,073	584,662	09/30/2023
12667F4N2	2,131,981	2,102,525	29,456	2,102,525	2,003,869	09/30/2023
12667F5E1	998,934	999,062	(128)	999,062	919,366	09/30/2023
12667GAC7	641,949	642,107	(158)	642,107	605,263	09/30/2023
12668APC3	811,652	812,953	(1,300)	812,953	775,662	09/30/2023
17307GED6	1,383,968	1,370,895	13,074	1,370,895	1,414,213	09/30/2023
17309BAB3	205,994	202,794	3,201	202,794	171,985	09/30/2023
32051GSQ9	1,609,003	1,603,331	5,672	1,603,331	1,656,065	09/30/2023
32051GT70	638,394	635,227	3,166	635,227	561,409	09/30/2023
36244SAD0	2,086,866	2,091,595	(4,729)	2,091,595	2,092,913	09/30/2023
43739EAP2	600,361	591,499	8,862	591,499	566,842	09/30/2023
46627MAD9	551,967	541,058	10,909	541,058	474,792	09/30/2023
46627MEC7	364,017	360,581	3,437	360,581	323,064	09/30/2023
46627MEJ2	1,097,236	1,094,239	2,997	1,094,239	888,082	09/30/2023
643529AC4	504,332	491,904	12,428	491,904	538,114	09/30/2023
65535VNL8	2,075,144	2,055,698	19,446	2,055,698	2,078,429	09/30/2023
65535VSJ8	1,256,596	1,234,664	21,931	1,234,664	1,073,207	09/30/2023
69337BAH7	1,342,250	1,324,870	17,380	1,324,870	1,128,015	09/30/2023
74923HAQ4	509,767	510,394	(627)	510,394	429,265	09/30/2023
75115DAA3	188,747	185,664	3,083	185,664	182,465	09/30/2023
761118GS1	1,085,700	1,072,281	13,419	1,072,281	1,007,009	09/30/2023

D. INVESTMENTS (CONTINUED)

CUSIP	Amortized Cost Before OTTI	Present Value of Projected Cash Flows	OTTI Charge Recognized in Statement of Operations	Amortized Cost After OTTI	Fair Value at Time of OTTI	Date Reported
761118SC3	1,483,628	1,492,604	(8,976)	1,492,604	1,269,597	09/30/2023
761118UG1	468,938	469,663	(725)	469,663	393,703	09/30/2023
863579J90	308,602	305,810	2,792	305,810	317,961	09/30/2023
86360BAJ7	651,289	649,170	2,119	649,170	663,487	09/30/2023
87222EAB4	794,273	757,539	36,733	757,539	695,006	09/30/2023
87222EAC2	917,429	875,091	42,338	875,091	735,483	09/30/2023
41161PTN3	331,804	277,221	54,583	277,221	311,042	09/30/2023
45660LCK3	2,616,065	2,518,214	97,852	2,518,214	2,766,498	09/30/2023
05946XY72	1,018,663	1,014,239	4,424	1,014,239	947,595	09/30/2023
05949CHM1	666,490	660,363	6,127	660,363	690,602	09/30/2023
07386YAE4	1,885,974	1,866,881	19,093	1,866,881	1,705,295	09/30/2023
073880AD8	1,076,505	1,037,154	39,351	1,037,154	987,684	09/30/2023
12543XAD8	1,101,148	1,105,980	(4,831)	1,105,980	936,389	09/30/2023
12638PAB5	694,351	675,173	19,178	675,173	512,071	09/30/2023
12669G4K4	2,601,658	2,601,146	511	2,601,146	2,396,294	09/30/2023
12669GR45	498,496	476,051	22,445	476,051	430,865	09/30/2023
170257AE9	2,360,086	2,294,691	65,396	2,294,691	1,706,184	09/30/2023
17025AAH5	753,396	787,624	(34,228)	787,624	795,445	09/30/2023
225458L55	495,061	491,459	3,602	491,459	425,644	09/30/2023
225470VF7	1,387,201	1,333,114	54,088	1,333,114	1,298,598	09/30/2023
32052EAA7	46,567	43,785	2,782	43,785	40,679	09/30/2023
362341FN4	754,611	747,216	7,395	747,216	669,320	09/30/2023
362341XC8	827,434	812,370	15,063	812,370	684,900	09/30/2023
41161PCX9	180,773	179,982	791	179,982	176,391	09/30/2023
46631NDT3	5,999,611	6,009,390	(9,779)	6,009,390	5,617,945	09/30/2023
47233DAB7	595,329	204,708	390,622	204,708	681,585	09/30/2023
576433D52	486,384	480,875	5,509	480,875	413,266	09/30/2023
57643MLZ5	248,993	244,183	4,811	244,183	230,150	09/30/2023
59023PAB9	483,479	478,356	5,122	478,356	492,971	09/30/2023
74958TAB9	519,216	508,266	10,950	508,266	470,425	09/30/2023
863579RP5	591,272	566,391	24,881	566,391	560,020	09/30/2023
863579UL0	259,923	258,399	1,523	258,399	245,880	09/30/2023
863579UU0	1,016,080	963,663	52,416	963,663	990,946	09/30/2023
863579XC7	1,037,796	981,054	56,742	981,054	1,022,671	09/30/2023
86363GAF1	1,179,527	1,182,146	(2,619)	1,182,146	1,193,014	09/30/2023
885220KW2	1,896,532	1,874,254	22,278	1,874,254	1,835,343	09/30/2023
07325DAF1	193,552	193,679	(127)	193,679	183,083	12/31/2023
3622EAAA8	3,286,278	3,237,272	49,006	3,237,272	3,255,864	12/31/2023
61751DAE4	1,543,361	1,498,683	44,678	1,498,683	1,797,931	12/31/2023
75156VAD7	2,959,112	2,496,716	462,396	2,496,716	2,973,028	12/31/2023
86358RDX2	963,691	945,774	17,917	945,774	795,532	12/31/2023
86358RXY8	191,518	165,259	26,259	165,259	165,808	12/31/2023
86358RXZ5	327,597	248,323	79,275	248,323	244,869	12/31/2023

D. INVESTMENTS (CONTINUED)

CUSIP	Amortized Cost Before OTTI	Present Value of Projected Cash Flows	OTTI Charge Recognized in Statement of Operations	Amortized Cost After OTTI	Fair Value at Time of OTTI	Date Reported
00703QAD4	2,455,266	2,403,956	51,310	2,403,956	2,362,111	12/31/2023
02147XAR8	582,086	581,667	419	581,667	475,448	12/31/2023
02152AAS8	1,839,976	1,736,745	103,231	1,736,745	1,709,492	12/31/2023
058933AN2	794,268	793,985	283	793,985	750,932	12/31/2023
05951KAN3	580,528	579,964	564	579,964	514,479	12/31/2023
07386XAH9	876,767	875,510	1,257	875,510	782,619	12/31/2023
12628LAD2	708,617	661,150	47,467	661,150	587,483	12/31/2023
12667F4N2	2,025,464	2,012,088	13,376	2,012,088	1,984,305	12/31/2023
12667F5E1	983,360	978,296	5,064	978,296	909,176	12/31/2023
12667GAC7	619,616	613,153	6,463	613,153	585,116	12/31/2023
17307GED6	1,341,806	1,336,284	5,522	1,336,284	1,400,985	12/31/2023
17309BAB3	201,958	198,201	3,757	198,201	176,462	12/31/2023
32051GSQ9	1,522,783	1,512,933	9,850	1,512,933	1,515,991	12/31/2023
32051GT70	619,138	612,519	6,618	612,519	534,842	12/31/2023
36244SAD0	2,148,368	1,989,448	158,920	1,989,448	2,137,247	12/31/2023
43739EAP2	561,096	556,890	4,206	556,890	538,989	12/31/2023
46627MAD9	524,569	524,569	(0)	524,569	468,198	12/31/2023
46627MCY1	3,947,612	3,784,942	162,670	3,784,942	3,845,527	12/31/2023
46627MEC7	353,579	351,690	1,889	351,690	326,489	12/31/2023
643529AC4	505,690	486,982	18,708	486,982	551,521	12/31/2023
65535VNL8	1,947,633	1,933,908	13,724	1,933,908	2,036,022	12/31/2023
65535VSJ8	1,230,484	1,232,758	(2,274)	1,232,758	989,929	12/31/2023
69337BAH7	1,311,917	1,303,815	8,102	1,303,815	1,159,687	12/31/2023
74928RAB0	239,342	216,651	22,691	216,651	238,268	12/31/2023
74928XBB6	3,183,555	3,039,107	144,448	3,039,107	3,430,881	12/31/2023
75115BAC3	1,030,772	916,005	114,767	916,005	1,035,843	12/31/2023
75115DAA3	186,218	186,790	(572)	186,790	164,206	12/31/2023
75116FBH1	1,377,535	1,361,078	16,456	1,361,078	1,145,682	12/31/2023
76110HT90	840,834	582,373	258,461	582,373	917,175	12/31/2023
761118SC3	1,431,534	1,428,103	3,431	1,428,103	1,242,244	12/31/2023
855541AC2	750,496	745,072	5,424	745,072	691,191	12/31/2023
863579J90	303,000	300,072	2,928	300,072	306,643	12/31/2023
86360BAJ7	680,750	643,758	36,993	643,758	672,067	12/31/2023
87222EAB4	834,894	822,502	12,392	822,502	694,825	12/31/2023
87222EAC2	882,066	857,058	25,008	857,058	695,801	12/31/2023
45660LCK3	3,167,425	2,938,420	229,005	2,938,420	2,780,987	12/31/2023
058931AT3	1,095,711	1,095,714	(3)	1,095,714	918,016	12/31/2023
05946XY72	977,968	978,683	(715)	978,683	937,593	12/31/2023
05949CHM1	663,718	655,328	8,390	655,328	662,826	12/31/2023
05949CKX3	1,187,717	1,150,126	37,591	1,150,126	1,168,876	12/31/2023
073880AD8	1,030,655	1,019,083	11,571	1,019,083	930,752	12/31/2023
12544DAG4	78,643	78,571	72	78,571	64,456	12/31/2023
12638PAB5	679,907	659,700	20,206	659,700	486,778	12/31/2023

D. INVESTMENTS (CONTINUED)

CUSIP	Amortized Cost Before OTTI	Present Value of Projected Cash Flows	OTTI Charge Recognized in Statement of Operations	Amortized Cost After OTTI	Fair Value at Time of OTTI	Date Reported
1266942H0	512,111	510,107	2,004	510,107	423,601	12/31/2023
12669G4K4	2,556,809	2,555,364	1,445	2,555,364	2,427,811	12/31/2023
12669GR45	470,597	467,135	3,462	467,135	435,906	12/31/2023
2254582Y3	1,077,827	1,066,955	10,873	1,066,955	959,317	12/31/2023
225458L55	491,469	487,840	3,628	487,840	406,462	12/31/2023
32052EAA7	43,448	42,472	976	42,472	41,090	12/31/2023
362341FN4	733,600	729,603	3,996	729,603	662,609	12/31/2023
362341XC8	795,518	795,302	217	795,302	720,040	12/31/2023
466247UG6	427,081	426,051	1,029	426,051	391,055	12/31/2023
46628LAB4	37,967	37,273	694	37,273	37,689	12/31/2023
46630WAL4	455,687	451,993	3,694	451,993	302,703	12/31/2023
46631NDT3	5,867,333	5,886,670	(19,337)	5,886,670	5,731,594	12/31/2023
57643MLZ5	229,612	225,458	4,154	225,458	205,035	12/31/2023
59023PAB9	475,891	473,619	2,272	473,619	481,056	12/31/2023
863579RP5	600,470	597,146	3,324	597,146	549,353	12/31/2023
863579UL0	258,471	257,405	1,065	257,405	242,466	12/31/2023
863579UU0	958,195	945,112	13,083	945,112	980,662	12/31/2023
863579XC7	980,418	980,418	-	980,418	1,038,343	12/31/2023
863579XR4	1,957,805	1,957,254	552	1,957,254	2,023,487	12/31/2023
86363GAF1	1,167,594	1,159,765	7,829	1,159,765	1,173,720	12/31/2023
885220KW2	1,840,344	1,731,006	109,338	1,731,006	1,616,956	12/31/2023
92979DAC9	2,388,453	2,324,573	63,880	2,324,573	2,467,969	12/31/2023
94984DAC8	277,596	275,841	1,755	275,841	284,511	12/31/2023
Total			$ 13,772,890			

D. INVESTMENTS (CONTINUED)

The following table shows each loan-backed security with an OTTI recognized in 2022, as the present value of cash flows expected to be collected is less than the amortized cost basis of the security (in whole dollars):

CUSIP	Amortized Cost Before OTTI	Present Value of Projected Cash Flows	OTTI Charge Recognized in Statement of Operations	Amortized Cost After OTTI	Fair Value at Time of OTTI	Date Reported
00256DAA0	$ 5,028,172	$ 3,890,891	$ 1,137,281	$ 3,890,891	$ 3,201,439	3/31/2022
05535DBG8	270,320	226,054	44,266	226,054	146,322	3/31/2022
36157NFL3	63,101	48,296	14,805	48,296	65,578	3/31/2022
86358RXZ5	730,465	680,597	49,868	680,597	653,004	3/31/2022
05951KAN3	769,516	727,854	41,662	727,854	725,932	3/31/2022
17309AAD1	1,178,157	1,157,862	20,295	1,157,862	1,143,417	3/31/2022
41161PMV2	381,790	294,193	87,597	294,193	400,491	3/31/2022
65535VNL8	2,434,448	2,223,472	210,976	2,223,472	2,443,775	3/31/2022
74928XBB6	5,618,112	4,942,615	675,497	4,942,615	6,168,357	3/31/2022
05949CHM1	951,691	869,857	81,834	869,857	894,663	3/31/2022
57643MLZ5	391,660	375,540	16,120	375,540	376,146	3/31/2022
59020UV77	84,020	82,288	1,732	82,288	80,945	3/31/2022
863579RP5	736,920	685,020	51,900	685,020	711,770	3/31/2022
885220KW2	2,541,472	2,529,769	11,703	2,529,769	2,530,102	3/31/2022
94984DAC8	474,157	426,688	47,469	426,688	439,204	3/31/2022
07325DAF1	351,756	298,754	53,002	298,754	308,547	6/30/2022
759676AF6	467,062	389,330	77,732	389,330	403,998	6/30/2022
02147WAT6	1,833,809	1,810,984	22,825	1,810,984	1,647,430	6/30/2022
02147XAR8	722,783	716,983	5,800	716,983	616,400	6/30/2022
05951KAN3	727,416	726,755	661	726,755	709,393	6/30/2022
12566UAE4	484,546	479,517	5,029	479,517	428,794	6/30/2022
12566UAN4	745,695	687,455	58,239	687,455	680,275	6/30/2022
12566XAM0	762,429	749,321	13,107	749,321	711,263	6/30/2022
12628LAD2	939,894	917,685	22,210	917,685	775,478	6/30/2022
12668APC3	1,053,742	1,028,969	24,773	1,028,969	1,023,156	6/30/2022
17309BAB3	231,697	229,910	1,787	229,910	212,294	6/30/2022
17309VAH6	883,901	881,260	2,641	881,260	828,464	6/30/2022
225470Q89	639,198	566,017	73,181	566,017	434,433	6/30/2022
32051GSQ9	2,150,300	2,111,315	38,985	2,111,315	2,136,944	6/30/2022
59020UW43	484,507	422,353	62,154	422,353	438,518	6/30/2022
65535VSJ8	1,382,487	1,368,659	13,828	1,368,659	1,226,910	6/30/2022
69337BAH7	1,615,840	1,597,892	17,947	1,597,892	1,468,643	6/30/2022
74923HAQ4	591,952	582,904	9,048	582,904	527,598	6/30/2022
74928RAB0	299,181	295,529	3,652	295,529	312,097	6/30/2022
75115BAC3	1,263,859	1,260,657	3,203	1,260,657	1,287,590	6/30/2022
75116FBH1	1,660,615	1,655,476	5,139	1,655,476	1,511,249	6/30/2022
761118SC3	1,738,294	1,735,436	2,859	1,735,436	1,583,504	6/30/2022
863579J90	408,035	404,919	3,116	404,919	410,645	6/30/2022
87222EAB4	989,431	964,435	24,996	964,435	915,285	6/30/2022
87222EAC2	1,069,037	1,046,433	22,604	1,046,433	954,115	6/30/2022

D. INVESTMENTS (CONTINUED)

CUSIP	Amortized Cost Before OTTI	Present Value of Projected Cash Flows	OTTI Charge Recognized in Statement of Operations	Amortized Cost After OTTI	Fair Value at Time of OTTI	Date Reported
93934NAC9	550,457	525,641	24,815	525,641	469,111	6/30/2022
058931AT3	1,243,463	1,240,130	3,333	1,240,130	1,198,967	6/30/2022
073880AD8	1,276,813	1,222,687	54,126	1,222,687	1,154,766	6/30/2022
12544DAG4	95,844	90,011	5,833	90,011	85,172	6/30/2022
12545EAK2	1,550,474	1,490,197	60,276	1,490,197	1,329,130	6/30/2022
12638PAB5	744,092	736,605	7,487	736,605	600,312	6/30/2022
1266942H0	606,740	599,651	7,089	599,651	501,690	6/30/2022
126694HP6	655,886	535,926	119,960	535,926	506,396	6/30/2022
12669G3S8	1,421,943	1,403,926	18,017	1,403,926	1,272,912	6/30/2022
12669G4K4	2,882,965	2,860,499	22,466	2,860,499	2,654,538	6/30/2022
16162YAL9	406,596	387,094	19,502	387,094	351,124	6/30/2022
16165MAG3	2,063,370	2,039,505	23,865	2,039,505	1,824,783	6/30/2022
170257AE9	3,090,905	2,877,625	213,279	2,877,625	2,454,654	6/30/2022
17025AAH5	1,119,104	1,045,677	73,427	1,045,677	993,451	6/30/2022
225458L55	554,354	551,293	3,060	551,293	495,964	6/30/2022
362341XC8	963,117	959,504	3,613	959,504	830,593	6/30/2022
46631NAA7	819,190	805,803	13,387	805,803	733,833	6/30/2022
46631NDT3	7,735,758	7,037,790	697,968	7,037,790	7,196,047	6/30/2022
74958YAE2	335,485	319,458	16,027	319,458	327,784	6/30/2022
78473TAJ9	275,754	245,411	30,343	245,411	214,919	6/30/2022
863579XC7	1,415,676	1,337,580	78,096	1,337,580	1,408,287	6/30/2022
86363GAF1	1,733,928	1,673,515	60,413	1,673,515	1,636,845	6/30/2022
94985AAA7	227,339	217,876	9,463	217,876	211,415	6/30/2022
94986CAA2	328,420	320,452	7,968	320,452	302,929	6/30/2022
57430U301	1,330,669	1,004,371	326,298	1,004,371	803,430	9/30/2022
07325DAF1	291,282	290,354	928	290,354	286,720	9/30/2022
3622EAAA8	3,999,702	3,929,491	70,212	3,929,491	3,739,585	9/30/2022
61751DAE4	1,716,986	1,604,835	112,151	1,604,835	2,251,814	9/30/2022
617526AD0	2,717,720	2,314,163	403,557	2,314,163	2,489,016	9/30/2022
86358RXZ5	573,712	503,846	69,866	503,846	532,119	9/30/2022
07386XAH9	1,136,200	1,060,380	75,820	1,060,380	920,227	9/30/2022
12566UAE4	469,028	437,575	31,453	437,575	395,514	9/30/2022
12566UAN4	659,320	581,671	77,649	581,671	613,196	9/30/2022
12566XAM0	724,102	706,097	18,005	706,097	652,607	9/30/2022
12628LAD2	944,313	837,560	106,754	837,560	715,627	9/30/2022
126670JP4	799,425	751,737	47,688	751,737	748,985	9/30/2022
12667F4N2	2,337,848	2,296,401	41,448	2,296,401	2,234,566	9/30/2022
12668APC3	991,327	950,477	40,850	950,477	944,519	9/30/2022
17307GED6	1,519,753	1,448,105	71,648	1,448,105	1,466,554	9/30/2022
17309BAB3	228,895	224,462	4,433	224,462	201,398	9/30/2022
17309VAH6	845,828	839,340	6,488	839,340	792,523	9/30/2022
225470Q89	554,757	534,935	19,822	534,935	418,987	9/30/2022
32051GSQ9	2,037,561	1,989,697	47,865	1,989,697	2,018,934	9/30/2022

D. INVESTMENTS (CONTINUED)

CUSIP	Amortized Cost Before OTTI	Present Value of Projected Cash Flows	OTTI Charge Recognized in Statement of Operations	Amortized Cost After OTTI	Fair Value at Time of OTTI	Date Reported
46627MAD9	641,414	620,422	20,992	620,422	598,910	9/30/2022
46627MEJ2	1,290,004	1,214,983	75,022	1,214,983	1,045,674	9/30/2022
47232CAH7	1,899,848	1,899,428	420	1,899,428	2,091,390	9/30/2022
576434W59	231,800	180,887	50,912	180,887	133,506	9/30/2022
59020UW43	402,012	374,574	27,438	374,574	282,946	9/30/2022
643529AC4	566,063	512,432	53,631	512,432	615,937	9/30/2022
65535VMJ4	654,212	604,134	50,077	604,134	606,472	9/30/2022
65535VNL8	2,216,330	2,128,294	88,036	2,128,294	2,136,155	9/30/2022
65535VSJ8	1,353,591	1,314,301	39,290	1,314,301	1,150,059	9/30/2022
69337BAH7	1,588,255	1,531,076	57,179	1,531,076	1,357,354	9/30/2022
74923HAQ4	563,728	561,272	2,456	561,272	491,746	9/30/2022
74928RAB0	293,120	262,538	30,582	262,538	285,136	9/30/2022
75116CET9	263,844	166,578	97,266	166,578	229,893	9/30/2022
761118SC3	1,692,139	1,684,385	7,754	1,684,385	1,439,667	9/30/2022
863579J90	399,903	373,319	26,584	373,319	387,475	9/30/2022
87222EAB4	960,274	864,706	95,569	864,706	855,078	9/30/2022
87222EAC2	1,041,136	968,565	72,571	968,565	884,062	9/30/2022
93934FMD1	1,850,357	1,613,441	236,916	1,613,441	1,651,078	9/30/2022
45660LCK3	2,987,283	2,747,927	239,356	2,747,927	2,828,661	9/30/2022
05946XY72	1,121,255	1,064,056	57,199	1,064,056	1,039,216	9/30/2022
05949CHM1	788,146	770,794	17,352	770,794	776,150	9/30/2022
05949CKX3	1,593,696	1,495,795	97,900	1,495,795	1,483,476	9/30/2022
073880AD8	1,165,906	1,163,805	2,101	1,163,805	1,066,603	9/30/2022
12544DAG4	87,957	88,141	(184)	88,141	76,266	9/30/2022
12545EAK2	1,470,040	1,423,980	46,060	1,423,980	1,225,499	9/30/2022
12638PAB5	730,343	719,668	10,676	719,668	561,272	9/30/2022
1266942H0	586,626	561,203	25,423	561,203	472,137	9/30/2022
126694BE7	332,557	306,506	26,051	306,506	311,536	9/30/2022
126694CS5	3,094,276	3,091,476	2,800	3,091,476	2,504,248	9/30/2022
126694HP6	515,419	474,981	40,438	474,981	462,478	9/30/2022
12669DUS5	773,797	772,715	1,082	772,715	742,780	9/30/2022
12669G3S8	1,387,574	1,375,347	12,226	1,375,347	1,217,425	9/30/2022
12669G4K4	2,834,361	2,781,521	52,840	2,781,521	2,545,994	9/30/2022
12669GR45	534,792	525,148	9,644	525,148	485,346	9/30/2022
16162YAL9	380,468	361,472	18,995	361,472	327,514	9/30/2022
16165MAG3	1,961,306	1,944,718	16,588	1,944,718	1,661,310	9/30/2022
170257AE9	2,828,331	2,633,857	194,474	2,633,857	2,354,786	9/30/2022
17025AAH5	996,965	955,555	41,410	955,555	872,118	9/30/2022
2254582Y3	1,262,710	1,223,508	39,202	1,223,508	1,083,348	9/30/2022
362341XC8	925,615	890,329	35,286	890,329	775,076	9/30/2022
41161PCX9	222,673	219,523	3,150	219,523	217,809	9/30/2022
466247UG6	543,666	541,554	2,112	541,554	492,253	9/30/2022
466247ZP1	597,232	578,858	18,375	578,858	551,434	9/30/2022

D. INVESTMENTS (CONTINUED)

CUSIP	Amortized Cost Before OTTI	Present Value of Projected Cash Flows	OTTI Charge Recognized in Statement of Operations	Amortized Cost After OTTI	Fair Value at Time of OTTI	Date Reported
46628LAB4	52,197	43,653	8,544	43,653	46,321	9/30/2022
46631NAA7	787,350	768,303	19,047	768,303	654,423	9/30/2022
46631NDT3	6,957,695	6,448,656	509,039	6,448,656	6,565,975	9/30/2022
57643MLZ5	322,070	311,840	10,230	311,840	295,793	9/30/2022
59023PAB9	550,151	530,517	19,633	530,517	549,074	9/30/2022
863579RP5	630,863	612,560	18,302	612,560	593,202	9/30/2022
863579XC7	1,202,538	1,169,250	33,288	1,169,250	1,184,462	9/30/2022
86363GAF1	1,622,996	1,511,763	111,233	1,511,763	1,431,479	9/30/2022
885220KW2	2,336,973	2,265,171	71,802	2,265,171	2,217,726	9/30/2022
92979DAC9	2,889,617	2,736,750	152,866	2,736,750	2,880,781	9/30/2022
94984DAC8	391,725	391,939	(214)	391,939	377,184	9/30/2022
94986CAA2	319,103	297,142	21,962	297,142	281,932	9/30/2022
00176BAM54	221,912	204,829	17,083	204,829	145,456	12/31/2022
36157NFL3	34,787	33,507	1,280	33,507	49,479	12/31/2022
3622EAAA8	3,923,762	3,761,791	161,971	3,761,791	3,650,746	12/31/2022
61751DAE4	1,629,194	1,602,771	26,423	1,602,771	1,949,256	12/31/2022
759676AF6	379,733	378,947	785	378,947	359,320	12/31/2022
86358RXZ5	465,267	455,171	10,096	455,171	471,122	12/31/2022
02147XAR8	680,181	643,751	36,430	643,751	528,126	12/31/2022
058933AN2	919,353	889,825	29,529	889,825	821,517	12/31/2022
05951KAN3	696,878	683,150	13,728	683,150	647,406	12/31/2022
07386XAH9	1,011,656	911,593	100,063	911,593	863,150	12/31/2022
12566UAE4	337,542	337,076	465	337,076	317,476	12/31/2022
12566UAN4	576,035	576,010	25	576,010	628,281	12/31/2022
12566XAM0	699,177	699,339	(162)	699,339	655,865	12/31/2022
12628LAD2	834,249	776,091	58,158	776,091	675,639	12/31/2022
126670JP4	743,653	722,674	20,979	722,674	725,258	12/31/2022
12667F4N2	2,266,231	2,246,591	19,640	2,246,591	2,214,064	12/31/2022
12667GAC7	693,373	685,397	7,976	685,397	654,562	12/31/2022
12668APC3	924,868	924,886	(18)	924,886	878,754	12/31/2022
17025RAA3	1,550,324	1,306,829	243,495	1,306,829	1,552,445	12/31/2022
17307GED6	1,443,837	1,417,702	26,135	1,417,702	1,463,475	12/31/2022
17309BAB3	222,437	220,151	2,285	220,151	198,606	12/31/2022
17309VAH6	805,883	803,877	2,006	803,877	758,730	12/31/2022
225470Q89	521,333	522,356	(1,023)	522,356	415,017	12/31/2022
32051GT70	735,886	675,158	60,728	675,158	601,220	12/31/2022
36244SAD0	2,376,922	2,199,302	177,620	2,199,302	2,397,505	12/31/2022
43739EAP2	705,506	689,473	16,033	689,473	669,168	12/31/2022
46627MAD9	604,558	593,543	11,016	593,543	524,404	12/31/2022
46627MCY1	5,194,888	4,953,702	241,186	4,953,702	5,130,647	12/31/2022
46627MEJ2	1,195,047	1,170,943	24,104	1,170,943	982,410	12/31/2022
47232CAH7	1,899,914	1,890,225	9,689	1,890,225	2,006,775	12/31/2022

D. INVESTMENTS (CONTINUED)

CUSIP	Amortized Cost Before OTTI	Present Value of Projected Cash Flows	OTTI Charge Recognized in Statement of Operations	Amortized Cost After OTTI	Fair Value at Time of OTTI	Date Reported
59020UW43	366,342	237,303	129,039	237,303	284,957	12/31/2022
643529AC4	520,909	520,857	53	520,857	620,443	12/31/2022
65535VSJ8	1,311,192	1,265,976	45,215	1,265,976	1,124,326	12/31/2022
69337BAH7	1,434,530	1,431,323	3,207	1,431,323	1,273,601	12/31/2022
74923GAC7	1,755,192	1,490,490	264,702	1,490,490	1,608,920	12/31/2022
74923HAQ4	552,304	550,690	1,614	550,690	486,284	12/31/2022
74928RAB0	264,408	256,037	8,371	256,037	280,614	12/31/2022
75115BAC3	1,262,630	1,098,615	164,015	1,098,615	1,195,478	12/31/2022
75115DAA3	201,854	200,413	1,441	200,413	189,024	12/31/2022
76110HH85	270,810	243,642	27,169	243,642	261,417	12/31/2022
761118BU1	942,962	855,567	87,395	855,567	916,638	12/31/2022
761118GS1	1,175,777	1,156,524	19,253	1,156,524	1,119,101	12/31/2022
761118SC3	1,633,297	1,616,573	16,724	1,616,573	1,423,542	12/31/2022
761118UG1	524,740	522,750	1,990	522,750	437,178	12/31/2022
76112BNM8	5,289,750	4,895,126	394,624	4,895,126	5,091,696	12/31/2022
863579J90	348,530	349,527	(997)	349,527	353,839	12/31/2022
86360BAJ7	747,131	721,456	25,674	721,456	766,709	12/31/2022
87222EAB4	867,402	838,871	28,530	838,871	817,668	12/31/2022
87222EAC2	977,235	960,878	16,357	960,878	815,432	12/31/2022
93934FMD1	1,598,156	1,599,666	(1,510)	1,599,666	1,669,656	12/31/2022
93934NAC9	495,187	485,595	9,592	485,595	412,326	12/31/2022
026929AA7	1,760,841	1,592,703	168,138	1,592,703	1,705,416	12/31/2022
45660LCK3	2,750,918	2,656,466	94,452	2,656,466	2,796,920	12/31/2022
058931AT3	1,225,723	1,209,276	16,447	1,209,276	1,154,041	12/31/2022
05946XY72	1,048,037	1,046,371	1,666	1,046,371	1,028,271	12/31/2022
05949CKX3	1,262,077	1,203,570	58,507	1,203,570	1,250,063	12/31/2022
07386YAE4	2,032,756	1,895,938	136,818	1,895,938	1,823,359	12/31/2022
073880AD8	1,158,830	1,127,532	31,298	1,127,532	1,051,875	12/31/2022
07401CAS2	3,509,364	3,262,743	246,621	3,262,743	3,195,561	12/31/2022
12543XAD8	1,176,300	1,172,978	3,321	1,172,978	1,091,000	12/31/2022
12545EAK2	1,377,454	1,391,454	(14,000)	1,391,454	1,221,449	12/31/2022
12638PAB5	721,090	711,902	9,188	711,902	552,531	12/31/2022
1266942H0	554,299	556,124	(1,824)	556,124	475,653	12/31/2022
126694HP6	472,556	469,133	3,424	469,133	458,573	12/31/2022
126694UJ5	1,182,995	1,033,719	149,276	1,033,719	1,173,798	12/31/2022
12669DUS5	754,525	753,847	679	753,847	726,499	12/31/2022
12669G3S8	1,273,702	1,267,299	6,403	1,267,299	1,123,086	12/31/2022
12669G4K4	2,695,208	2,679,394	15,815	2,679,394	2,508,614	12/31/2022
12669GR45	521,474	499,857	21,618	499,857	477,045	12/31/2022
16162YAL9	353,219	351,895	1,324	351,895	327,680	12/31/2022
16165MAG3	1,899,055	1,872,274	26,782	1,872,274	1,610,464	12/31/2022
170257AE9	2,539,977	2,557,671	(17,695)	2,557,671	2,070,574	12/31/2022

D. INVESTMENTS (CONTINUED)

CUSIP	Amortized Cost Before OTTI	Present Value of Projected Cash Flows	OTTI Charge Recognized in Statement of Operations	Amortized Cost After OTTI	Fair Value at Time of OTTI	Date Reported
17025AAH5	938,958	899,184	39,774	899,184	873,057	12/31/2022
2254582Y3	244,640	244,638	3	244,638	216,789	12/31/2022
225458L55	544,944	541,599	3,344	541,599	471,470	12/31/2022
225470VF7	1,564,751	1,540,100	24,651	1,540,100	1,484,306	12/31/2022
32051GXQ3	1,362,980	1,279,943	83,036	1,279,943	1,285,425	12/31/2022
362341XC8	884,539	865,321	19,218	865,321	767,933	12/31/2022
36242DQY2	110,190	104,565	5,625	104,565	100,339	12/31/2022
466247J46	80,370	74,449	5,922	74,449	74,585	12/31/2022
466247UG6	541,686	527,981	13,705	527,981	520,360	12/31/2022
466247ZP1	571,804	565,679	6,125	565,679	545,586	12/31/2022
46628LAB4	43,495	42,157	1,338	42,157	44,190	12/31/2022
46630WAB6	922,039	888,065	33,974	888,065	822,318	12/31/2022
46630WAL4	544,230	517,582	26,648	517,582	489,602	12/31/2022
46631NAA7	754,017	754,676	(659)	754,676	639,770	12/31/2022
46631NDT3	6,401,145	6,374,664	26,481	6,374,664	6,427,560	12/31/2022
576433C53	505,306	453,037	52,269	453,037	513,969	12/31/2022
576433D52	534,258	502,735	31,523	502,735	444,494	12/31/2022
57643MLZ5	289,827	286,800	3,026	286,800	270,858	12/31/2022
59020UV77	34,748	33,720	1,027	33,720	33,150	12/31/2022
59023PAB9	513,508	509,687	3,821	509,687	530,373	12/31/2022
74958YAE2	312,432	299,278	13,154	299,278	304,434	12/31/2022
863579RP5	611,800	611,553	247	611,553	595,598	12/31/2022
863579XC7	1,153,338	1,124,061	29,277	1,124,061	1,170,138	12/31/2022
86363GAF1	1,513,354	1,415,604	97,750	1,415,604	1,437,559	12/31/2022
885220KW2	2,124,251	2,082,510	41,741	2,082,510	2,073,599	12/31/2022
94984DAC8	360,258	345,160	15,098	345,160	349,356	12/31/2022
94986CAA2	295,523	289,300	6,223	289,300	276,087	12/31/2022
Total			$ 13,330,036			

D. INVESTMENTS (CONTINUED)

The following table shows the amount of assets pledged to others as collateral or otherwise restricted for the years ended December 31 (in millions):

Restricted Asset Category	2023	2022	(Decrease)/ Increase	Gross Restricted to Total Assets	Restricted to Total Admitted Assets
Letter stock or securities restricted as to sale	$ 157.4	$ 241.4	$ (84.0)	0.3%	0.3%
FHLB capital stock	41.5	48.3	(6.8)	0.1%	0.1%
On deposit with states	6.6	6.3	0.3	0.0%	0.0%
Pledged as collateral to FHLB (including assets backing funding agreements)	1,279.2	1,102.3	176.9	2.7%	2.7%
Pledged as collateral not captured in other categories	196.4	167.6	28.8	0.4%	0.4%
Total restricted assets	$ 1,681.1	$ 1,565.9	$ 115.2	3.6%	3.6%

Net investment income consisted of the following for the years ended December 31 (in millions):

	2023	2022	2021
Investment income:			
Bonds	$ 1,803.2	$ 1,436.1	$ 1,240.2
Equity securities	23.7	9.3	28.5
Mortgage loans	200.3	116.5	74.6
Real estate	-	-	11.9
Policy loans	3.8	4.1	4.7
Cash and short-term investments	109.7	17.5	18.8
Other invested assets	131.9	96.1	75.8
Derivative instruments	(41.3)	(174.6)	543.7
Other	-	2.9	2.0
Gross investment income	2,231.3	1,507.9	2,000.2
Investment expenses	(72.2)	(35.6)	(49.2)
Ceded investment income	(240.7)	(453.3)	-
Net investment income	$ 1,918.4	$ 1,019.0	$ 1,951.0

D. INVESTMENTS (CONTINUED)

The carrying value of partnership and limited liability company holdings by annual statement category as of December 31 were (in millions):

	2023	2022
Joint venture interests:		
Common stocks - subsidiaries and affiliates	$ 0.1	$ 9.4
Common stocks - unaffiliated	717.8	774.2
Real estate	93.3	84.4
Bonds/preferred stock	54.2	62.5
Mortgage loans	172.9	117.7
Other	110.2	29.8
Surplus notes	213.6	199.8
Residual tranches	44.7	85.4
Other	1.0	0.2
Total	$ 1,407.8	$ 1,363.4

The Company held one affiliated partnership and limited liability company in a loss position with accumulated losses of less than $0.1 million as of December 31, 2023, and held none in a loss position as of December 31, 2022.

E. OTHER FINANCIAL INSTRUMENTS

The Company's derivative strategy employs a variety of derivative financial instruments including interest rate and currency swaps, options, financial futures, and forward contracts. Investment risk is assessed on a portfolio basis and individual derivative financial instruments are not generally designated in hedging relationships; therefore, as allowed by statutory accounting practices, the Company intentionally has not applied hedge accounting.

MMALIC primarily utilizes a variety of financial instruments as part of its efforts to economically hedge and manage fluctuations in the fair value of its investment portfolio attributable to changes in general interest rate levels and to manage duration mismatch of assets and liabilities. Those instruments may include interest rate exchange agreements, equity index options purchased in either over-the-counter market or on the Chicago Board Options Exchange, payer swaptions, and commitments to extend credit. All instruments involve elements of credit and market risks in excess of the amounts recognized in the accompanying financial statements at a given point of time. The contract or notional amounts of those instruments reflect the extent of involvement in the various types of financial instruments.

Equity index options are contracts that give the purchaser the right, but not the obligation, to buy or sell securities at a specified price during a specified period. MMALIC's equity index options backing fixed-indexed and registered index-linked annuities are based on an existing market index (generally the S&P 500). The equity index options expire ratably between 2024 and 2030. Under the indexed annuity products, the crediting rate is linked to changes in the equity indices or Exchanged Traded Funds (ETF) for specified periods and participation rates. The prices of the options purchased are calculated with reference to the underlying index or ETF, participation rates, caps, floors, durations and notional amounts of the underlying contracts. As a purchaser of options, MMALIC pays, at the beginning of the contract, a premium for transferring the risk of an unfavorable change in the price of the underlying financial instrument. As of January 1, 2022, options backing the fixed-indexed annuities for which the company is applying the OAC prescribed practice are now accounted for at amortized cost.

As of December 31, 2023, MMALIC has entered into twenty-three interest rate swaps to more closely match the cash flows of assets and liabilities. Interest rate swaps are also used to mitigate changes in the value of assets anticipated to be purchased and other anticipated transactions and commitments. The notional amounts of the interest rate swaps generally decline over each swap's respective life (the swaps expire between 2024 and 2042).

The Company uses currency swaps for the purpose of managing currency exchange risks in its assets and liabilities.

The Company utilizes certain other agreements including forward contracts and financial futures. Currency forwards are contracts in which the Company agrees with other parties to exchange specified amounts of identified currencies at a specific future date. Typically, the exchange rate is agreed upon at the time of the contract. The Company's futures contracts are exchange traded and have credit risk. Margin requirements are met with the deposit of securities. Futures contracts are generally settled with offsetting transactions. Forward contracts and financial futures are used by the Company to reduce exposures to various risks including interest rates and currency rates.

The Company enters derivative transactions through bilateral derivative agreements with counterparties, or through over the counter cleared derivatives with a counterparty and the use of a clearinghouse. To minimize credit risk for bilateral transactions, the Company and its counterparties generally enter into master netting agreements based on agreed upon requirements that outline the framework for how collateral is to be posted in the amount owed under each transaction, subject to certain minimums. For over the counter cleared derivative transactions between the Company and a counterparty, the parties enter into a series of master netting and other agreements that govern, among other things, clearing and collateral requirements. These transactions are cleared through a clearinghouse and each derivative counterparty is only exposed to the default risk of the clearinghouse. Certain interest rate swaps are considered cleared transactions. These cleared transactions require initial and daily variation margin collateral postings. These agreements allow for contracts in a positive position, in which amounts are due to the Company, to be offset by contracts in a negative position. This right of offset, combined with collateral obtained from counterparties, reduces the Company's credit exposure.

Net collateral pledged by the counterparties was $789.0 million as of December 31, 2023 and $131.1 million as of December 31, 2022. In the event of default, the full market value exposure at risk in a net gain position, net of offsets and collateral, was $425.9 million as of December 31, 2023 and $194.2 million as of December 31, 2022. The statutory net amount at risk, defined as net collateral pledged and statement values excluding accrued interest, was $428.6 million as of December 31, 2023 and $80.4 million as of December 31, 2022.

E. OTHER FINANCIAL INSTRUMENTS (CONTINUED)

The following tables summarize the carrying values and notional amounts of the Company's derivative financial instruments within the general account:

	December 31, 2023			
	Assets		Liabilities	
	Carrying Value	Notional Amount	Carrying Value	Notional Amount
	(in millions)			
Fixed-indexed options*	$ 723.8	$ 19,765.4	$ 418.1	$ 16,036.9
Interest rate swaps	26.6	4,774.8	66.3	2,451.0
Financial futures	21.0	1,343.1	-	-
Currency swaps	-	-	38.8	443.5
Forward contracts	-	3.2	5.0	183.9
Total	$ 771.4	$ 25,886.5	$ 528.2	$ 19,115.3

*Beginning January 1, 2022, fixed-indexed options are held at amortized cost under OAC 3901-1-67. Prior to the adoption of OAC 3901-1-67, fixed-indexed options were carried at fair value. The fair value amount related to fixed-indexed options was $822.9 million as of December 31, 2023.

	December 31, 2022			
	Assets		Liabilities	
	Carrying Value	Notional Amount	Carrying Value	Notional Amount
	(in millions)			
Fixed-indexed options*	$ 846.8	$ 18,948.0	$ 598.6	$ 17,176.5
Interest rate swaps	25.2	1,551.8	95.0	3,930.0
Currency swaps	0.9	38.4	4.8	142.4
Forward contracts	0.1	7.5	2.5	69.0
Total	$ 873.0	$ 20,545.7	$ 700.9	$ 21,317.9

*Beginning January 1, 2022, fixed-indexed options are held at amortized cost under OAC 3901-1-67. Prior to the adoption of OAC 3901-1-67, fixed-indexed options were carried at fair value. The fair value amount related to fixed-indexed options was $287.4 million as of December 31, 2022.

The following presents the Company's gross notional interest rate swap positions:

	December 31, 2023	December 31, 2022
	(in millions)	
Open interest rate swaps in a fixed pay position	$ 2,484.8	$ 1,551.8
Open interest rate swaps in a fixed receive position	4,741.0	3,930.0
Total interest rate swaps	$ 7,225.8	$ 5,481.8

E. OTHER FINANCIAL INSTRUMENTS (CONTINUED)

The following summarizes the Company's net realized gains (losses) on closed contracts and change in net unrealized gains (losses) related to market fluctuations on open contracts by derivative type:

	Years Ended December 31,							
	2023				2022			
	Net Realized Gains (Losses) on Closed Contracts		Change In Net Unrealized Gains (Losses) on Open Contracts		Net Realized Gains (Losses) on Closed Contracts		Change In Net Unrealized Gains (Losses) on Open Contracts	
	(in millions)							
Registered index-linked options	$	22.9	$	203.7	$	(26.1)	$	(86.2)
Interest rate swaps		-		30.0		-		(111.6)
Currency swaps		(0.1)		(35.0)		-		(3.9)
Forward contracts		0.3		(2.6)		0.7		(2.4)
Financial futures		0.2		21.0		3.1		-
Total	$	23.3	$	217.1	$	(22.3)	$	(204.1)

Fixed-indexed options are carried at amortized cost with amortization and expirations recorded in Net investment income. The Company recorded gains on expirations of $521.1 million and amortization of $537.7 million in 2023. The Company recorded gains on expirations of $273.9 million and amortization of $457.1 million in 2022.

The Company became a member of the Federal Home Loan Bank ("FHLB") on August 14, 2009. The FHLB makes advances and provides other banking services to member institutions. The Company owned $20.0 million of FHLB Class B membership stock at December 31, 2023 and 2022. The Company has no membership stock eligible for redemption. Through its association with the FHLB and by purchasing a set amount of FHLB stock, the Company can enter into deposit-type contracts with the FHLB known as funding agreements.

In 2022, FHLB advanced MMALIC $300.0 million. At December 31, 2023 and 2022, MMALIC had $500.0 million (the maximum amount of borrowings, as permitted by the FHLB, during the reporting period was $500.0 million) in outstanding advances from the FHLB (included in liability for deposit-type contracts), bearing interest at rates ranging from 1.35% to 1.97% (average rate of 1.72% at December 31, 2023). The Company paid interest of approximately $8.6 million, $8.4 million, and $4.4 million on FHLB advances in 2023, 2022 and 2021, respectively. These advances must be repaid between 2025 and 2030 ($200.0 million in 2025 and $300.0 million in 2030). The Company has invested the proceeds from the advances in bonds for the purpose of earning a spread over the interest payments due to the FHLB. Per the funding agreement, the Company was required to purchase 215,252 shares ($21.5 million) of FHLB activity and excess stock.

The Company posted collateral to the FHLB of assets with a fair value of approximately $1,204.1 million and $1,030.9 million at December 31, 2023 and 2022, respectively. The Company posted collateral to the FHLB of assets with a carrying value of approximately $1,279.2 million and $1,102.3 million at December 31, 2023 and 2022, respectively. The Company's FHLB borrowing capacity is based on the Company's estimate of collateral eligible to be pledged with the FHLB. The deposit contract liabilities are reported in liability for deposit-type contracts in the balance sheet, and related assets are accounted for in the Company's general account. FHLB capital stock is reported in Common stocks in the balance sheet.

E. OTHER FINANCIAL INSTRUMENTS (CONTINUED)

In the normal course of business, the Company enters into commitments to purchase certain investments. The majority of these commitments have funding periods that extend between one and five years. The Company is not required to fund commitments once the commitment period expires.

As of December 31, 2023, the Company had the following outstanding commitments:

	2024	2025	2026	2027	2028	Thereafter	Total
				(in millions)			
Private Placements	$ 135.5	$ 224.7	$ 262.4	$ 73.7	$ 33.4	$ 157.1	$ 886.8
Mortgage Loans	192.0	123.5	305.9	36.9	-	-	658.3
Real Estate	-	6.0	1.2	-	-	-	7.2
Partnerships and LLC	27.8	10.7	38.9	13.3	19.8	160.2	270.7
Total	$ 355.3	$ 364.9	$ 608.4	$ 123.9	$ 53.2	$ 317.3	$ 1,823.0

In the normal course of business, the Company enters into commitments related to property lease arrangements, certain indemnities, investments and other business obligations. As of December 31, 2023 and 2022, the Company had no outstanding obligations attributable to these commitments.

F. REINSURANCE

The Company is contingently liable with respect to reinsurance ceded in that the liability for such reinsurance would become that of the Company upon failure of any reinsurer to meet its obligations under a particular reinsurance agreement. The Company currently reinsures its ordinary life insurance, LTC, other health products and a portion of fixed and fixed-indexed annuity products. The maximum amount the Company would retain on any single life insurance policy is $15 million.

On February 17, 2022, MMALIC entered into a Funds Withheld Coinsurance agreement effective February 1, 2022, with Martello Re Limited, a Bermuda-domiciled Class E life and annuity reinsurer launched in 2022. MMALIC ceded statutory reserves of approximately $14.2 billion on a closed block of fixed, fixed-indexed and payout annuity policies, in exchange for a $320 million ceding commission paid by Martello Re that was recorded to surplus net of tax. The Company has ceded approximately $10.0 billion and $12.6 billion of statutory annuity reserves at December 31, 2023 and 2022, respectively. The Company's funds held under reinsurance treaties was approximately $10.0 billion and $12.7 billion at December 31, 2023 and 2022, respectively.

The impact of the Martello Re transaction on MMALIC's income statement as of December 31, 2022 was as follows (in millions):

	2022
Premiums and other revenues:	
Premiums and annuity considerations	$ (14,113.4)
Net investment income	(451.8)
Commissions and expense allowances and reserve adjustments on reinsurance ceded	451.6
Charges and fees for deposit-type contracts and miscellaneous income	(34.6)
Total premiums and other revenues	$ (14,148.2)
Benefits and expenses:	
Policyholders' benefits	$ (470.7)
Surrender benefits	(1,604.8)
Change in policy and contract reserves	(12,416.6)
Other	317.2
Total benefits and expenses	$ (14,174.9)

Effective January 1, 2007, MMALIC entered into a reinsurance agreement with Loyal American Life Insurance Company ("Loyal"), at the time an indirect wholly-owned insurance subsidiary domiciled in Ohio, whereby Loyal cedes 100% of certain fixed-indexed annuity business written to MMALIC. Annuity reserves assumed by MMALIC under this agreement were $10.7 million and $14.5 million at December 31, 2023 and 2022, respectively.

On August 31, 2012, in conjunction with and prior to the sale of certain affiliated insurance companies to Cigna, the Company entered into a reinsurance agreement with Cigna which ceded 100% of all accident and health policies, excluding LTC. Under this agreement, all activity on these policies after existing reinsurance is ceded to Loyal, a Cigna subsidiary and one of the sold companies.

Also, effective August 31, 2012, the Company entered into an agreement to retrocede 90% of the life and annuity business assumed from Loyal to Hannover Life Reassurance Company of America. This business was previously reinsured directly from Loyal to Hannover Life Reassurance of Ireland. This transaction did not have any significant impact on the operations and capital of MMALIC.

The Company entered into a coinsurance agreement with Great American Life Assurance Company ("GALAC"), an affiliated life insurance company domiciled in Ohio, effective June 30, 2011. Under this agreement the Company assumes 100% of GALAC's life and annuity business, with statutory reserves of approximately $4.3 million and $4.4 million at December 31, 2023 and 2022, respectively. GALAC was sold to an unaffiliated insurance company on July 3, 2012, re-domiciled in Iowa, and is currently named Accordia Life and Annuity Company.

F. REINSURANCE (CONTINUED)

The Company entered into a coinsurance agreement with United Teacher Associates Insurance Company ("UTAIC"), a life insurance company domiciled in Texas, effective October 31, 2015. Under this agreement the Company assumes 100% of UTAIC's life, annuity, and LTC business issued in the state of Florida. Effective December 31, 2016, UTAIC merged into Continental General Insurance Company, a life insurance company domiciled in Texas.   Assumed reserves under this agreement were approximately $55.3 million and $53.7 million at December 31, 2023 and 2022, respectively.

The Company entered into a quota share indemnity reinsurance agreement on fixed-indexed annuity policies with Hannover Life Reassurance Company of America effective December 31, 2018. The reinsurance treaty transfers risk of certain surrender activity in MMALIC's fixed-indexed annuity business. This treaty reduced statutory capital and surplus volatility related to MMALIC's fixed-indexed annuity policies from stock market fluctuations, which could impact the Company's risk-based capital. Effective January 1, 2022 the Company recaptured the fixed-indexed annuity policies ceded to Hannover Life Reassurance Company of America in the agreement that became effective on December 31, 2018. The financial impact of the reinsurance recapture was a decrease to statutory capital of $140.6 million.

The Company entered into a flow coinsurance agreement with Commonwealth, a subsidiary of Global Atlantic Financial Group, effective May 7, 2020. Under this agreement, the Company cedes certain newly issued traditional fixed and fixed-indexed annuities on a quota share coinsurance basis with such quota share percentages being up to 50%. The Company has ceded approximately $1,601.8 million and $1,417.8 million of deferred annuity reserves to Commonwealth under this agreement at December 31, 2023 and 2022, respectively.

The Company entered into a block coinsurance agreement with Commonwealth effective October 1, 2020. Under this agreement the Company ceded approximately $5.7 billion of deferred annuity reserves and transferred investments with a statutory carrying value of approximately $5.7 billion and market value of approximately $6.1 billion to Commonwealth. The Company has ceded approximately $3.6 billion and $4.5 billion of deferred annuity reserves under this agreement at December 31, 2023 and 2022, respectively.

The Company has reinsured with various insurance companies approximately $15,350.1 million and $18,719.6 million of reserves at December 31, 2023 and 2022, respectively.

The effect of reinsurance on premiums and annuity considerations for the years ended December 31 is as follows (in millions):

	2023	2022	2021
Direct premiums and annuity considerations	$ 8,775.8	$ 7,379.8	$ 5,797.3
Reinsurance assumed	6.6	6.7	4.2
Reinsurance ceded	(275.6)	(14,584.8)	(774.5)
Net premium and annuity considerations	$ 8,506.8	$ (7,198.3)	$ 5,027.0

The effect of reinsurance on benefits paid to policyholders and withdrawals on deposit-type contract funds during the years ended December 31 is as follows (in millions):

	2023	2022	2021
Direct benefits paid to policyholders and withdrawals on deposit-type contracts	$ 7,621.5	$ 5,063.7	$ 3,959.4
Reinsurance assumed	37.1	26.8	26.2
Reinsurance ceded	(4,354.9)	(2,862.0)	(798.9)
Net benefits paid to policyholders and withdrawals on deposit-type contracts	$ 3,303.7	$ 2,228.5	$ 3,186.7

G. FEDERAL INCOME TAXES

On August 16th, 2022, the Inflation Reduction Act ("IRA") was signed into law and includes certain corporate income tax provisions. Impacts to the Company could include the imposition of a CAMT applicable to tax years beginning after December 31, 2022. The CAMT imposes a 15% minimum tax on adjusted financial statement income on applicable corporations that have an average group wide adjusted financial statement income over $1 billion in the prior three-year period (2020-2022). As of the reporting date, the Company has determined that it is not an applicable corporation and therefore not liable for CAMT in 2023. The United States Treasury Secretary and the IRS have been authorized to issue further guidance and intend to publish proposed regulations in 2024.

The components of the net deferred tax assets at December 31 are as follows (in millions):

	2023	2022	Change
DTAs resulting in book/tax differences in:			
Ordinary:			
Deferred acquisition costs	$ 77.6	$ 61.6	$ 16.0
Reserves	168.1	112.7	55.4
Investment items	111.7	-	111.7
Deferred compensation	0.2	0.2	-
Accrued expenses	5.8	4.6	1.2
Other	5.5	8.3	(2.8)
Total ordinary DTAs	368.9	187.4	181.5
Capital:			
Investment items	78.4	-	78.4
Total capital DTAs	78.4	-	78.4
Total DTAs	447.3	187.4	259.9
Deferred tax assets nonadmitted	(36.1)	(2.2)	(33.9)
Admitted DTAs	411.2	185.2	226.0
DTLs resulting in book/tax differences in:			
Ordinary:			
Section 807(f) amortization	21.7	3.9	17.8
Investment items	55.8	-	55.8
Depreciation/other	0.3	4.6	(4.3)
Reserve transition adjustment	22.0	33.1	(11.1)
Total ordinary DTLs	99.8	41.6	58.2
Capital:			
Unrealized gains	38.6	54.9	(16.3)
Investment items	-	16.5	(16.5)
Total capital DTLs	38.6	71.4	(32.8)
Total DTLs	138.4	113.0	25.4
Total net deferred admitted tax assets	$ 272.8	$ 72.2	$ 200.6
Change in deferred tax assets nonadmitted	$ (33.9)	$ 12.4	

G. FEDERAL INCOME TAXES (CONTINUED)

The results of the admissibility calculations at December 31 are as follows (in millions):

	2023			2022			Change		
	Ordinary	Capital	Total	Ordinary	Capital	Total	Ordinary	Capital	Total
a. Federal income taxes paid in prior years recoverable through loss carrybacks	$ -	$ 42.3	$ 42.3	$ -	$ -	$ -	$ -	$ 42.3	$ 42.3
b. Adjusted gross deferred tax assets expected to be realized (excluding the amount of deferred tax assets from (a) above) after application of the threshold limitation. (The lesser of (b)1 and (b)2 below)	218.5	12.0	230.5	72.2	-	72.2	146.3	12.0	158.3
1. Adjusted gross deferred tax assets expected to be realized following the balance sheet date	218.5	12.0	230.5	72.2	-	72.2	146.3	12.0	158.3
2. Adjusted gross deferred tax assets allowed per limitation threshold	XXX	XXX	416.7	XXX	XXX	415.6	XXX	XXX	1.1
c. Adjusted gross deferred tax assets (excluding the amount of deferred tax assets from (a) and (b) above) offset by gross deferred tax liabilities	114.3	24.1	138.4	41.6	71.4	113.0	72.7	(47.3)	25.4
d. Deferred tax assets admitted as the result of application of SSAP No. 101	$ 332.8	$ 78.4	$ 411.2	$ 113.8	$ 71.4	$ 185.2	$ 219.0	$ 7.0	$ 226.0

The other admissibility criteria for the Company are as follows (dollars in millions):

	2023	2022	2021
a. Ratio percentage used to determine recovery period and threshold limitation amount	828%	871%	791%
b. Amount of adjusted capital and surplus used to determine recovery period and threshold limitation in the table above	$ 2,778.2	$ 2,770.8	$ 2,788.3

The impact of the Company's tax planning strategies, which do not include the use of reinsurance, on the adjusted gross DTAs and net admitted adjusted gross DTAs by tax character is as follows:

	2023		2022		Change	
	Ordinary	Capital	Ordinary	Capital	Ordinary	Capital
a. Adjusted gross DTAs						
(% of total adjusted gross DTAs)	0%	0%	0%	0%	0%	0%
b. Net admitted adjusted gross DTAs						
(% of total net admitted adjusted gross DTAs)	4%	0%	0%	0%	4%	0%

G. FEDERAL INCOME TAXES (CONTINUED)

The provision for incurred income taxes on operating earnings and capital gains and the change in DTAs and DTLs for the years ended December 31 are as follows (in millions):

	2023	2022	2021
Current federal income tax expense (benefit) on operations	$ 241.8	$ 13.6	$ 45.5
Federal income tax expense (benefit) on net realized capital gains	(23.4)	(14.3)	118.3
Total federal income tax expense (benefit)	$ 218.4	$ (0.7)	$ 163.8
Net DTA(L)	$ 200.6	$ 10.5	$ 22.7
Less: Items not recorded in the change in net deferred tax asset:			
Tax-effect of unrealized gains (losses)	(16.3)	(31.2)	2.1
Tax-effect of correction of error	(3.6)	-	-
Tax-effect of changes in nonadmitted DTA	33.9	(12.4)	14.6
Change in net deferred tax asset	$ 214.6	$ (33.1)	$ 39.4

The Company's income tax expense and change in DTA/DTL for the year ended December 31 differs from the amount obtained by applying the federal statutory rate of 21% to income from operations before federal income taxes for the following reasons (in millions):

	12-2023	12-2022
Provision computed at federal statutory rate	$ (29.6)	$ 40.3
Reinsurance items	11.7	54.9
OAC 3901-1-67 adoption	-	(46.2)
Investment items	(3.8)	(10.4)
Nonadmitted assets	2.3	(3.6)
Tax credits	-	(0.1)
Section 481 - change in accounting method	25.2	-
Other	(2.0)	(2.5)
Total statutory income tax expense (benefit)	$ 3.8	$ 32.4
Federal and foreign income tax expense (benefit)	$ 218.4	$ (0.7)
Change in net deferred income taxes	(214.6)	33.1
Total statutory income tax expense (benefit)	$ 3.8	$ 32.4

G. FEDERAL INCOME TAXES (CONTINUED)

The Company's income tax expense and change in DTA/DTL for the year ended December 31 differs from the amount obtained by applying the federal statutory rate of 21% to income from operations before federal income taxes for the following reasons (in millions):

	2021
Provision computed at statutory rate (operations and realized gains/losses, excluding amortization of IMR)	$ 112.0
Permanent differences:	
Company-owned life insurance	(1.3)
Dividend received deduction	(0.7)
Stock options	(0.2)
Tax exempt interest	(1.8)
Other	0.6
Total permanent differences	(3.4)
Timing adjustments:	
Investment differences	(1.4)
Reserves	43.8
DAC tax adjustment	8.5
Provision to return adjustments	(20.0)
Sale of real estate and subs	20.1
Other	5.7
Total timing adjustments	56.7
Other adjustments:	
Unrealized loss on equity index options	(1.6)
Miscellaneous items	0.1
Total other adjustments	(1.5)
Federal income tax expense on operations and realized gains	$ 163.8
Federal income tax expense on operations and realized gains	$ 163.8
Change in net deferred tax assets (excluding unrealized)	(39.4)
Total statutory income tax expense (excluding unrealized)	$ 124.4

G. FEDERAL INCOME TAXES (CONTINUED)

As of December 31, 2023 and 2022, the Company does not have any operating loss carryforwards available to offset future net income subject to federal income taxes. As of December 31, 2023 and 2022, the Company does not have a pretax capital loss carryforward.

The following are income taxes incurred in the current and prior years that will be available for recoupment in the event of future net losses (in millions):

Year	Operations	Realized Gains	Total
2023	$ -	$ -	$ -
2022	$ -	$ 13.4	$ 13.4
2021	$ -	$ 28.9	$ 28.9

As of December 31, 2023, MMALIC's consolidated federal income tax returns for the 2021 through 2023 tax years remain subject to examination by the IRS.

The consolidated federal income tax returns include the following entities:

AAG Insurance Agency, LLC
Annuity Investors Life Insurance Company
MM Ascend Life Investor Services, LLC
MassMutual Ascend Life Insurance Company
Manhattan National Holding, LLC
Manhattan National Life Insurance Company

The Company has determined that it is more likely than not that gross DTAs will be recoverable through future taxable income and that a valuation allowance is not necessary.

H. RELATED PARTY TRANSACTIONS

Certain administrative, management, accounting, actuarial, data processing, underwriting, claim, collection and investment services are provided under agreements between MMALIC and affiliates at charges not unfavorable to MMALIC or the insurance affiliates. The net amount received from affiliates was $8.4 million in 2023, the net amount received from affiliates was $13.1 million in 2022, and the net amount received from affiliates was $14.4 million in 2021, included in general insurance expenses in the Statement of Operations.

As of May 28, 2021, the Company has an agreement with Barings, LLC, an affiliate, which provides investment advisory services to the Company. MMALIC expensed investment management charges related to Barings, LLC of $34.8 million in 2023, $32.8 million in 2022 and $27.5 million during the last seven months of 2021, included in net investment income in the Statement of Operations. Prior to that agreement and to the sale of the Company to MassMutual, the Company and affiliated insurance companies had contracts with American Money Management Corporation ("AMMC"), which, subject to the direction of the Finance Committee, provided for management and accounting services related to the investment portfolios. MMALIC expensed investment management charges related to AMMC of $4.0 million in 2021, included in net investment income in the Statement of Operations.

For the first five months of 2021, AFG provided retirement benefits to qualified employees of participating companies through the AFG 401(k) Retirement and Savings Plan, a defined contribution plan. AFG made all contributions to the retirement fund portion of the plan and matched a percentage of employee contributions to the savings fund. Company contributions were expensed in the year for which they were declared. Beginning in June of 2021, the Company participates in the retirement plans of MMALIC. MMALIC sponsors funded (qualified 401(k) thrift savings) and unfunded (nonqualified deferred compensation thrift savings) defined contribution plans for its employees and retirees. The qualified 401(k) thrift savings plan's net assets available for benefits were $58.7 million and $37.4 million as of December 31, 2023 and 2022, respectively. The Company matches a percentage of employee contributions to the qualified 401(k) thrift savings plan. MMALIC expensed approximately $4.5 million, $4.0 million, and $3.4 million in 2023, 2022, and 2021, respectively, for its retirement and employee savings plan.

In contemplation of the sale of MMALIC to Glidepath, effective May 28, 2021, a condition to the sale agreement was that MMALIC sell certain assets to AFG prior to sale, representing approximately $66 million of directly owned real estate and approximately $405 million of Schedule BA assets. The proceeds from these sales were approximately $579 million and the net gain recognized by MMALIC as a result of these sales was approximately $108 million (all on Schedule BA assets) recognized in the accompanying statements of operations statutory-basis.

MMALIC has an agreement with MassMutual Ascend Life Investor Services ("MMALIS," formerly known as Great American Advisors, Inc.), a wholly-owned subsidiary of MMALIC, whereby MMALIS is the principal underwriter and distributor of MMALIC's registered index-linked annuity contracts. MMALIC pays MMALIS for acting as underwriter under a distribution agreement. MMALIC paid $69.2 million in 2023 to MMALIS, 99% of which was paid to other broker/dealers as commissions. The remaining 1% of MMALIC commissions were paid to registered representatives of MMALIS. MMALIC paid $71.1 million in 2022 to MMALIS, 99% of which was paid to other broker/dealers as commissions. The remaining 1% of MMALIC commissions were paid to registered representatives of MMALIS. MMALIC paid $32.3 million in 2021 to MMALIS, 97% of which was paid to other broker/dealers as commissions. The remaining 3% of MMALIC commissions were paid to registered representatives of MMALIS. MMALIS exited the retail brokerage business on August 3, 2010 after MMALIC announced a definitive agreement with Lincoln Investment Planning, Inc., an independent broker dealer.

The Company paid $200 million in dividends to Glidepath in 2023, none in 2022 and paid $300.0 million in dividends to GAFRI, its former parent, in 2021.

I. ANNUITY RESERVES AND DEPOSIT-TYPE FUNDS

At December 31, 2023, MMALIC's annuity (individual and group) reserves and deposit-type funds that are subject to discretionary withdrawal (with adjustment), subject to discretionary withdrawal (without adjustment), and not subject to discretionary withdrawal are summarized as follows (in millions):

A. Individual Annuities:

	General Account	Separate Account with Guarantees	Separate Account Nonguaranteed	Total	% of Total
1. Subject to discretionary withdrawal:					
a. With market value adjustment	$ 22,517.3	$ -	$ -	$ 22,517.3	51.5%
b. At book value less current surrender charge of 5% or more	5,279.5	-	-	5,279.5	12.1%
c. At fair value	-	-	387.5	387.5	0.9%
d. Total with market value adjustment or at fair value (total of a through c)	27,796.8	-	387.5	28,184.3	64.5%
e. At book value without adjustment (minimal or no charge or adjustment)	13,422.5	-	-	13,422.5	30.7%
2. Not subject to discretionary withdrawal	2,063.5	-	-	2,063.5	4.7%
3. Total (gross: direct + assumed)	43,282.8	-	387.5	43,670.3	100.0%
4. Reinsurance ceded	14,472.5	-	-	14,472.5	
5. Total (net) (3) - (4)	28,810.3	-	387.5	29,197.8	
6. Amount included in A(1)b above that will move to A(1)e in the year after the statement date	$ 970.2	$ -	$ -	$ 970.2	

B. Group Annuities:

	General Account	Separate Account with Guarantees	Separate Account Nonguaranteed	Total	% of Total
1. Subject to discretionary withdrawal:					
a. With market value adjustment	$ -	$ -	$ -	$ -	0.0%
b. At book value less current surrender charge of 5% or more	116.0	-	-	116.0	6.8%
c. At fair value	-	-	-	-	0.0%
d. Total with market value adjustment or at fair value (total of a through c)	116.0	-	-	116.0	6.8%
e. At book value without adjustment (minimal or no charge or adjustment)	686.3	-	-	686.3	40.4%
2. Not subject to discretionary withdrawal	898.1	-	-	898.1	52.8%
3. Total (gross: direct + assumed)	1,700.4	-	-	1,700.4	100.0%
4. Reinsurance ceded	481.2	-	-	481.2	
5. Total (net) (3) - (4)	1,219.2	-	-	1,219.2	
6. Amount included in A(1)b above that will move to A(1)e in the year after the statement date	$ 2,548.1	$ -	$ -	$ 2,548.1	

I. ANNUITY RESERVES AND DEPOSIT-TYPE FUNDS (CONTINUED)

C. Deposit-Type Funds
  (no life contingencies):

	General Account	Separate Account with Guarantees	Separate Account Nonguaranteed	Total	% of Total
1. Subject to discretionary withdrawal:					
a. With market value adjustment	$ -	$ -	$ -	$ -	0.0%
b. At book value less current surrender charge of 5% or more	-	-	-	-	0.0%
c. At fair value	-	-	-	-	0.0%
d. Total with market value adjustment or at fair value (total of a through c)	-	-	-	-	0.0%
e. At book value without adjustment (minimal or no charge or adjustment)	-	-	-	-	0.0%
2. Not subject to discretionary withdrawal	903.6	-	-	903.6	100.0%
3. Total (gross: direct + assumed)	903.6	-	-	903.6	100.0%
4. Reinsurance ceded	115.6	-	-	115.6	
5. Total (net) (3) - (4)	788.0	-	-	788.0	
6. Amount included in A(1)b above that will move to A(1)e in the year after the statement date	$ -	$ -	$ -	$ -	

D. Reconciliation to total annuity reserves and deposit-type funds:

Net annuity reserves	$ 30,028.6
Net supplementary contracts	0.9
Deposit-type funds	788.0
Separate account nonguaranteed liabilities	387.5
Total	$ 31,205.0

I. ANNUITY RESERVES AND DEPOSIT-TYPE FUNDS (CONTINUED)

At December 31, 2022, MMALIC's annuity (individual and group) reserves and deposit-type funds that are subject to discretionary withdrawal (with adjustment), subject to discretionary withdrawal (without adjustment), and not subject to discretionary withdrawal are summarized as follows (in millions):

A. Individual Annuities:

	General Account	Separate Account with Guarantees	Separate Account Nonguaranteed	Total	% of Total
1. Subject to discretionary withdrawal:					
a. With market value adjustment	$ 17,148.9	$ -	$ -	$ 17,148.9	42.2%
b. At book value less current surrender charge of 5% or more	7,044.3	-	-	7,044.3	17.3%
c. At fair value	-	-	30.6	30.6	0.1%
d. Total with market value adjustment or at fair value (total of a through c)	24,193.0	-	30.6	24,223.8	59.6%
e. At book value without adjustment (minimal or no charge or adjustment)	14,464.8	-	-	14,464.8	35.5%
2. Not subject to discretionary withdrawal	1,985.4	-	-	1,985.4	4.9%
3. Total (gross: direct + assumed)	40,643.3	-	30.6	40,674.0	100.0%
4. Reinsurance ceded	17,817.8	-	-	17,817.8	
5. Total (net) (3) - (4)	22,825.5	-	30.6	22,856.2	
6. Amount included in A(1)b above that will move to A(1)e in the year after the statement date	$ 2,241.2	$ -	$ -	$ -	

B. Group Annuities:

	General Account	Separate Account with Guarantees	Separate Account Nonguaranteed	Total	% of Total
1. Subject to discretionary withdrawal:					
a. With market value adjustment	$ -	$ -	$ -	$ -	0.0%
b. At book value less current surrender charge of 5% or more	118.9	-	-	118.9	6.7%
c. At fair value	-	-	-	-	0.0%
d. Total with market value adjustment or at fair value (total of a through c)	118.9	-	-	118.9	6.7%
e. At book value without adjustment (minimal or no charge or adjustment)	723.0	-	-	723.0	40.5%
2. Not subject to discretionary withdrawal	943.3	-	-	943.3	52.8%
3. Total (gross: direct + assumed)	1,785.2	-	-	1,785.2	100.0%
4. Reinsurance ceded	496.7	-	-	496.7	
5. Total (net) (3) - (4)	1,288.5	-	-	1,288.5	
6. Amount included in A(1)b above that will move to A(1)e in the year after the statement date	$ 2.7	$ -	$ -	$ -	

I. ANNUITY RESERVES AND DEPOSIT-TYPE FUNDS (CONTINUED)

C. Deposit-Type Funds
(no life contingencies):

	General Account	Separate Account with Guarantees	Separate Account Nonguaranteed	Total	% of Total
1. Subject to discretionary withdrawal:					
a. With market value adjustment	$ -	$ -	$ -	$ -	0.0%
b. At book value less current surrender charge of 5% or more	-	-	-	-	0.0%
c. At fair value	-	-	-	-	0.0%
d. Total with market value adjustment or at fair value (total of a through c)	-	-	-	-	0.0%
e. At book value without adjustment (minimal or no charge or adjustment)	-	-	-	-	0.0%
2. Not subject to discretionary withdrawal	889.6	-	-	889.6	100.0%
3. Total (gross: direct + assumed)	889.6	-	-	889.6	100.0%
4. Reinsurance ceded	109.8	-	-	109.8	
5. Total (net) (3) - (4)	779.8	-	-	779.8	
6. Amount included in A(1)b above that will move to A(1)e in the year after the statement date	$ -	$ -	$ -	$ -	

D. Reconciliation to total annuity reserves and deposit-type funds:

Net annuity reserves	$	24,113.2
Net supplementary contracts		0.9
Deposit-type funds		779.8
Separate account nonguaranteed liabilities		30.6
Total	$	24,924.5

J. LIFE RESERVES

At December 31, 2023, MMALIC's account value, cash value and reserves for the breakouts of life insurance by withdrawal characteristics for general account products are summarized as follows (in millions):

	December 31, 2023		
	General Account		
	Account Value	Cash Value	Reserve
A. Subject to discretionary withdrawal, surrender values, or policy loans:			
Universal Life	$ 105.4	$ 104.6	$ 104.6
Other Permanent Cash Value Life Insurance	-	48.7	48.7
B. Not subject to discretionary withdrawal or no cash values			
Term Policies without Cash Value	XXX	XXX	184.2
Accidental Death Benefits	XXX	XXX	0.1
Disability - Active Lives	XXX	XXX	0.1
Disability - Disabled Lives	XXX	XXX	3.4
Miscellaneous Reserves	XXX	XXX	5.5
C. Total (gross: direct + assumed)	105.4	153.3	346.6
D. Reinsurance ceded	64.2	93.9	216.3
E. Total (net) (C) - (D)	$ 41.2	$ 59.4	$ 130.3

	Amount
F.	
Reconciliation to total life reserves:	
Life insurance, total (net)	$ 125.2
Accidental death benefits, total (net)	-
Disability - active lives, total (net)	-
Disability - disabled lives, total (net)	1.3
Miscellaneous reserves, total (net)	3.8
Total	$ 130.3

J. LIFE RESERVES (CONTINUED)

At December 31, 2022, MMALIC's account value, cash value and reserves for the breakouts of life insurance by withdrawal characteristics for general account products are summarized as follows (in millions):

| | December 31, 2022 | | |
| | General Account | | |
	Account Value	Cash Value	Reserve
A. Subject to discretionary withdrawal, surrender values, or policy loans:			
Universal Life	$ 107.6	$ 107.6	$ 107.6
Other Permanent Cash Value Life Insurance	-	51.3	51.3
B. Not subject to discretionary withdrawal or no cash values			
Term Policies without Cash Value	XXX	XXX	209.6
Accidental Death Benefits	XXX	XXX	0.1
Disability - Active Lives	XXX	XXX	0.1
Disability - Disabled Lives	XXX	XXX	3.6
Miscellaneous Reserves	XXX	XXX	5.6
C. Total (gross: direct + assumed)	107.6	158.9	377.9
D. Reinsurance ceded	66.9	97.8	232.1
E. Total (net) (C) - (D)	$ 40.7	$ 61.1	$ 145.8

	Amount
F.	
Reconciliation to total life reserves:	
Life insurance, total (net)	$ 140.2
Accidental death benefits, total (net)	-
Disability - active lives, total (net)	-
Disability - disabled lives, total (net)	1.5
Miscellaneous reserves, total (net)	4.1
Total	$ 145.8

K. CAPITAL AND SURPLUS

The portion of the Company's unassigned funds represented or reduced by each item below is as follows at December 31 (in millions):

	2023	2022	2021
Unrealized gains and losses (excluding subsidiaries)	$ 339.7	$ 213.4	$ 678.1
Nonadmitted asset values	$ (54.7)	$ (31.9)	$ (27.2)
Asset valuation reserve	$ (528.4)	$ (577.1)	$ (504.1)

Life/health insurance companies are subject to certain Risk-Based Capital ("RBC") requirements as specified by the NAIC. Under those requirements, the amount of capital and surplus maintained by a life/health insurance company is to be determined based on the various risk factors related to it. At December 31, 2023 and 2022, MMALIC exceeds the RBC requirements.

The maximum amount of dividends which can be paid to stockholders by life insurance companies domiciled in the State of Ohio without prior approval of the Insurance Commissioner is the greater of 10% of surplus as regards policyholders or net income as of the preceding December 31, but only to the extent of earned surplus as of the preceding December 31. The maximum amount of dividends payable in 2024 without prior approval is $304.9 million based on 10% of surplus as regards to policyholders as of the preceding December 31. At December 31, 2023, surplus as regards policyholders was $3,049.4 million, earned surplus was $1,962.7 million, and 2023 net loss was $5.1 million.

L. SEPARATE ACCOUNT

The Company utilizes a non-unitized separate account to record and account for assets and liabilities for individual registered index-linked annuities. MMALIC maintains the separate account pursuant to the laws of Ohio for the purpose of supporting the obligation to adjust the indexed strategy values based on the daily value calculation or rise and fall of the index. The assets of the separate account are held in MMALIC's name on behalf of the separate account and legally belong to MMALIC. The assets in the separate account are not chargeable with liabilities arising out of any other business the Company conducts. MMALIC may invest these assets in hedging instruments, including derivative contracts as well as other assets permitted under state law (ORC 3907.15). To support the Company's obligations to adjust the index strategy values, the Company may move funds between the separate account and the general account. MMALIC is not obligated to invest the assets of the separate account according to any particular plan except as the Company may be required to by state insurance laws (MMALIC does have a derivative use plan).

In accordance with the products and transactions recorded within the separate account, all assets are considered legally insulated from the general account and are not chargeable with liabilities incurred in any other business operation of the Company. As of December 31, 2023 and 2022, the Company's separate account statement included legally insulated registered index-linked annuity assets of $443.3 million and $103.7 million, respectively.

With regard to the products and transactions recorded within the separate account, registered index-linked annuity products have guarantees backed by the general account. The separate account does not remit any risk charges to the general account for guaranteed benefits for the registered index-linked annuity products. The general account has not paid any guarantees for registered index-linked annuity products through December 31, 2023.

Net transfers to or (from) the Company's separate account for the years ended December 31, 2023, 2022, and 2021 were $356.8 million, ($22.0) million and $36.8 million, respectively.

All separate account reserves are non-guaranteed and subject to discretionary withdrawal at fair value. Investments in the separate account at December 31, 2023 had a cost of $232.6 million and fair value of $387.5 million. The notional amount of these investments at December 31, 2023 was $5,650.5 million. Investments in the separate account at December 31, 2022 had a cost of $79.5 million and fair value of $30.6 million. The notional amount of these investments at December 31, 2022 was $3,800.5 million.

SUPPLEMENTARY INFORMATION

MASSMUTUAL ASCEND LIFE INSURANCE COMPANY
NOTE TO SUPPLEMENTAL SCHEDULE OF SELECTED STATUTORY-BASIS FINANCIAL DATA
AND SUPPLEMENTAL INVESTMENT DISCLOSURES
DECEMBER 31, 2023

Basis of Presentation

The accompanying supplemental schedules and interrogatories present selected statutory-basis financial data as of December 31, 2023 and for the year then ended for purposes of complying with the National Association of Insurance Commissioners' ("NAIC") *Annual Statement Instructions* and the NAIC's *Accounting Practices and Procedures Manual,* and agrees to or is included in the amounts reported in the Company's 2023 Statutory Annual Statement as amended and filed with the Ohio Department of Insurance.

Captions not presented were not applicable to the Company.

Investment income earned:

U.S. Government bonds	$ 7.8
Bonds exempt from U.S. tax	-
Other bonds (unaffiliated)	1,779.1
Bonds of affiliates	16.3
Preferred stocks (unaffiliated)	11.5
Common stocks (unaffiliated)	12.2
Common stocks (affiliated)	-
Mortgage loans	200.3
Real estate	-
Policy loans	3.8
Cash, cash equivalents and short-term investments	109.7
Derivative instruments	(41.3)
Other invested assets	131.9

Gross investment income	$ 2,231.3
Real estate owned (book value less encumbrances)	$ -

Mortgage loans - book value:

Residential mortgages	$ 2,777.0
Commercial mortgages	1,479.5
Total mortgage loans	$ 4,256.5

Mortgage loans by standing - book value

Good standing	$ 4,256.5
Interest overdue more than 90 days, not in foreclosure	$ -
Other long term assets - statement value	$ 1,407.8

Bonds and stocks of parents, subsidiaries and affiliates - book value

Bonds	$ -
Common stocks	$ 445.2

Bonds (including short-term investments and cash equivalents) by expected maturity - statement value

Due within one year or less	$ 4,463.5
Over 1 year through 5 years	14,032.5
Over 5 years through 10 years	10,975.9
Over 10 years through 20 years	4,761.5
Over 20 years	2,680.0
Total by maturity	$ 36,913.4

Bonds (including short-term investments and cash equivalents) by NAIC designation - statement value

NAIC 1	$ 20,587.6
NAIC 2	14,265.4
NAIC 3	1,252.4
NAIC 4	494.4
NAIC 5	271.7
NAIC 6	41.9
Total by NAIC designation	$ 36,913.4
Total bonds publicly traded	$ 13,705.1
Total bonds privately placed	$ 23,208.3
Preferred stocks - statement value	$ 201.0
Common stocks - market value	$ 716.4
Short-term investments - book value	$ 424.2
Derivative instruments owned - statement value	$ 243.2
Cash on deposit	$ (157.3)
Cash equivalents	$ 1,944.4

(Continued)

MASSMUTUAL ASCEND LIFE INSURANCE COMPANY
SUPPLEMENTAL SCHEDULE OF SELECTED STATUTORY-BASIS FINANCIAL DATA
(CONTINUED)
DECEMBER 31, 2023
(Dollars in millions)

Life insurance in force:		
Ordinary	$	4,074.2
Group life	$	12.7
Amount of accidental death insurance in-force under ordinary policies:	$	67.6
Life insurance with disability provisions in-force:		
Ordinary	$	75.8
Group life	$	-
Annuities:		
Ordinary:		
Immediate - amount of income payable	$	178.9
Deferred - fully paid account balance	$	26,918.9
Deferred - not fully paid - account balance	$	13,332.4
Group		
Amount of income payable	$	74.3
Fully paid account balance	$	93.7
Not fully paid - account balance	$	711.0
Accident and health insurance - premiums in force:		
Ordinary	$	3.0
Claim payments 2023		
Other accident and health:		
2023	$	3.8

See accompanying independent auditors' report.

MASSMUTUAL ASCEND LIFE INSURANCE COMPANY
SUPPLEMENTAL INVESTMENT DISCLOSURES
DECEMBER 31, 2023
(Dollars in millions)

1. MMALIC's total admitted assets as reported on page two of its Annual Statement excluding separate account assets are $46,545.4 million.

2. Following are the 10 largest exposures to a single issuer/borrower/investment, by investment category, excluding: (i) U.S. Government, U.S. Government agency securities and those U.S. Government money market funds listed in the appendix to the SVO Practices and Procedures Manual as exempt, (ii) property occupied by MMALIC, and (iii) policy loans.

Issuer	Amount	Percent of Total Admitted Assets
NP Inc/US	$ 570.8	1.2%
Annuity Investors Life (AILIC) Common St	427.5	0.9%
Penny Mac Loan Services LLC	399.3	0.9%
LOAN ASSET ISSUER LLC SER 2021 M-2	234.6	0.5%
Churchill Finance LLC	217.5	0.5%
Herlan Peak Funding Trust	192.8	0.4%
Deephaven Mortgage LLC	171.3	0.4%
Conrex Corp	160.4	0.3%
ERAC USA Finance LLC	144.2	0.3%
CIP VIII Holdings Spv LP Inc	136.3	0.3%

3. MMALIC's total admitted assets held in bonds (including short-term investments and cash equivalents) and preferred stocks by NAIC rating, are as follows:

	Bonds			Preferred Stocks	
NAIC Rating	Amount	Percentage of Total Admitted Assets	NAIC Rating	Amount	Percentage of Total Admitted Assets
NAIC-1	$ 20,587.6	44.2%	P/RP-1	$ 4.9	0.0%
NAIC-2	14,265.4	30.6%	P/RP-2	161.9	0.3%
NAIC-3	1,252.4	2.7%	P/RP-3	7.0	0.0%
NAIC-4	494.4	1.1%	P/RP-4	3.0	0.0%
NAIC-5	271.7	0.6%	P/RP-5	24.1	0.1%
NAIC-6	41.9	0.1%	P/RP-6	0.0	0.0%
Total	$ 36,913.4	79.3%	Total	$ 201.0	0.4%

4. Assets held in foreign investments:

	Amount	Percent of Total Admitted Assets
Total admitted assets held in foreign investments	$ 7,789.9	16.7%
Foreign-currency-denominated investments	-	0.0%
Insurance liabilities denominated in that same foreign currency	-	0.0%

(Continued)

5. Aggregate foreign investment exposure categorized by NAIC sovereign rating:

	Amount	Percent of Total Admitted Assets
Countries rated NAIC-1	$ 5,006.0	10.8%
Countries rated NAIC-2	1,934.8	4.2%
Countries rated NAIC-3 or below	849.1	1.8%

6. Two largest foreign investment exposures to a single country, categorized by the country's NAIC sovereign rating:

	Amount	Percent of Total Admitted Assets
Countries rated NAIC-1:		
Cayman Islands	$ 3,514.3	7.6%
Jersey	297.0	0.6%
Countries rated NAIC-2		
United Kingdom	$ 429.0	0.9%
Cayman Islands	378.8	0.8%
Countries rated NAIC-3 or below		
Cayman Islands	$ 254.8	0.5%
United Kingdom	73.6	0.2%

7. The Company does not have any unhedged foreign currency exposure.

8. The Company does not have any unhedged foreign currency exposure.

9. The Company does not have any unhedged foreign currency exposure.

10. Ten largest non-sovereign (i.e. non-governmental) foreign issues:

Issuer	NAIC Rating	Amount	Percent of Total Admitted Assets
NP Inc/ Us	Mortgage Loan	$ 192.0	0.4%
CIP VIII Holdings Spv LP Inc	1.F PL	136.3	0.3%
Barings Loan Partners CLO Ltd 3	1.A Z	107.0	0.2%
Barings Clo Ltd 2023-I	1.C FE	103.6	0.2%
Elis SA	2.C PL	88.0	0.2%
Seaspan Holdco III Ltd	2.B PL	80.0	0.2%
Modec Finance B.V.	2.C PL	75.0	0.2%
Vodafone Group PLC	2.B FE	62.0	0.1%
Zais Clo 6 Ltd	1.A FE	55.8	0.1%
Hildene TruPS Financials Note Securitization 2018-1 Ltd	1.B FE	54.9	0.1%

11. Assets held in Canadian investments are less than 2.5% of the Company's total admitted assets.

12. Assets held with contractual sales restrictions are less than 2.5% of the Company's total admitted assets.

(Continued)

13. Following are MMALIC's total admitted assets held in the largest 10 equity interests:

Name of Issuer	Amount	Percentage of Total Admitted Assets
Annuity Investors Life (AILIC) Common St	$ 427.5	0.9%
CGL Holdings LLC	63.9	0.1%
FEDERAL HOME LOAN BANK CINCINNATI-R	41.5	0.1%
NexBank Capital Inc Noncumulative Perpet	39.0	0.1%
AT&T Mobility II LLC Preferred Equity	23.3	0.1%
Farm Credit Bank of Texas	21.7	0.0%
Apollo Global Management Inc	20.0	0.0%
TS Opco Holding LLC	19.7	0.0%
MANHATTAN NATIONAL HOLDING LLC	16.8	0.0%
Lincoln National Corp	16.4	0.0%

14. Following are MMALIC's largest three investments held in nonaffiliated, privately placed equities:

Name of Issuer	Amount	Percentage of Total Admitted Assets
CGL Holdings LLC	$ 63.9	0.1%
FEDERAL HOME LOAN BANK CINCINNATI-R	41.5	0.1%
NexBank Capital Inc	39.0	0.1%

15. Assets held in general partnership interests are less than 2.5% of the Company's total admitted assets.

16. Following are MMALIC's total admitted assets held in the largest 10 mortgage loans:

Type (Residential, Commercial, Agricultural)	Amount	Percentage of Total Admitted Assets
NP Inc (Residential)	$ 568.8	1.2%
PennyMac Loan Services LLC (Residential)	399.3	0.9%
Churchill Finance LLC (Residential)	217.5	0.5%
Herlan Peak Funding Trust (Residential)	192.8	0.4%
Deephaven Mortgage LLC (Residential)	171.3	0.4%
Conrex Corp (Residential)	160.4	0.3%
Quontic Bank (Residential)	129.5	0.3%
Luxury Mortgage Corp (Residential)	124.5	0.3%
Churchill Financial LLC (Residential)	108.2	0.2%
Deephaven Mortgage Trust (Residential)	100.4	0.2%

17. Following are MMALIC's loan-to-value ratios as determined from the most current appraisal:

Loan-to-Value	Residential		Commercial		Agricultural	
above 95%	$ 2,770.0	5.9%	$ 76.7	0.2%	$ -	0.0%
91% to 95%	7.0	0.0%	-	0.0%	-	0.0%
81% to 90%	-	0.0%	130.5	0.3%	-	0.0%
71% to 80%	-	0.0%	212.3	0.5%	-	0.0%
below 70%	-	0.0%	1,060.0	2.3%	-	0.0%

18. The assets held in real estate are less than 2.5% of the Company's total admitted assets.

19. Investments in mezzanine real estate loans are less than 2.5% of the Company's total admitted assets.

20. The Company has no admitted assets subject to securities lending agreements, repurchase agreements, reverse repurchase agreements, dollar repurchase agreements, or dollar reverse repurchase agreements.

(Continued)

21. The Company owns $305.7 million in hedging options.

22. The Company's potential exposure for swaps and forwards is $89.8 million.

23. The Company's potential exposure for financial futures is $22.7 million.

Investment Categories	Gross Investment Holdings* Amount	Percentage of Column 1 Line 13	Admitted Assets Amount	Securities Lending Reinvested Collateral Amount	Total (Col 3 +4) Amount	Percentage of Column 5 Line 13
1. Long-Term Bonds:						
1.01 U.S. Governments	$ 186.7	0.4%	$ 186.7	$ -	$ 186.7	0.4%
1.02 All Other Governments	19.2	0.0%	19.2	-	19.2	0.0%
1.03 U.S. States, Territories and Possessions etc., Guaranteed	180.4	0.4%	180.4	-	180.4	0.4%
1.04 U.S. Political Subdivisions of States, Territories and Possessions, Guaranteed	231.5	0.5%	231.5	-	231.5	0.5%
1.05 U.S. Special Revenue and Special Assessment Obligations, etc., Non-Guaranteed	1,920.8	4.3%	1,920.8	-	1,920.8	4.3%
1.06 Industrial and Miscellaneous	27,812.7	62.4%	27,812.7	-	27,812.7	62.4%
1.07 Hybrid Securities	772.6	1.7%	772.6	-	772.6	1.7%
1.08 Parent, Subsidiaries and Affiliates	745.2	1.7%	745.2	-	745.2	1.7%
1.09 SVO Identified Funds	-	0.0%	-	-	-	0.0%
1.10 Unaffiliated Bank Loans	3,103.2	6.9%	3,103.2	-	3,103.2	6.9%
1.11 Total Long-Term Bonds	34,972.3	78.3%	34,972.3	-	34,972.3	78.3%
2. Preferred Stocks:						
2.01 Industrial and Misc. (Unaffiliated)	201.0	0.4%	201.0	-	201.0	0.4%
2.02 Parent, Subsidiaries and Affiliates	-	0.0%	-	-	-	0.0%
2.03 Total Preferred Stock	201.0	0.4%	201.0	-	201.0	0.4%
3. Common Stocks:						
3.01 Industrial and Miscellaneous Publicly Traded (Unaffiliated)	107.7	0.2%	107.7	-	107.7	0.2%
3.02 Industrial and Miscellaneous Other (Unaffiliated)	162.9	0.4%	162.9	-	162.9	0.4%
3.03 Parent, Subsidiaries and Affiliates Publicly Traded	-	0.0%	-	-	-	0.0%
3.04 Parent, Subsidiaries and Affiliates Other	445.2	1.0%	445.2	-	445.2	1.0%
3.05 Mutual Funds	-	0.0%	-	-	-	0.0%
3.06 Unit Investment Trusts	-	0.0%	-	-	-	0.0%
3.07 Closed-End Funds.	-	0.0%	-	-	-	0.0%
3.08 Exchange traded funds	0.6	0.0%	0.6	-	0.6	0.0%
3.09 Total Common Stocks	716.4	1.6%	716.4	-	716.4	1.6%
4. Mortgage Loans:						
4.01 Farm Mortgages	-	0.0%	-	-	-	0.0%
4.02 Residential Mortgages	2,777.0	6.2%	2,777.0	-	2,777.0	6.2%
4.03 Commercial Mortgages	1,431.9	3.2%	1,431.9	-	1,431.9	3.2%
4.04 Mezzanine Real Estate Loans	47.6	0.1%	47.6	-	47.6	0.1%
4.05 Total Mortgage Loans	4,256.5	9.5%	4,256.5	-	4,256.5	9.5%
5. Real estate:						
5.01 Properties Occupied by Company	-	0.0%	-	-	-	0.0%
5.02 Properties Held for Production of Income	-	0.0%	-	-	-	0.0%
5.03 Properties Held for Sale	-	0.0%	-	-	-	0.0%
5.04 Total Real Estate	-	0.0%	-	-	-	0.0%
6. Cash, Cash Equivalents, and Short-Term Investments:						
6.01 Cash	(157.3)	-0.4%	(157.3)	-	(157.3)	-0.4%
6.02 Cash Equivalents	1,944.4	4.4%	1,944.4	-	1,944.4	4.4%
6.03 Short-Term Investments	424.2	0.9%	424.2	-	424.2	0.9%
6.04 Total Cash, Cash Equivalents, and Short-Term Investments	2,211.3	4.9%	2,211.3	-	2,211.3	4.9%
7. Contract Loans	30.0	0.1%	30.0	-	30.0	0.1%
8. Derivatives	771.4	1.7%	771.4	-	771.4	1.7%
9. Other Invested Assets	1,407.8	3.1%	1,407.8	-	1,407.8	3.1%
10. Receivables for Securities	165.4	0.4%	165.4	-	165.4	0.4%
11. Securities Lending	-	0.0%	-	-	-	0.0%
12. Other Invested Assets	-	0.0%	-	-	-	0.0%
13. Total Invested Assets	44,732.1	100.0%	44,732.1	-	44,732.1	100.0%

* Gross investment holdings as valued in compliance with NAIC SAP.

See accompanying independent auditors' report.

MASSMUTUAL ASCEND LIFE INSURANCE COMPANY
SUPPLEMENTAL SCHEDULE OF LIFE AND HEALTH REINSURANCE DISCLOSURES
FOR THE YEAR ENDED DECEMBER 31, 2023
(Dollars in millions)

The following information regarding reinsurance contracts is presented to satisfy the disclosure requirements in SSAP No. 61R, *Life, Deposit-Type and Accident and Health Reinsurance*, which apply to reinsurance contracts entered into, renewed or amended on or after January 1, 1996.

1. Has MassMutual Ascend Life Insurance Company reinsured any risk with any other entity under a reinsurance contract (or multiple contracts with the same reinsurer or its affiliates) that is subject to Appendix A-791, *Life and Health Reinsurance Agreements*, and includes a provision that limits the reinsurer's assumption of significant risks identified in Appendix A-791?

    Examples of risk-limiting features include provisions such as a deductible, a loss ratio corridor, a loss cap, an aggregate limit or other provisions that result in similar effects.

    Yes ☐ No ☒

    If yes, indicate the number of reinsurance contracts to which such provisions apply: _____

    If yes, indicate if deposit accounting was applied for all contracts subject to Appendix A-791 that limit significant risks.

    Yes ☐ No ☐ N/A ☒

2. Has MassMutual Ascend Life Insurance Company reinsured any risk with any other entity under a reinsurance contract (or multiple contracts with the same reinsurer or its affiliates) that is not subject to Appendix A-791, for which reinsurance accounting was applied and includes a provision that limits the reinsurer's assumption of risk?

    Examples of risk-limiting features include provisions such as a deductible, a loss ratio corridor, a loss cap, an aggregate limit or other provisions that result in similar effects.

    Yes ☐ No ☒

    If yes, indicate the number of reinsurance contracts to which such provisions apply: _____

    If yes, indicate whether the reinsurance credit was reduced for the risk-limiting features.

    Yes ☐ No ☐ N/A ☒

3. Does MassMutual Ascend Life Insurance Company have any reinsurance contracts (other than reinsurance contracts with a federal or state facility) that contain one or more of the following features which may result in delays in payment in form or in fact:

    (a) Provisions that permit the reporting of losses to be made less frequently than quarterly;
    (b) Provisions that permit settlements to be made less frequently than quarterly;
    (c) Provisions that permit payments due from the reinsurer to not be made in cash within ninety (90) days of the settlement date (unless there is no activity during the period); or
    (d) The existence of payment schedules, accumulating retentions from multiple years, or any features inherently designed to delay timing of the reimbursement to the ceding entity.

    Yes ☐ No ☒

(Continued)

4. Has MassMutual Ascend Life Insurance Company reflected reinsurance accounting credit for any contracts that are not subject to Appendix A-791 and not yearly renewable term reinsurance, which meet the risk transfer requirements of SSAP No. 61R?

Type of contract:	Response:	Identify reinsurance contract(s):	Has the insured event(s) triggering contract coverage been recognized?
Assumption reinsurance – new for the reporting period	Yes ☐ No ☒		N/A
Non-proportional reinsurance, which does not result in significant surplus relief	Yes ☐ No ☒		Yes ☐ No ☐ N/A ☒

5. Has MassMutual Ascend Life Insurance Company ceded any risk, which is not subject to Appendix A-791 and not yearly renewable term reinsurance, under any reinsurance contract (or multiple contracts with the same reinsurer or its affiliates) during the period covered by the financial statements, and either:

   (a) Accounted for that contract as reinsurance under statutory accounting principles (SAP) and as a deposit under generally accepted accounting principles (GAAP); or

   <div align="right">Yes   No ☒ N/A</div>

   (b) Accounted for that contract as reinsurance under GAAP and as a deposit under SAP?

   <div align="right">Yes   No ☒ N/A</div>

If the answer to item (a) or item (b) is yes, include relevant information regarding GAAP to SAP differences from the accounting policy footnote to the audited statutory-basis financial statements to explain why the contract(s) is treated differently for GAAP and SAP below:

See accompanying independent auditors' report