

MassMutual Capital Vantage[®] Variable Annuity

Issued by Massachusetts Mutual Life Insurance Company

Massachusetts Mutual Variable Annuity Separate Account 4

This prospectus describes an individual flexible premium deferred variable annuity contract (Contract) offered by Massachusetts Mutual Life Insurance Company (“MassMutual,” “Company,” “we,” “us”). The Contract offers a choice of features and benefits. You, as the owner of the Contract (“you,” “Owner”), determine which ones may be appropriate for you, based on your financial circumstances and objectives. The fees and charges that you pay are based on the features and benefits that you select.

You may accumulate value on a tax-deferred basis under your Contract by allocating your money to one or more variable investment divisions (Sub-Accounts) of Massachusetts Mutual Variable Annuity Separate Account 4 (Separate Account). Each Sub-Account, in turn, invests in one of the following investment entities (Funds). The investment choices available to you are restricted if you elect the Return of Purchase Payment Death Benefit. See “Death Benefit – Return of Purchase Payment Death Benefit” for more information. You bear the entire investment risk for all amounts you allocate to a Sub-Account.

BlackRock Variable Series Funds, Inc.
BlackRock 60/40 Target Allocation ETF V.I.
Fund

Fidelity[®] Variable Insurance Products Fund

Fidelity[®] VIP Contrafund[®] Portfolio

Ivy Variable Insurance Portfolios
Ivy VIP Asset Strategy

MML Series Investment Fund

MML Aggressive Allocation Fund
MML American Funds Core Allocation Fund
MML American Funds[®] Growth Fund
MML American Funds[®] International Fund
MML Balanced Allocation Fund
MML Blue Chip Growth Fund
MML Conservative Allocation Fund
MML Equity Income Fund
MML Focused Equity Fund
MML Foreign Fund

MML Fundamental Growth Fund
MML Fundamental Value Fund
MML Global Fund

MML Growth & Income Fund
MML Growth Allocation Fund
MML Income & Growth Fund
MML International Equity Fund
MML Large Cap Growth Fund
MML Managed Volatility Fund
MML Mid Cap Growth Fund

MML Mid Cap Value Fund

MML Moderate Allocation Fund

MML Small Cap Growth Equity Fund

MML Small Company Value Fund

MML Small/Mid Cap Value Fund

MML Total Return Bond Fund

MML Series Investment Fund II

MML Asset Momentum Fund

MML Blend Fund

MML Dynamic Bond Fund

MML Equity Fund

MML Equity Rotation Fund

MML High Yield Fund

MML Inflation-Protected and Income Fund

MML Managed Bond Fund

MML Short-Duration Bond Fund

MML Small Cap Equity Fund

MML Special Situations Fund

MML Strategic Emerging Markets Fund

MML U.S. Government Money Market Fund

Oppenheimer Variable Account Funds

Oppenheimer Discovery Mid Cap Growth Fund/VA

Oppenheimer Global Fund/VA

Oppenheimer Global Strategic Income

Fund/VA

Oppenheimer International Growth Fund/VA

Oppenheimer Main Street Fund[®]/VA

To learn more about the Contract, you can obtain a copy of the Statement of Additional Information (SAI), dated May 1, 2019. The SAI is incorporated by reference into this prospectus. The prospectus and SAI are parts of the registration statement that we filed with the Securities and Exchange Commission (SEC). The SEC maintains a website (<http://www.sec.gov>) that contains the registration statement, material incorporated by reference, and other information regarding companies that file electronically with the SEC. The table of contents for the SAI is on page 49 of this prospectus.

For a free copy of the SAI, or for general inquiries, call our Service Center at (866) 645-2362 or write to our Service Center using the following address: MassMutual, P.O. Box 758511, Topeka, Kansas 66675-8550. (Overnight Mail Address: MassMutual, Mail Zone 511, 5801 SW 6th Ave., Topeka, KS 66636-0001)

Beginning January 1, 2021, we will no longer send you paper copies of Fund shareholder reports (Reports) unless you specifically request paper copies from us. The Reports will be available online. We will notify you by mail each time the Reports are posted. The notice will provide the website link(s) to access the Reports as well as instructions for requesting paper copies. If you wish to continue receiving your Reports in paper free of charge from us, please call (866) 444-2450. Your election to receive the Reports in paper will apply to all Funds available with your Contract. If you have already elected to receive the Reports electronically, you will not be affected by this change and need not take any action. If you wish to receive the Reports and other SEC disclosure documents from us electronically, follow the instructions provided on the inside front cover of this prospectus.

The Contract:

- is not a bank or credit union deposit or obligation.
- is not FDIC or NCUA insured.
- is not insured by any federal government agency.
- is not guaranteed by any bank or credit union.
- may go down in value.
- provides guarantees that are subject to our financial strength and claims-paying ability.

The SEC has not approved or disapproved the Contract or determined that this prospectus is accurate or complete. Any representation that it has is a criminal offense.

This prospectus is not an offer to sell the Contract in any jurisdiction where it is illegal to offer the Contract nor is it an offer to sell the Contract to anyone to whom it is illegal to offer the Contract.

Please read this prospectus before investing. You should keep it for future reference. It contains important information about the MassMutual Capital Vantage[®] Variable Annuity.

Effective May 1, 2019

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Glossary

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| Accumulation Phase | Begins on the date the Contract is issued and ends on the date the Owner applies the full Contract Value to an Annuity Option or upon Contract termination. |
| Accumulation Unit | A unit of measure used to determine your value in a Sub-Account during the Accumulation Phase. |
| Age | The attained age of any Owner or of any Annuitant, as applicable. Except when discussed in regards to specific tax provisions and for calculating Annuity Payments, Age refers to the Owner's or Annuitant's age as of his or her last birthday. If the Contract is owned by a non-natural person, then Age shall mean attained age of the Annuitant as of his/her last birthday. For purposes of calculating Annuity Payments we calculate the Annuitant's Age based on his/her birthday nearest the applicable Annuity Date. See "The Annuity Phase – Annuity Age." |
| Annuitant | The person(s) on whose life Annuity Payments are based, with the exception of the non-lifetime contingent option. See "The Annuity Phase – Non-Lifetime Contingent Option." The term Annuitant also includes the joint Annuitant, if any. The Annuitant has no rights to the Contract. |
| Annuity Date | The date Annuity Payments begin. There may be more than one Annuity Date applicable to a Non-Qualified Contract if the Owner elects to apply only a portion of the Contract Value to an Annuity Option. |
| Annuity Options | Options available for Annuity Payments. |
| Annuity Payments | Series of payments made pursuant to the Annuity Option(s) elected. |
| Annuity Phase | The period that begins on the Annuity Date and ends with the last Annuity Payment. There may be more than one Annuity Phase applicable to a Non-Qualified Contract if the Owner elects to apply only a portion of the Contract Value to an Annuity Option. |
| Beneficiary | The person(s) or entity(ies) that the Owner designates to receive the death benefit provided by the Contract. |
| Business Day | Every day the New York Stock Exchange (NYSE), or its successor, is open for trading. Our Business Day ends at the Close of Business. |
| Close of Business | The time on a Business Day when the NYSE ends regular trading, usually at 4:00 p.m. Eastern Time. However, when the NYSE closes early or closes due to any emergency or SEC order, the Close of Business will occur at the same time. |
| Contingent Deferred Sales Charge (CDSC) | A charge that may be assessed against each Purchase Payment withdrawn from the Contract. (In some states referred to as surrender charge.) |
| Contract | The MassMutual Capital Vantage Variable Annuity; an individual flexible premium deferred variable annuity contract. |
| Contract Anniversary | An anniversary of the Issue Date of the Contract. |
| Contract Value | The sum of your values in the Sub-Accounts during the Accumulation Phase. |
| Contract Withdrawal Value | The Contract Value less any applicable Premium Taxes not previously deducted; less any applicable annual contract maintenance charge; less any applicable CDSC; less any Purchase Payments credited to the Contract that have not yet cleared the bank. |
| Contract Value Death Benefit | The Contract Value determined as of the Close of Business on the Business Day on which we receive both due proof of death and an election of the payment method in Good Order at our Service Center. See "Death Benefit – Death Benefit Amount During the Accumulation Phase." |
| Contract Year | The first Contract Year is the annual period which begins on the Issue Date and ends on the last calendar day before the first Contract Anniversary. Subsequent Contract Years begin on subsequent Contract Anniversaries. |
| Fixed Annuity Payments | Annuity Payments made during the Annuity Phase which we guarantee as to dollar amount of each Annuity Payment. |
| Fund(s) | The investment entities into which the assets of the Separate Account will be invested. |
| General Account | The Company's general investment account, which supports the Company's annuity and insurance obligations. The General Account's assets include all the assets of the Company with the exception of the Separate Account and the Company's other segregated asset accounts. |

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| Good Order | <p>An instruction or transaction request that we receive at our Service Center generally is considered in “Good Order” if:</p> <ol style="list-style-type: none"> 1) we receive it within the time limits, if any, prescribed in this prospectus for a particular request or transaction; 2) it includes all information necessary for us to execute the request or transaction; and 3) it is signed by you or authorized persons to provide instruction to engage in the request or transaction. <p>A request or transaction may be rejected or delayed if not in Good Order. Good Order generally means the actual receipt by our Service Center of the instructions related to the request or transaction in writing (or, when permitted, by telephone or Internet) along with all forms, information and supporting legal documentation we require to effect the request or transaction. This information generally includes to the extent applicable: the completed application or instruction form; your Contract number; the transaction amount (in dollars or percentage terms); the names and allocation to and/or from the Sub-Accounts affected by the request or transaction; the signatures of all owners; if necessary, Social Security Number or Tax Identification number; tax certification; and any other information or supporting documentation we may require including consents, certifications and guarantees. Instructions must be complete and sufficiently clear so that we do not need to exercise any discretion to follow such instructions. We will not accept instructions that require additional requirements or burdens not provided for within the Contract. With respect to Purchase Payments, Good Order also generally includes receipt by us of sufficient funds to affect the purchase. We may, in our sole discretion, determine whether any particular request or transaction is in Good Order, and we reserve the right to change or waive any Good Order requirements at any time. If you have any questions you may contact our Service Center before submitting the form or request. See “Sending Requests in Good Order” for more information.</p> |
| Issue Date | The date on which the Contract becomes effective. The Issue Date is included in the Contract. |
| Joint Owner | A person entitled to ownership rights under the Contract. See “Ownership – Owner.” |
| Non-Business Day | Any day when the NYSE is not open for trading. Unless specified otherwise, if the due date for any activity required by the Contract falls on any day that is not a Business Day, performance of such activity will be rendered on the first Business Day following such due date. |
| Non-Qualified Contract | Your Contract is referred to as a Non-Qualified Contract if you purchase the Contract as an individual and not under a qualified plan such as an Individual Retirement Annuity (IRA), Roth IRA, or a corporate pension and profit sharing plan. |
| Owner | The person(s) or entity entitled to ownership rights under the Contract. We allow multiple Owners, subject to certain restrictions (see “Ownership”). Where we describe multiple owners, we refer to them as Joint Owners. |
| Premium Tax | A tax imposed by certain states and other jurisdictions when a Purchase Payment is made, when Annuity Payments begin, or when Contract Value is withdrawn. |
| Purchase Payment(s) | Any amount paid to us by you or on your behalf with respect to the Contract during the Accumulation Phase which may be decreased by the assessment of any applicable Premium Tax. Purchase Payments may not be added after the Annuity Date to any portion of the Contract Value that has been applied to an Annuity Option. |
| Qualified Contract | Your Contract is referred to as a Qualified Contract if it is purchased under a qualified retirement plan (qualified plan) such as an Individual Retirement Annuity (IRA), Roth IRA, tax-sheltered annuity plan (TSA or TSA plan), corporate pension and profit-sharing plan (including 401(k) plans and H.R. 10 plans), or a governmental 457(b) deferred compensation plan. For information on the types of qualified plans for which the Contract is available, see “Taxes – Qualified Contracts.” |
| Required Minimum Distribution (RMD) | An RMD is a minimum amount the federal tax law requires be withdrawn from certain Qualified Contracts each year. RMDs are generally required to begin by April 1 st of the year after attainment of age 70½, or for some qualified plans, the year of retirement, if later. See “Taxes – Required Minimum Distributions for Qualified Contracts” for more information. |
| Return of Purchase Payment Death Benefit (ROP) | The Return of Purchase Payment Death Benefit is the greater of the Contract Value or the total Purchase Payments reduced by an adjustment for any withdrawals, determined as of the Close of Business on the Business Day on which we receive both due proof of death and an election of the payment method in Good Order at our Service Center. See “Death Benefit – Death Benefit Amount During the Accumulation Phase.” |
| Separate Account | The account that holds the assets underlying the Contract. The assets of the Separate Account are kept separate from the assets of the General Account and the Company’s other separate accounts. |

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| Service Center | The location to which Written Requests must be sent. |
| Sub-Account(s) | The Separate Account assets are divided into Sub-Accounts. The assets of each Sub-Account will be invested in the shares of a single Fund. |
| Written Notice | A written or electronic communication or instruction sent by the Company to the Owner. Any notice the Company sends to the Owner will be sent to the Owner's last known address. The Owner must promptly provide the Company with notice of any Owner address change. |
| Written Request | A written communication or instruction sent by the Owner to the Company. A Written Request must be in Good Order and must be received by the Company's Service Center. The Company may consent to receiving requests electronically or by telephone at the Service Center. |

Contacting the Company

You may contact us by calling the MassMutual Customer Service Center (our Service Center) at (866) 645-2362 Monday through Friday between 7 a.m. and 7 p.m. Central Time. You may also contact us by visiting www.MassMutual.com/contact-us. Additionally, you may write to our Service Center using the following address: MassMutual, P.O. Box 758511, Topeka, Kansas 66675-8550. (Overnight Mail: MassMutual, Mail Zone 511, 5801 SW 6th Ave., Topeka, KS 66636-0001.)

Overview

The following is intended as a summary. Please read each section of this prospectus for additional detail.

This prospectus refers to the following share classes: B-Share and C-Share. Each share class is subject to different charges. The share class that you select will be identified in your Contract. Not every share class or additional feature may be available to you. For certain distribution channels, this product is no longer available in the tax-qualified market. However, we continue to administer existing Contracts, and you may continue making additional Purchase Payments to your Contract, subject to certain restrictions.

You should consider the Contract in conjunction with any other annuity contract or life insurance policy you own.

Replacing an existing annuity contract or life insurance policy with the Contract may not be to your advantage. In addition, it may not be to your advantage to finance the purchase or maintenance of the Contract through a loan or withdrawals from another annuity contract or life insurance policy. You should consult your registered representative before replacing your existing life insurance policy or annuity contract.

For certain distribution channels, this product is no longer available in the tax-qualified market. However, we continue to administer existing Contracts, and you may continue making additional Purchase Payments to your Contract, subject to certain restrictions.

This annuity is a contract between you, as the Owner, and MassMutual. The Contract is intended for retirement savings and/or other long-term investment purposes.

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| How does the Contract work? | <p>In exchange for your Purchase Payments, we agree to pay you Annuity Payments when you choose to receive them. You select an Annuity Option and the date on which payments will begin. We call this date the Annuity Date. According to your Contract, the Annuity Date must be at least five years (13 months for Contracts issued in New York or Florida) from the Issue Date of the Contract.</p> <p>The Contract has two phases – the Accumulation Phase and the Annuity Phase. If your Contract is a Non-Qualified Contract, you may participate in both phases simultaneously if you apply a portion of your Contract Value to an Annuity Option. During the Accumulation Phase, subject to certain restrictions, you can apply Purchase Payments to your Contract, and we provide a death benefit. Once you begin receiving Annuity Payments, your Contract enters the Annuity Phase.</p> <p>During the Annuity Phase, we make Annuity Payments based on the Annuity Option you elect. When you elect an Annuity Option, you also elect from a number of features, including but not limited to: duration, number of payees, and payments to Beneficiaries. See “The Annuity Phase.”</p> <p>The Contract is called a variable deferred annuity because you can choose to allocate your Purchase Payments among various Sub-Accounts. Contract Value allocated to a Sub-Account is not guaranteed. It is possible to lose your Contract Value allocated to any of the Sub-Accounts. If you allocate Contract Value to the Sub-Accounts, the amount you are able to accumulate in your Contract depends upon the performance of the Sub-Accounts you select.</p> |
| What are my investment choices under the Contract? | <p>You can choose to allocate your Purchase Payments among various investment choices. Your investment choices include a number of Sub-Accounts. See “General Information about Massachusetts Mutual Life Insurance Company, the Separate Account and the Investment Choices – The Funds.”</p> <p>The number of Sub-Accounts available to you will be restricted if you elect the Return of Purchase Payment Death Benefit. See “Death Benefit – Return of Purchase Payment Death Benefit – Return of Purchase Payment Death Benefit Allocation Restrictions.”</p> |
| How can I access my money? | <p>Subject to certain restrictions, you may make withdrawals of your Contract Value. Withdrawals may be subject to a CDSC. Income taxes and tax penalties may apply to any withdrawal you request. See “Withdrawals,” “Charges and Deductions – Contingent Deferred Sales Charge,” and “Taxes.”</p> |

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| <p>Can I make transfers?</p> | <p>You may transfer Contract Value among available Sub-Accounts during the Accumulation Phase; however, we reserve the right to charge \$20 per transfer in excess of 12 in a single calendar year. We will exercise this right should we see a significant increase in transfer activity by Owners that leads to an increase in cost to administer the Contract. If we exercise this right, we will do so in the same manner for all Owners, and we will provide Owners with prior Written Notice of our decision to assess a fee. See “Transfers and Transfer Programs.”</p> |
| <p>Is a death benefit paid under the Contract?</p> | <p>A Beneficiary will receive a death benefit in the event of your death prior to the Annuity Phase. You must select the Contract Value Death Benefit or, for an additional cost the Return of Purchase Payment Death Benefit (ROP) at the time you apply for the Contract. The number of Sub-Accounts available to you will be restricted if you elect Return of Purchase Payment Death Benefit. The ROP is not available for selection if the oldest Owner (or Annuitant, if the Owner is a non-natural person) is over the age of 75 (maximum age for Contract Value Death Benefit is 85). The Return of Purchase Payment Death Benefit is the greater of the Contract Value or the total Purchase Payments reduced by an adjustment for any withdrawals.</p> <p>Once you select a death benefit feature and we issue the Contract, you cannot later select another death benefit feature.</p> <p>Once the Annuity Phase commences, payments upon death may be available to Beneficiaries depending on the Annuity Option elected. See “Death Benefit” and “The Annuity Phase.”</p> |
| <p>What are the charges under the Contract?</p> | <p>Your Contract Value will be subject to certain fees. These charges may be reflected in your Contract Value and/or may be reflected when making a withdrawal or in any Annuity Payments you choose to receive from the Contract. See “Fees and Expenses” and “Charges and Deductions.”</p> <ul style="list-style-type: none"> • We may deduct a charge to cover state or local <i>Premium Taxes</i>. Premium Taxes currently range from 0% to 3.5%. • We will deduct an <i>annual contract maintenance</i> charge on each Contract Anniversary, when applicable. We also may deduct this charge when you make a full withdrawal or deduct a portion of this charge if your entire Contract Value is applied to an Annuity Option on a date other than your Contract Anniversary. • An <i>administrative charge</i> and a <i>mortality and expense risk charge</i> compensate us primarily for our administrative and distribution expenses and the mortality and expense risks that we assume under the Contract. • We currently do not assess a <i>transfer fee</i> during the Accumulation Phase. We reserve the right to charge \$20 per transfer in excess of 12 in a single calendar year during the Accumulation Phase. We will exercise this right should we see a significant increase in transfer activity by Owners that leads to an increase in cost to administer the Contract. If we exercise this right, we will do so in the same manner for all Owners, and we will provide Owners with prior Written Notice of our decision to assess a fee. • If you elect the Return of Purchase Payment Death Benefit (ROP), we will deduct an additional charge from each Sub-Account in which you are invested to compensate us for the costs associated with this Death Benefit. • We may deduct any income taxes we incur because of the operation of the Separate Account. We also will deduct any withholding taxes required by law. • We do not assess a sales charge when you make a Purchase Payment; however, we may assess a CDSC when you make withdrawals. • The Funds deduct fees from their assets to cover operating expenses (including investment management fees). These deductions are not charges under the terms of the Contract, but are reflected in the share values of the Funds. More detail about those deductions is available in the Fund prospectuses. |

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| <p>What are the share classes?</p> | <p>When you purchase the Contract you must choose between two different share classes. The Contract offers a B-Share class and a C-Share class. The two share classes differ with respect to whether a CDSC is applicable and mortality and expense risk charges. Since the share class selected will determine the CDSC, if any, and mortality and expense risk charge associated with your Contract, you should familiarize yourself with both share class options before you decide to purchase the Contract. Once you have selected a share class and we issue the Contract, you cannot later select a different share class.</p> <p>The B-Share class provides a five year CDSC schedule and a lower mortality and expense risk charge for the first five Contract Years than the C-Share class.</p> <p>The C-Share class does not have a CDSC schedule, but it does have a higher mortality and expense risk charge than the B-Share class for the first five Contract Years.</p> <p>After the fifth Contract Year, the mortality and expense risk charge for the C-Share class will be reduced. However, your share class will not change. Purchase Payments received after the fifth Contract Year for a B-Share class Contract will still have a five year CDSC schedule. The C-Share class will continue to not have a CDSC schedule.</p> <p>Since the B-Share class has a CDSC period while the C-Share class has none, it may result in a higher cost to access your Contract Value. The lack of a CDSC for the C-Share class may result in a lower cost to access your Contract Value than the B-Share class, but the C-Share class has a higher mortality and expense risk charge for the first five Contract Years. The B-Share class may be more appropriate for someone with a longer investment time horizon, who does not intend to withdraw Contract Value in excess of the free withdrawal amount during the CDSC period, and who seeks a lower cost contract. The C-Share class may be more appropriate for someone who may want to withdraw some or all of the Contract Value any time after making a Purchase Payment and is willing to pay a higher mortality and expense risk charge for the first five Contract Years.</p> <p>When considering which share class to elect, it is important that you consider the appropriate balance between the cost of accessing your Contract Value and the impact of the mortality and expense risk charge on your Contract Value. Please note that the B-Share class provides a free withdrawal amount which allows the Owner to take a certain withdrawal amount each Contract Year without incurring a CDSC. See “Charges and Deductions – Contingent Deferred Sales Charge (CDSC).” You should consider discussing the benefits and costs of the different share classes with your registered representative.</p> <p>Certain broker-dealers may not make both share classes available to you.</p> |
| <p>Can I return my Contract for a refund?</p> | <p>You have a right to examine your Contract. If you change your mind about owning your Contract, you can return it for a refund, but only if you return it within a prescribed period—within at least ten calendar days after receiving it, or whatever longer period may be required by state law. The amount of the refund will generally be your Contract Value plus any fees or charges previously deducted from your Purchase Payments. If state law requires us to return the amount of your Purchase Payments, then we will return the greater of: (i) the full amount of any Purchase Payment(s) or (ii) your Contract Value plus any fees or charges previously deducted from your Purchase Payments. See “Right to Cancel Your Contract.”</p> |
| <p>Will I pay taxes on my Contract earnings?</p> | <p>The Internal Revenue Code of 1986, as amended (IRC), has certain rules that apply to the Contract. These tax treatments apply to earnings from the Contracts, withdrawals, death benefits and Annuity Options. You are generally not taxed on Contract earnings until you take money from your Contract. This is known as tax deferral. Tax deferral is automatically provided by tax-qualified retirement plans. There is no additional tax deferral provided when a variable annuity contract is used to fund a tax-qualified retirement plan. Investors should only consider buying the Contract to fund a qualified plan for the Contract’s additional features such as lifetime income payments and the Return of Purchase Payment Death Benefit. See “Taxes.”</p> |

The prospectus and SAI describe all material terms and features of your Contract. Certain non-material provisions of your Contract may be different than the general description in the prospectus and the SAI and certain riders may not be available because of legal requirements in your state. Any such state variation will be included in your Contract or in riders or endorsements attached to your Contract. See your Contract for specific variations.

Fees and Expenses

Standard Contract Charges

The following tables describe the fees and expenses you pay when buying, owning, and surrendering the Contract. In addition to the fees and expenses shown below, Premium Taxes may also apply, but are not reflected below.

I. The first table describes the fees and expenses that you will pay at the time that you transfer the Contract Value between investment choices, or withdraw your Contract Value. Please note that the Contract does not assess a sales load on Purchase Payments; however, we may assess a Contingent Deferred Sales Charge as noted below.

| Transaction Expenses | Current | Maximum |
|---|-------------|---|
| Transfer Fee <i>During the Accumulation Phase</i> | \$ 0 | \$20 per transfer for each additional transfer in excess of the 12 free transfers per calendar year |
| Contingent Deferred Sales Charge (CDSC) ¹ <i>(as a percentage of Purchase Payment withdrawn)</i> | | |
| C-Share | None | None |
| B-Share | 7% | 7% |
| Contingent Deferred Sales Charge (CDSC) Schedule | | |
| B-Share | | |
| Number of full Years from Application of each Purchase Payment | 0 | 1 |
| CDSC | 7% | 7% |
| | 2 | 3 |
| | 6% | 5% |
| | 4 | 4 |
| | 5 and later | 0% |

¹ Subject to the CDSC schedule. See “Charges and Deductions – Contingent Deferred Sales Charge” for more information.

II. The next table describes fees and expenses you will pay periodically during the time you own the Contract, not including underlying Fund fees and expenses.

| Periodic Contract Charges | Current | Maximum |
|---|-------------------------------------|-------------------------------------|
| Annual Contract Maintenance Charge | \$40 per Contract Year ¹ | \$40 per Contract Year ¹ |
| Separate Account Annual Expenses <i>(as a percentage of average account value in the Separate Account on an annualized basis)</i> | | |
| B-Share | | |
| Mortality and Expense Risk Charge | 0.85% | 0.85% |
| Administrative Charge | 0.15% | 0.15% |
| Total Separate Account Annual Expenses | 1.00% | 1.00% |
| C-Share | | |
| Mortality and Expense Risk Charge | 1.30% ² | 1.30% ² |
| Administrative Charge | 0.15% | 0.15% |
| Total Separate Account Annual Expenses | 1.45% | 1.45% |

¹ Currently, we waive this charge if, when we are to make the deduction, your Contract Value is \$100,000 or more. We assess the charge on each Contract Anniversary or when you make a full withdrawal. A portion of the charge is assessed if your entire Contract Value is applied to an Annuity Option on a date other than your Contract Anniversary. For Contracts issued in New York, the charge is deducted on a pro-rated basis for full withdrawals.

² After your fifth Contract Anniversary, the mortality and expense risk charge will be reduced to 0.85%.

If you elect the Return of Purchase Payment Death Benefit (ROP), we will deduct an additional charge from each Sub-Account in which you are invested. The charge for the ROP is in addition to other Separate Account charges you are assessed. You may only elect the ROP at the time you apply for a Contract and it cannot be cancelled.

| Charges for Additional Features | <i>When Charge is Deducted</i> | <i>Current (annual rate)</i> | <i>Maximum (annual rate)</i> |
|--|--|-------------------------------------|-------------------------------------|
| <i>Return of Purchase Payment Death Benefit</i> | Daily as a % of the daily value of the assets invested in each Sub-Account | 0.35% | 0.35% |

Annual Fund Operating Expenses

While you own the Contract, if your assets are invested in any of the Sub-Accounts, you will be subject to the fees and expenses charged by the Fund in which that Sub-Account invests. The table below shows the minimum and maximum total operating expenses charged by any of the Funds, expressed as a percentage of average net assets, for the year ended December 31, 2018 (before any waivers or reimbursements).¹ Current and future expenses may be higher or lower than those shown. More detail concerning each Fund’s fees and expenses that you may periodically be charged during the time that you own the Contract is contained in each Fund prospectus.

| Charge | <i>Minimum</i> | <i>Maximum</i> |
|--|-----------------------|-----------------------|
| Total Annual Fund Operating Expenses that are deducted from Fund assets, including management fees, distribution, and/or 12b-1 fees, and other expenses. | 0.54% | 2.33% |

¹ *The Fund expenses used to prepare this table were provided to us by the Funds. We have not independently verified such information provided to us by Funds that are not affiliated with us.*

The information above describes the fees and expenses you pay related to the Contract. For information on compensation we may receive from the Funds and their advisers and sub-advisers, see “General Information about Massachusetts Mutual Life Insurance Company, the Separate Account and the Investment Choices – Compensation We Receive from Funds, Advisers and Sub-Advisers.” For information on compensation we pay to broker-dealers selling the Contract, see “Distribution.”

Examples

These examples are intended to help you compare the cost of investing in the Contract with the cost of investing in other variable annuity contracts. These costs include Owner transaction expenses, Contract fees, Separate Account annual expenses, charges for the ROP, and Fund fees and expenses.

There is an Accumulation Unit value history in “Appendix A – Condensed Financial Information.”

Examples Using Current and Maximum Expenses (ROP elected)

These examples assume that you either:

- withdraw all your Contract Value at the end of each year shown,
- do not withdraw any of your Contract Value at the end of each year shown, or
- that you decide to apply your entire Contract Value to an Annuity Option at the end of each year shown and no CDSC is applied. Note the Annuity Phase is not available until five years after the Contract Issue Date unless state law requires a shorter period.

The examples also assume:

- that you purchase either a B-Share or C-Share Contract,
- that you elected the ROP,
- that you invested \$10,000 in the Contract for the time periods indicated,
- that you allocated Contract Value to a Sub-Account that has a 5% return each year,
- that you selected one of two Sub-Accounts – the one that invests in the Fund with the maximum total operating expenses or the one that invests in the Fund with the minimum total operating expenses,
- that you made no transfers, and
- that no Premium Taxes apply.

Based on the above assumptions, your costs would be as shown in the following tables. Your actual costs may be higher or lower.

B-Share

| Years | <i>Current Expenses</i> | | | | <i>Maximum Expenses</i> | | | |
|--|-------------------------|---------|---------|---------|-------------------------|---------|---------|---------|
| | 1 | 3 | 5 | 10 | 1 | 3 | 5 | 10 |
| If you withdraw all of your Contract Value at the end of each year shown | | | | | | | | |
| <i>Maximum total Fund operating expenses</i> | \$1,002 | \$1,671 | \$2,269 | \$3,944 | \$1,002 | \$1,671 | \$2,269 | \$3,944 |
| <i>Minimum total Fund operating expenses</i> | \$ 823 | \$1,138 | \$1,387 | \$2,222 | \$ 823 | \$1,138 | \$1,387 | \$2,222 |
| If you do not withdraw any of your Contract Value at the end of each year shown | | | | | | | | |
| <i>Maximum total Fund operating expenses</i> | \$ 372 | \$1,131 | \$1,909 | \$3,944 | \$ 372 | \$1,131 | \$1,909 | \$3,944 |
| <i>Minimum total Fund operating expenses</i> | \$ 193 | \$ 598 | \$1,027 | \$2,222 | \$ 193 | \$ 598 | \$1,027 | \$2,222 |
| If you decide to begin the Annuity Phase at the end of each year shown | | | | | | | | |
| <i>Maximum total Fund operating expenses</i> | N/A | N/A | \$1,909 | \$3,944 | N/A | N/A | \$1,909 | \$3,944 |
| <i>Minimum total Fund operating expenses</i> | N/A | N/A | \$1,027 | \$2,222 | N/A | N/A | \$1,027 | \$2,222 |

We estimate that the Annual Contract Maintenance Charge under the current expenses would be \$40 or, as percentage, 0.04%.

C-Share

| Years | Current Expenses | | | | Maximum Expenses | | | |
|--|------------------|---------|---------|---------|------------------|---------|---------|---------|
| | 1 | 3 | 5 | 10 | 1 | 3 | 5 | 10 |
| If you withdraw all of your Contract Value at the end of each year shown | | | | | | | | |
| <i>Maximum total Fund operating expenses</i> | \$ 417 | \$1,262 | \$2,121 | \$4,111 | \$ 417 | \$1,262 | \$2,121 | \$4,111 |
| <i>Minimum total Fund operating expenses</i> | \$ 238 | \$ 734 | \$1,255 | \$2,424 | \$ 238 | \$ 734 | \$1,255 | \$2,424 |
| If you do not withdraw any of your Contract Value at the end of each year shown | | | | | | | | |
| <i>Maximum total Fund operating expenses</i> | \$ 417 | \$1,262 | \$2,121 | \$4,111 | \$ 417 | \$1,262 | \$2,121 | \$4,111 |
| <i>Minimum total Fund operating expenses</i> | \$ 238 | \$ 734 | \$1,255 | \$2,424 | \$ 238 | \$ 734 | \$1,255 | \$2,424 |
| If you decide to begin the Annuity Phase at the end of each year shown | | | | | | | | |
| <i>Maximum total Fund operating expenses</i> | N/A | N/A | \$2,121 | \$4,111 | N/A | N/A | \$2,121 | \$4,111 |
| <i>Minimum total Fund operating expenses</i> | N/A | N/A | \$1,255 | \$2,424 | N/A | N/A | \$1,255 | \$2,424 |

We estimate that the Annual Contract Maintenance Charge under the current expenses would be \$40 or, as percentage, 0.04%.

Examples Using Current and Maximum Expenses (No ROP Elected)

These examples assume that you either:

- withdraw all your Contract Value at the end of each year shown,
- do not withdraw any of your Contract Value at the end of each year shown, or
- that you decide to apply your entire Contract Value to an Annuity Option at the end of each year shown and no CDSC is applied. Note the Annuity Phase is not available until five years after the Contract Issue Date unless state law requires a shorter period.

The examples also assume:

- that you purchase either a B-Share or C-Share Contract,
- that you did not elect the ROP, which would include additional charges on your Contract,
- that you invested \$10,000 in the Contract for the time periods indicated,
- that you allocated Contract Value to a Sub-Account that has a 5% return each year,
- that you selected one of two Sub-Accounts – the one that invests in the Fund with the maximum total operating expenses or the one that invests in the Fund with the minimum total operating expenses,
- that you made no transfers, and
- that no Premium Taxes apply.

Based on the above assumptions, your costs would be as shown in the following tables. Your actual costs may be higher or lower.

B-Share

| Years | Current Expenses | | | | Maximum Expenses | | | |
|--|------------------|---------|---------|---------|------------------|---------|---------|---------|
| | 1 | 3 | 5 | 10 | 1 | 3 | 5 | 10 |
| If you withdraw all of your Contract Value at the end of each year shown | | | | | | | | |
| <i>Maximum total Fund operating expenses</i> | \$ 967 | \$1,568 | \$2,102 | \$3,631 | \$ 967 | \$1,568 | \$2,102 | \$3,631 |
| <i>Minimum total Fund operating expenses</i> | \$ 788 | \$1,031 | \$1,207 | \$1,850 | \$ 788 | \$1,031 | \$1,207 | \$1,850 |
| If you do not withdraw any of your Contract Value at the end of each year shown | | | | | | | | |
| <i>Maximum total Fund operating expenses</i> | \$ 337 | \$1,028 | \$1,742 | \$3,631 | \$ 337 | \$1,028 | \$1,742 | \$3,631 |
| <i>Minimum total Fund operating expenses</i> | \$ 158 | \$ 491 | \$ 847 | \$1,850 | \$ 158 | \$ 491 | \$ 847 | \$1,850 |
| If you decide to begin the Annuity Phase at the end of each year shown | | | | | | | | |
| <i>Maximum total Fund operating expenses</i> | N/A | N/A | \$1,742 | \$3,631 | N/A | N/A | \$1,742 | \$3,631 |
| <i>Minimum total Fund operating expenses</i> | N/A | N/A | \$ 847 | \$1,850 | N/A | N/A | \$ 847 | \$1,850 |

We estimate that the Annual Contract Maintenance Charge under the current expenses would be \$40 or, as percentage, 0.04%.

C-Share

| Years | Current Expenses | | | | Maximum Expenses | | | |
|--|------------------|---------|---------|---------|------------------|---------|---------|---------|
| | 1 | 3 | 5 | 10 | 1 | 3 | 5 | 10 |
| If you withdraw all of your Contract Value at the end of each year shown | | | | | | | | |
| <i>Maximum total Fund operating expenses</i> | \$ 382 | \$1,160 | \$1,957 | \$3,804 | \$ 382 | \$1,160 | \$1,957 | \$3,804 |
| <i>Minimum total Fund operating expenses</i> | \$ 203 | \$ 628 | \$1,078 | \$2,059 | \$ 203 | \$ 628 | \$1,078 | \$2,059 |
| If you do not withdraw any of your Contract Value at the end of each year shown | | | | | | | | |
| <i>Maximum total Fund operating expenses</i> | \$ 382 | \$1,160 | \$1,957 | \$3,804 | \$ 382 | \$1,160 | \$1,957 | \$3,804 |
| <i>Minimum total Fund operating expenses</i> | \$ 203 | \$ 628 | \$1,078 | \$2,059 | \$ 203 | \$ 628 | \$1,078 | \$2,059 |
| If you decide to begin the Annuity Phase at the end of each year shown | | | | | | | | |
| <i>Maximum total Fund operating expenses</i> | N/A | N/A | \$1,957 | \$3,804 | N/A | N/A | \$1,957 | \$3,804 |
| <i>Minimum total Fund operating expenses</i> | N/A | N/A | \$1,078 | \$2,059 | N/A | N/A | \$1,078 | \$2,059 |

We estimate that the Annual Contract Maintenance Charge under the current expenses would be \$40 or, as percentage, 0.04%.

The examples should not be considered a representation of past or future expenses. Your actual expenses may be higher or lower than those shown in the examples. The assumed 5% annual rate of return is purely hypothetical. Actual returns may be greater or less than the assumed hypothetical return.

General Information about Massachusetts Mutual Life Insurance Company, the Separate Account and the Investment Choices

The Company

In this prospectus, the “Company,” “we,” “us,” and “our” refer to Massachusetts Mutual Life Insurance Company (MassMutual). 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. Products and services are offered primarily through the Company’s distribution channels: MassMutual Financial Advisors, Direct to Consumer, Institutional Solutions and Workplace Solutions.

MassMutual is organized as a mutual life insurance company. MassMutual’s home office is located at 1295 State Street, Springfield, Massachusetts 01111-0001.

The assets of our General Account support our insurance and annuity obligations and are subject to our general liabilities from our business operations and to claims by our creditors. You should be aware that, unlike the Separate Account, the Company’s General Account is not segregated or insulated from the claims of the Company’s creditors. In addition, because of exemptive and exclusionary provisions, the General Account, unlike the Separate Account, has not been registered under the Securities Act of 1933 (1933 Act) or the Investment Company Act of 1940 (1940 Act). Because of this, the General Account is generally not subject to the provisions of the 1933 Act or the 1940 Act. However, disclosures regarding the General Account are subject to certain generally applicable provisions of the federal securities laws that require complete and accurate statements in prospectuses.

Financial Condition of the Company. We use General Account assets for many purposes, including to pay death benefits, Annuity Payments, and any amounts we provide to you through any elected additional feature that are in excess of your Contract Value allocated to the Separate Account. Any amounts that we may be obligated to pay under the Contract in excess of Contract Value are subject to our financial strength and claims-paying ability and our long-term ability to make such payments. The assets of the Separate Account, however, are also available to cover the liabilities of our General Account, but only to the extent they exceed our liabilities under the Contract and other contracts we issue that are funded by the Separate Account.

We issue other types of insurance policies and financial products as well, and we pay our obligations under those products from our assets in the General Account.

As an insurance company, we are required by state insurance regulation to hold a specified amount of reserves in order to meet the contractual obligations of our General Account to our insurance policies and financial products. We monitor our reserves so that we hold sufficient amounts to cover actual or expected contract and claims payments. In addition, we hedge our investments in our General Account and may require that purchasers of certain of our variable insurance products allocate Purchase Payments and Contract Value according to specified investment requirements. Even with these safeguards in place, there are risks to purchasing any insurance product and there is no guarantee that we will always be able to meet our claims-paying obligations.

State insurance regulators also require insurance companies to maintain a minimum amount of capital, which acts as a cushion if the insurer suffers a financial setback because of the inherent risks in the insurer’s operations. These risks include losses that we may incur as the result of defaults on the payment of interest or principal on our General Account assets – e.g., bonds, mortgages, general real estate investments, and stocks – as well as the loss in market value of these investments.

We continue to evaluate our investment portfolio to mitigate market risk and actively manage the investment in that portfolio.

The MassMutual financial information in the SAI includes a more detailed discussion of the risks inherent in our General Account assets. We encourage both existing and prospective Owners to read and understand our financial statements.

The Separate Account

We established Massachusetts Mutual Variable Annuity Separate Account 4 (Separate Account) as a separate account under Massachusetts law on July 9, 1997. The Separate Account is registered with the SEC as a unit investment trust under the 1940 Act.

The Separate Account holds the assets that underlie the Contracts (and certain other contracts that we issue), except any assets allocated to our General Account. We keep the Separate Account assets separate from the assets of our General Account and other separate accounts. The Separate Account is divided into Sub-Accounts, each of which invests exclusively in a single Fund.

We own the assets of the Separate Account. We credit gains to, or charge losses against, the Separate Account, whether or not realized, without regard to the performance of other investment accounts. The Separate Account’s assets may not be used to pay any of our liabilities other than those arising from the Contracts (or other contracts that we issue and that are funded by the Separate Account). If the Separate Account’s assets exceed the required reserves and other liabilities, we may transfer the excess to our General Account. The obligations of the Separate Account are not our generalized obligations and will be satisfied solely by the assets of the Separate Account.

We reserve the right, subject to compliance with applicable federal securities laws and regulations and any other federal or state law, to make certain changes to the structure and operation of the Separate Account, including, among other things:

- eliminate, combine or add Sub-Accounts;
- combine the Separate Account or any Sub-Account(s) with one or more different separate account(s) or Sub-Account(s);
- close existing Sub-Accounts to allocations of new Purchase Payments and Contract Value by current or new Owners;
- transfer assets of the Separate Account or any Sub-Account that we may determine to be associated with the class of contracts in which the Contract belongs to another separate account or Sub-Account;
- operate the Separate Account as a management investment company under the 1940 Act, or as any other form permitted by law;
- add or remove Funds or Fund classes in which the Sub-Accounts invest; and
- substitute a new Fund for a Fund in which a Sub-Account currently invests (new or substitute Funds may have different fees and expenses).

We will not eliminate or combine existing Sub-Accounts, or substitute any Funds in which the Sub-Accounts invest without any necessary prior approval of the appropriate state or federal regulatory authorities, and we will notify you of any such changes. We also will notify you when we add or remove Funds as investment choices under the Contract.

The Funds

The following Funds are available as investment choices under the Contract. If your Contract Value is allocated to a Fund, your Contract Value will be influenced by the investment performance of that Fund. **There is no assurance that any of the Funds will achieve their stated objective(s).**

These Funds are only available to insurance company separate accounts and qualified retirement plans, are not available for purchase directly by the general public, and are not the same as other mutual fund portfolios with very similar or nearly identical names and investment goals and policies that are sold directly to the public. While a Fund may have many similarities to these other publicly available mutual funds, you should not expect the investment results of the Fund to be the same as the investment results of those publicly available mutual funds. We do not guarantee or make any representation that the investment results of the Funds will be comparable to the investment results of any other mutual fund, even a mutual fund with the same investment adviser or manager.

You can find more detailed information about the Funds, including a description about their management, investment objectives, expenses, and potential risks, in the prospectuses for the Funds. The Fund prospectuses should be read in conjunction with this prospectus before you invest. You can obtain a copy of the Fund prospectuses by contacting our Service Center. **Note:** If you received a summary prospectus for a Fund listed below, please follow the directions on the first page of the summary prospectus to obtain a copy of the full Fund prospectus.

| Fund Type | Investment Funds in Which the Sub-Accounts Purchase Shares | Investment Fund's Adviser and Sub-Adviser |
|-------------------------|--|---|
| Asset Allocation | | |
| | MML Aggressive Allocation Fund (Service Class) ¹ | Adviser: MML Investment Advisers, LLC Sub-Adviser: N/A |
| | MML American Funds Core Allocation Fund (Service Class I) ¹ | Adviser: MML Investment Advisers, LLC Sub-Adviser: N/A |
| | MML Balanced Allocation Fund (Service Class) ¹ | Adviser: MML Investment Advisers, LLC Sub-Adviser: N/A |
| | MML Conservative Allocation Fund (Service Class) ¹ | Adviser: MML Investment Advisers, LLC Sub-Adviser: N/A |
| | MML Growth Allocation Fund (Service Class) ¹ | Adviser: MML Investment Advisers, LLC Sub-Adviser: N/A |
| | MML Moderate Allocation Fund (Service Class) ¹ | Adviser: MML Investment Advisers, LLC Sub-Adviser: N/A |
| Money Market | | |
| | MML U.S. Government Money Market Fund (Initial Class) ² | Adviser: MML Investment Advisers, LLC Sub-Adviser: Barings LLC |
| Fixed Income | | |
| | MML Dynamic Bond Fund (Service Class I) | Adviser: MML Investment Advisers, LLC Sub-Adviser: DoubleLine Capital LP |

| Fund Type | Investment Funds in Which the Sub-Accounts Purchase Shares | Investment Fund's Adviser and Sub-Adviser |
|---------------------------------|---|--|
| Fixed Income (continued) | | |
| | MML High Yield Fund (Service Class I) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> Barings LLC |
| | MML Inflation-Protected and Income Fund (Service Class) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> Barings LLC |
| | MML Managed Bond Fund (Service Class) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> Barings LLC |
| | MML Short-Duration Bond Fund (Service Class I) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> Barings LLC |
| | MML Total Return Bond Fund (Service Class I) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> Metropolitan West Asset Management, LLC |
| | Oppenheimer Global Strategic Income Fund/VA (Service) | <i>Adviser:</i> OFI Global Asset Management, Inc. <i>Sub-Adviser:</i> OppenheimerFunds, Inc. |
| Balanced | | |
| | MML Blend Fund (Service Class) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> Barings LLC |
| Large Cap Value | | |
| | MML Equity Fund (Service Class) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Advisers:</i> OppenheimerFunds, Inc. and Brandywine Global Investment Management, LLC |
| | MML Equity Income Fund (Service Class) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> T. Rowe Price Associates, Inc. |
| | MML Fundamental Value Fund (Service Class I) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> Boston Partners Global Investors, Inc. |
| | MML Income & Growth Fund (Service Class) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> Barrow, Hanley, Mewhinney & Strauss, LLC |
| Large Cap Blend | | |
| | Fidelity [®] VIP Contrafund [®] Portfolio (Service Class 2) | <i>Adviser:</i> Fidelity Management & Research Company <i>Sub-Adviser:</i> FMR Co., Inc. |
| | MML Focused Equity Fund (Service Class I) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> Wellington Management Company LLP |
| | MML Growth & Income Fund (Service Class) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> Massachusetts Financial Services Company |
| | Oppenheimer Main Street Fund [®] /VA(Service) | <i>Adviser:</i> OFI Global Asset Management, Inc. <i>Sub-Adviser:</i> OppenheimerFunds, Inc. |
| Large Cap Growth | | |
| | MML American Funds [®] Growth Fund (Service Class I) ³ | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> N/A |
| | MML Blue Chip Growth Fund (Service Class) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> T. Rowe Price Associates, Inc. |
| | MML Fundamental Growth Fund (Service Class I) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> Wellington Management Company LLP |
| | MML Large Cap Growth Fund (Service Class) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> Loomis, Sayles & Company, L.P. |
| Small/Mid-Cap Value | | |
| | MML Mid Cap Value Fund (Service Class) | <i>Adviser:</i> MML Investment Advisers, LLC <i>Sub-Adviser:</i> American Century Investment Management, Inc. |

| Fund Type | Investment Funds in Which the Sub-Accounts Purchase Shares | Investment Fund's Adviser and Sub-Adviser |
|---|---|--|
| <i>Small/Mid-Cap Value (continued)</i> | | |
| | MML Small Company Value Fund (Service Class I) | Adviser: MML Investment Advisers, LLC Sub-Adviser: T. Rowe Price Associates, Inc. |
| | MML Small/Mid Cap Value Fund (Service Class) | Adviser: MML Investment Advisers, LLC Sub-Adviser: AllianceBernstein L.P. |
| <i>Small/Mid-Cap Blend</i> | | |
| | MML Small Cap Equity Fund (Service Class) | Adviser: MML Investment Advisers, LLC Sub-Adviser: OppenheimerFunds, Inc. |
| <i>Small/Mid-Cap Growth</i> | | |
| | MML Mid Cap Growth Fund (Service Class) | Adviser: MML Investment Advisers, LLC Sub-Adviser: T. Rowe Price Associates, Inc. |
| | MML Small Cap Growth Equity Fund (Service Class) | Adviser: MML Investment Advisers, LLC Sub-Adviser: Wellington Management Company LLP |
| | Oppenheimer Discovery Mid Cap Growth Fund/VA (Service) | Adviser: OFI Global Asset Management, Inc. Sub-Adviser: OppenheimerFunds, Inc. |
| <i>International/Global</i> | | |
| | MML American Funds® International Fund (Service Class I) ³ | Adviser: MML Investment Advisers, LLC Sub-Adviser: N/A |
| | MML Foreign Fund (Service Class) | Adviser: MML Investment Advisers, LLC Sub-Adviser: Templeton Investment Counsel, LLC |
| | MML Global Fund (Service Class I) | Adviser: MML Investment Advisers, LLC Sub-Adviser: Massachusetts Financial Services Company |
| | MML International Equity Fund (Service Class I) | Adviser: MML Investment Advisers, LLC Sub-Adviser: Harris Associates L.P. |
| | MML Strategic Emerging Markets Fund (Service Class I) | Adviser: MML Investment Advisers, LLC Sub-Adviser: OppenheimerFunds, Inc. |
| | Oppenheimer Global Fund/VA (Service) | Adviser: OFI Global Asset Management, Inc. Sub-Adviser: OppenheimerFunds, Inc. |
| | Oppenheimer International Growth Fund/VA (Service) | Adviser: OFI Global Asset Management, Inc. Sub-Adviser: OppenheimerFunds, Inc. |
| <i>Specialty</i> | | |
| | BlackRock 60/40 Target Allocation ETF V.I. Fund (Class III) ^{1, 4} | Adviser: BlackRock Advisors, LLC Sub-Adviser: N/A |
| | Ivy VIP Asset Strategy (Class II) | Adviser: Ivy Investment Management Company Sub-Adviser: N/A |
| | MML Asset Momentum Fund (Service Class I) | Adviser: MML Investment Advisers, LLC Sub-Adviser: Barings LLC |
| | MML Equity Rotation Fund (Service Class I) | Adviser: MML Investment Advisers, LLC Sub-Adviser: Barings LLC |
| | MML Managed Volatility Fund (Service Class) | Adviser: MML Investment Advisers, LLC Sub-Adviser: Gateway Investment Advisers, LLC |
| | MML Special Situations Fund (Service Class I) | Adviser: MML Investment Advisers, LLC Sub-Adviser: Barings LLC |

1 *These are fund-of-funds investment choices. They are known as fund-of-funds because they invest in other underlying funds. A Fund offered in a fund-of-funds structure may have higher expenses than a direct investment in its underlying funds because a fund-of-funds bears its own expenses and indirectly bears its proportionate share of expenses of the underlying funds in which it invests.*

2 *You could lose money by investing in the Fund. Although the Fund seeks to preserve the value of your investment at \$1.00 per share, it cannot guarantee it will do so. An investment in the Fund is not insured or guaranteed by the Federal Deposit Insurance Corporation or any other government agency. The Fund's sponsor has no legal obligation to provide financial support to the Fund, and you should not expect that the sponsor will provide financial support to the Fund at any time. The yield of this Fund may become very low during periods of low interest rates. After deduction of Separate Account charges, the yield in the Sub-Account that invests in this Fund could be negative.*

- 3 *The Fund is a “feeder” fund, meaning that it does not buy investment securities directly, but instead invests in shares of a corresponding “master” fund, which in turn purchases investment securities. A Fund offered in a master-feeder structure may have higher expenses than those of a Fund which invests directly in securities because the “feeder” fund bears its own expenses in addition to those of the “master” fund. You should read the Fund prospectus for more information about this “feeder” fund.*
- 4 *BlackRock 60/40 Target Allocation ETF V.I. Fund formerly known as BlackRock iShares® Dynamic Allocation V.I. Fund.*

Conflicts of Interest. The Funds available with the Contract may also be available to registered separate accounts offering variable annuity and variable life products of other affiliated and unaffiliated insurance companies, as well as to the Separate Account and other separate accounts of MassMutual. Although we do not anticipate any disadvantages to this, it is possible that a material conflict may arise between the interests of the Separate Account and one or more of the other separate accounts participating in the Funds. A conflict may occur, for example, as a result of a change in law affecting the operations of variable life and variable annuity separate accounts, differences in the voting instructions of the Owners and payees and those of other insurance companies, or some other reason. In the event of a conflict of interest, we will take steps necessary to protect Owners and payees, including withdrawing the Separate Account from participation in the Funds involved in the conflict or substituting shares of other funds.

We do not recommend or endorse any particular Fund, and we do not provide investment advice. You are responsible for choosing the Funds, and the amounts allocated to each, that are appropriate for your own individual circumstances and your investment goals, financial situation, and risk tolerance. Because many Funds have similar names, be sure to state or write the full name of the Sub-Account when providing your allocation instructions to ensure that your allocation instructions are in Good Order. **You bear the risk of any decline in your Contract Value resulting from the performance of the Funds that you choose.**

Selection of Funds. When we select the Funds offered through the Contract, we consider various factors, including, but not limited to, asset class coverage, the strength of the adviser’s or sub-adviser’s reputation and tenure, brand recognition, performance, and the capabilities and qualifications of each investment firm. We may also consider whether the Fund, its service providers (e.g., the investment adviser or sub-advisers), or its affiliates will make payments to us or our affiliates in connection with certain administrative, marketing, and support services, or whether affiliates of the Fund can provide marketing and distribution support for sales of the Contracts. (For additional information on these arrangements, see the section below entitled “Compensation We Receive from Funds, Advisers and Sub-Advisers.”) We review the Funds periodically and may remove a Fund, or limit its availability to new Purchase Payments and/or transfers of Contract Value if we determine that a Fund no longer satisfies one or more of the selection criteria, and/or if the Fund has not attracted significant allocations from Owners.

Compensation We Receive from Funds, Advisers and Sub-Advisers

Compensation We Receive from Advisers and Sub-Advisers. We and certain of our insurance affiliates receive compensation from the advisers and sub-advisers to some of the Funds. We may use this compensation to pay expenses that we incur in promoting, issuing, distributing and administering the Contract, and in providing services on behalf of the Funds in our role as intermediary to the Funds. The amount of this compensation is determined by multiplying a specified annual percentage rate by the average net assets held in that Fund that are attributable to the variable annuity and variable life insurance products issued by us and our affiliates that offer the particular Fund (MassMutual’s variable contracts). These percentage rates differ, but currently do not exceed 0.25%. Some advisers and sub-advisers pay us more than others; some do not pay us any such compensation.

The compensation may not be reflected in a Fund’s expenses because this compensation may not be paid directly out of a Fund’s assets. These payments also may be derived, in whole or in part, from the advisory fee deducted from Fund assets. Owners, through their indirect investment in the Funds, bear the costs of these advisory fees (see the Funds’ prospectuses for more information).

In addition, we may receive fixed dollar payments from the advisers and sub-advisers to certain funds so that the adviser and sub-adviser can participate in sales meetings conducted by MassMutual. Attending such meetings provides advisers and sub-advisers with opportunities to discuss and promote their funds. **For a list of the Funds whose advisers and sub-advisers currently pay such compensation, visit www.MassMutual.com/legal/compensation-arrangements or call our Service Center at the number shown on page 1 of this prospectus.**

Compensation We Receive from Funds. We and certain of our affiliates also receive compensation from certain Funds pursuant to Rule 12b-1 under the 1940 Act. This compensation is paid out of the Fund’s assets and may be as much as 0.25% of the average net assets of an underlying Fund which are attributable to MassMutual’s variable contracts. An investment in a Fund with a 12b-1 fee will increase the cost of your investment in the Contract.

Compensation and Fund Selection. The compensation that we receive may be significant and we may profit from this compensation. Additionally, when selecting the Funds that will be available with MassMutual’s variable contracts, we consider the amount of compensation that we receive from the Funds, their advisers, sub-advisers, or their distributors along with the Funds’ name recognition, asset class, the managers’ reputation, and fund performance. We offer certain Funds through the Contract at least in part because they are managed by us or an affiliate.

Ownership

Owner

In this prospectus, “you” and “your” refer to the Owner of the Contract. The Owner is named at the time you apply for a Contract. The Owner can be an individual or non-natural person (e.g., a corporation, limited liability company, partnership or certain other entities). The Owner must be at least the age of majority in the state the Contract is issued, and may not be older than age 85 (age 75 if Return of Purchase Payment Death Benefit is selected) on the Issue Date. The maximum issue age for the Contract and certain of its additional features may be reduced in connection with the offer of the Contract through certain broker-dealers. You should discuss this with your registered representative. See “Death Benefit – Return of Purchase Payment Death Benefit” for age limits applicable to that feature.

If your Contract is non-qualified and owned by a non-natural person, the Contract will generally not be treated as an annuity for tax purposes. This means that gain in the Contract will be taxed each year while the Contract is in the Accumulation Phase. This treatment is not generally applied to a Contract held by a trust or other entity as an agent for a natural person. Before purchasing a Contract to be owned by a non-natural person or before changing ownership on an existing Contract that will result in it being owned by a non-natural person, you should consult a tax adviser to determine the tax impact. See “Taxes – Non-Natural Owner.”

As the Owner of the Contract, you exercise all rights under the Contract. On or after the Annuity Date, you continue as the Owner. You may change the Owner of a Non-Qualified Contract, other than a Contract held as a Non-Qualified Beneficiary Annuity at any time by Written Request. Except for Contracts issued in California or New York, you may not change the Owner(s) without our approval. We will refuse or accept any requested change on a non-discriminatory basis.

The change will take effect on the date the Written Request is signed, unless you specify otherwise. We will not be liable for any payment made or action taken prior to our receipt and approval of the Written Request. A change of Owner that we allow will automatically revoke any prior designation of Owner. Changing the Owner may result in tax consequences. See “Taxes – Tax Treatment of Assignments” for more information.

Contracts under qualified plans generally must be held by the plan sponsor or plan trustee. Except for Keogh plans and Individual Retirement Annuities (IRAs), an individual cannot be the Owner of a Contract held to fund a qualified plan. Therefore, the individuals covered by the qualified plan have no ownership rights.

Joint Owner

The Contract can be owned by Joint Owners. However, the Contract cannot be jointly owned if it is a Qualified Contract, an Owner is a non-natural person, or by more than two individuals. The Joint Owner must be at least the age of majority in the state the Contract is issued, and may not be older than age 85 (age 75 if Return of Purchase Payment Death Benefit is selected) on the Issue Date. See “Death Benefit – Return of Purchase Payment Death Benefit” for age limits applicable to that feature.

If the Contract is jointly owned, we will use the Age of the oldest Owner to determine all applicable benefits. If there are Joint Owners, we require authorization from both Owners for all transactions.

Annuitant

The Annuitant is the person(s) on whose life (or lives, in the case of joint Annuitants) we base Annuity Payments, with the exception of the non-lifetime contingent option. See “The Annuity Phase – Non-Lifetime Contingent Option – Period Certain Annuity Option.” You designate the Annuitant(s) at the time of application. A Contract may not have more than two Annuitants. There is no minimum age applicable to the Annuitant or joint Annuitant; however, any Annuitant must be at least 18 on the Annuity Date in order for you to elect a life contingent Annuity Option. Annuitants may not be older than age 85 (age 75 if Return of Purchase Payment Death Benefit is selected) as of the Issue Date. See “Death Benefit – Return of Purchase Payment Death Benefit” for age limits applicable to that feature.

You may change the Annuitant(s) before the Annuity Date, subject to our approval. However, the Annuitant(s) may not be changed on a Contract owned by a non-natural person unless the Contract is owned by a qualified plan. The Annuitant cannot be changed if the Contract is a Non-Qualified Beneficiary Annuity or an individually owned Qualified Contract. We will use the Age of the oldest Annuitant to determine all applicable benefits under a Contract owned by a non-natural person.

When calculating Annuity Payments, we determine Age based on each Annuitant’s nearest birthday on the Annuity Date. See “The Annuity Phase – Annuity Age.”

The Annuitant may not be changed nor may an Annuitant be added after the Annuity Date on any portion of the Contract Value that has been applied to an Annuity Option. Any change of an Annuitant must be made by Written Request. An approved change will take effect on the date the Written Request is signed, unless you specify otherwise. We will not be liable for any payment made or action taken prior to our receipt of the Written Request. A change of Annuitant that we allow will automatically revoke any prior designation of Annuitant.

Beneficiary

The Beneficiary is the person(s) or entity(ies) you name to receive any death benefit. You name the Beneficiary at the time of application. Unless an irrevocable Beneficiary has been named, you can change the Beneficiary at any time before you die. If you name an irrevocable Beneficiary but choose to change the Beneficiary, you must get written authorization from the irrevocable Beneficiary on our form in Good Order to our Service Center.

If you are married and your Contract is issued under an ERISA plan, your ability to name a primary Beneficiary other than your spouse is restricted. If the Owner is a non-natural person, the Owner must be the sole primary Beneficiary unless we allow otherwise.

If there is a joint Annuitant on an individually owned Qualified Contract, the joint Annuitant must also be the sole primary Beneficiary.

Non-Qualified Beneficiary Annuity

A Non-Qualified Beneficiary Annuity, also referred to as a “non-qualified stretch” or an inherited non-qualified annuity, is an annuity contract that is held for the benefit of the beneficiary of a deceased annuity contract owner in order to distribute death proceeds of a non-qualified annuity to the beneficiary over that beneficiary’s life expectancy in accordance with the required distribution rules of IRC Section 72(s). See “Taxes – Taxation of Non-Qualified Contracts – Distributions After Death of Owner” for more information.

If a Contract is purchased as a Non-Qualified Beneficiary Annuity, the death benefit provisions will be applied as if the Owner is deceased and the Beneficiary has elected death benefit payout Option 4. See “Death Benefit – Death Benefit Payment Options During the Accumulation Phase – Non-Qualified Beneficiary Annuity” for more information.

Eligibility Requirements/Restrictions for a Contract purchased as a Non-Qualified Beneficiary Annuity:

Note, these restrictions differ from those imposed on a Beneficiary who elects a Non-Qualified Beneficiary Annuity as a death benefit payout option under an existing Contract.

- The annuity Contract will be titled in the Beneficiary’s name as Beneficiary of the deceased Owner, and cannot be transferred. The Beneficiary must be the Annuitant, and the Annuitant cannot be changed.
- Distributions must begin within one year of the Owner’s death. Required distributions will be calculated based on the Beneficiary’s life expectancy as determined under the applicable Internal Revenue Service (IRS) table, and will be withdrawn from each Sub-Account in the ratio that your value in each bears to your Contract Value.
- Distributions required under IRC Section 72(s) must be made at least annually through a systematic withdrawal program (SWP) that we administer. This SWP cannot be changed or terminated. Distributions made under the SWP will be treated as variable Annuity Payments for income tax purposes. In order to qualify as Annuity Payments for income tax purposes, payments under the SWP will continue to be made even if you take additional withdrawals from the Contract.
- Any withdrawals from a Contract issued as a Non-Qualified Beneficiary Annuity in excess of the required distributions made under our SWP program may be subject to a CDSC.
- The source of the funds used to purchase the Contract must be a 1035 exchange of (i) death benefit proceeds payable to the Beneficiary under a non-qualified annuity contract, or (ii) a Non-Qualified Beneficiary Annuity contract under which the Beneficiary is currently taking required distributions based upon his or her life expectancy in accordance with IRC Section 72(s)(2).
- Additional Purchase Payments cannot be applied to the Contract.
- Joint ownership is not allowed.
- Upon the death of the Annuitant, a death benefit, under the terms of the Contract, will be paid to the succeeding Beneficiary in a lump sum or over the Annuitant’s remaining life expectancy as determined under the applicable IRS table.
- A Contract may only be purchased as a Non-Qualified Beneficiary Annuity by the Beneficiary of the contract owner whose death triggered the required distribution requirements of IRC Section 72(s). A Contract may not be purchased by a successor beneficiary as a “second generation” Non-Qualified Beneficiary Annuity.
- A Non-Qualified Beneficiary Annuity cannot be purchased by a Beneficiary that is a non-natural person.

You should consult a qualified tax adviser for advice prior to establishing a Non-Qualified Beneficiary Annuity.

Beneficiary IRA

Beneficiary, Inherited, Legacy or “Stretch” IRAs are all terms used to describe an IRA that is used exclusively to distribute death proceeds of an IRA or other qualified investment to the beneficiary over that beneficiary’s life expectancy in order to meet the RMD rules of IRC Section 401(a)(9). See “Taxes – Required Minimum Distributions for Qualified Contracts” for more information. If a Contract is purchased as a Beneficiary IRA, the death benefit provisions will be applied as if the IRA Owner is deceased and the Beneficiary has elected death benefit payout Option 4. See “Death Benefit – Death Benefit Payment Options During the Accumulation Phase” for more information.

Eligibility Requirements/Restrictions for a Contract purchased as a Beneficiary IRA:

Note, these restrictions differ from those imposed on a Beneficiary who elects a Beneficiary IRA as a death benefit payout option under an existing Contract. See “Death Benefit – Death Benefit Payment Options During the Accumulation Phase – Beneficiary IRA.”

- The annuity Contract will be titled in the Beneficiary’s name as Beneficiary of the deceased owner. The Beneficiary must be the Annuitant, and the Annuitant cannot be changed.
- For non-spousal Beneficiary IRAs, RMDs must begin by December 31st of the year following the year of the date of the owner’s death. For spousal Beneficiary IRAs, RMDs may be deferred until the year the original Owner would have attained age 70½. The RMD amount will generally be calculated based on the Beneficiary’s life expectancy and will be withdrawn from each Sub-Account in the ratio that your value in each bears to your Contract Value. If the original owner died after attaining age 70½ and was younger than the Beneficiary, the RMD amount will be calculated based on the original owner’s life expectancy in the year of his or her death.
- If the Beneficiary is a trust, a Contract may only be purchased as a Beneficiary IRA if the trust qualifies as a “see-through” trust. For see-through trusts, RMDs must be calculated based upon the life expectancy of the oldest trust beneficiary and the oldest trust beneficiary must be the Annuitant. In order to be a see-through trust, the trust must be valid under state law and be irrevocable, and all beneficiaries, current and future, must be identifiable from the trust instrument. If any beneficiary of the trust is not an individual, the trust is not a see-through trust and cannot establish a Beneficiary IRA.
- RMDs must be made at least annually through a SWP that we administer. This SWP cannot be terminated.
- Any withdrawals from a Contract issued as a Beneficiary IRA in excess of the RMD made under our SWP program may be subject to a CDSC.
- The source of funds to be invested must be from a traditional IRA, SEP IRA, SIMPLE IRA, Beneficiary IRA, TSA, 401(a) or a Qualified Employee Plan (includes Pension Plan, Money Purchase Pension Plan, Profit Sharing Plan, Keogh (HR10), Target Benefit Plan).
- Additional contributions cannot be applied to a Beneficiary IRA.
- Joint ownership is not allowed.
- Upon the death of the Annuitant, a death benefit, under the terms of the Contract, will be paid to the succeeding Beneficiary in a lump sum or over the Annuitant’s remaining life expectancy as determined by the applicable IRS table.
- A Contract may only be purchased as a Beneficiary IRA by the beneficiary of the IRA owner/qualified plan participant whose death triggered the RMD requirements of IRC Section 401(a)(9). A Contract may not be purchased as a “second generation” Beneficiary IRA by a successor beneficiary.

You should consult a qualified tax adviser for advice prior to establishing a Beneficiary IRA.

Purchasing a Contract

For certain distribution channels, this product is no longer available in the tax-qualified market. However, we do continue to administer existing Contracts, and you may continue making additional Purchase Payments to your Contract, subject to certain restrictions.

To purchase a Contract, you must submit your initial Purchase Payment to your registered representative or to us at our Service Center. Once we receive your initial Purchase Payment and the necessary information at our Service Center, we will credit your initial Purchase Payment to your Contract within two Business Days. If you do not give us all of the information we need, we will notify you. When we receive all of the information we need, we will apply your initial Purchase Payment within two Business Days. If we do not have the necessary information to issue your Contract within five Business Days, then we will either return your Purchase Payment or ask your permission to retain your Purchase Payment until all the necessary information is received.

The date when we credit your initial Purchase Payment to your Contract is the Issue Date. We use the Issue Date to determine Contract Years and Contract Anniversaries.

Delay of Contract. Our receipt of your initial Purchase Payment may be delayed because of circumstances outside of our control (for example, delays because of the failure of the selling broker-dealer or your registered representative to forward the Purchase Payment in Good Order to us promptly or because of delays in determining whether the Contract is suitable for you). Any such delays will affect when we can issue your Contract and when your initial Purchase Payment will be allocated among the investment choices under the Contract.

Purchase Payments

The minimum amount we accept for an initial Purchase Payment is:

- \$10,000 when the Contract is bought as a Non-Qualified Contract; or
- \$5,000 if you are buying the Contract as a Qualified Contract.

You can make additional Purchase Payments to your Contract throughout the Accumulation Phase, subject to the conditions noted below. You can make additional Purchase Payments by sending payments to the appropriate purchase payment processing service centers:

- **by check** that clearly indicates your name and Contract number mailed to:

First Class Mail

MassMutual
P.O. Box 758510
Topeka, KS 66675-8550

Overnight Mail

MassMutual
Mail Zone 511
5801 SW 6th Ave.
Topeka, KS 66636-0001

- **by Wire Transfer** to:

UMB Bank
Kansas City, MO
ABA #101000695
Massachusetts Mutual Life Insurance Company
Account #9872009118
Reference: Annuity Contract #
Name: (Your Name)

Additional Purchase Payments of less than \$500 are subject to our approval. The maximum total Purchase Payments we will allow without home office approval is \$1,500,000. In calculating the maximum, we will take into account the cumulative Purchase Payments on the Contract and multiple purchases of the Contract by the same Owner (whether as the sole Owner or Joint Owner), or with the same Annuitant (whether as the Annuitant or joint Annuitant).

If you add more money to your Contract by making additional Purchase Payments, we will credit these amounts to your Contract on the Business Day we receive them and all necessary information, in Good Order, at one of our purchase payment processing service centers. If we receive your Purchase Payment on a Non-Business Day or after the Close of Business, we will credit the amount to your Contract effective the next Business Day.

We have the right to reject any application or Purchase Payment. We will exercise this right to respond to changes in any of the following: (1) market or economic conditions, (2) regulatory requirements, (3) current and future anticipated expenses, (4) unfavorable mortality experience, or (5) our financial condition. If we exercise this right, we will do so in the same manner for all Owners, and we will provide you with Written Notice of any change in procedures related to the refusal of Purchase Payments before such a change takes effect.

Automatic Investment Plan (AIP). Under the AIP, you may authorize us to periodically draw funds from an account of your choosing (restrictions may apply) for the purpose of making Purchase Payments to your Contract. Contact our Service Center for information regarding setting up an AIP and any restrictions regarding use of the AIP. If you participate in the AIP, the minimum additional Purchase Payment is \$100. You may not elect the AIP if you have a Separate Account Dollar Cost Averaging Program in effect. Additionally, the AIP may not be available for Contracts held as a SEP IRA or SIMPLE IRA.

Allocation of Purchase Payments

When you purchase your Contract, we allocate your Purchase Payment among the investment choices according to the allocation instructions you provide. If you make additional Purchase Payments, we will allocate them based on your current allocation instructions, unless you request a different allocation by sending us a Written Request.

Any allocations to the Sub-Accounts that invest in the Funds that you have selected must be in whole percentages and must total 100%.

If you have selected the Return of Purchase Payments Death Benefit, there are allocation restrictions. See “Death Benefit – Return of Purchase Payment Death Benefit – Return of Purchase Payment Death Benefit Allocation Restrictions” for allocation restrictions applicable to that feature.

Contract Value

Your Contract Value is the sum of your values in the Sub-Accounts.

The value of your investments in the Separate Account will vary depending on the investment performance of the Funds you choose. In order to keep track of your Contract Value in the Separate Account, we use a unit of measure called an Accumulation Unit.

Accumulation Units. Every Business Day we determine the value of an Accumulation Unit for each of the Sub-Accounts. Changes in the Accumulation Unit value reflect the investment performance of the Fund as well as deductions for insurance and other charges. The value of an Accumulation Unit may go up or down from Business Day to Business Day.

When you make a Purchase Payment, we credit your Contract with Accumulation Units. We determine the number of Accumulation Units to credit by dividing the amount of the Purchase Payment allocated to a Sub-Account by the value of the Accumulation Unit for that Sub-Account. When you make a withdrawal, we deduct from your Contract Accumulation Units representing the withdrawal amount.

We calculate the value of an Accumulation Unit for each Sub-Account after the Close of Business each Business Day. Any change in the Accumulation Unit value will be reflected in your Contract Value.

Example:

On Monday we receive an additional Purchase Payment of \$5,000 from you. You have told us you want this to go to the MML Managed Bond Sub-Account. When the NYSE closes on that Monday, we determine that the value of an Accumulation Unit for the MML Managed Bond Sub-Account is \$13.90. We then divide \$5,000 by \$13.90 and credit your Contract on Monday night with 359.71 Accumulation Units for the MML Managed Bond Sub-Account.

Right to Cancel Your Contract

You have a right to examine your Contract. If you change your mind about owning your Contract, you can cancel it within ten calendar days after receiving it. This time period may vary by state, but will never be less than ten calendar days. When you cancel the Contract within this time period, we will not assess a CDSC. Unless your state has other requirements, you will receive back your Contract Value plus any fees or charges previously deducted from your Purchase Payments as of the Business Day we receive your Written Request in Good Order at our Service Center, and your Contract will be terminated. If state law requires us to return the amount of your Purchase Payments, then we will return the greater of: (i) the full amount of any Purchase Payment(s) less any withdrawals, or (ii) your Contract Value plus any fees or charges previously deducted from your Purchase Payments. If you purchase the Contract as an IRA, we will return the greater of your Purchase Payments less any withdrawals, or the Contract Value plus any fees or charges previously deducted from your Purchase Payments.

Sending Requests in Good Order

From time to time you may want to submit a request for transfer among investment choices, a withdrawal, a change of Beneficiary, or some other action. We can only act upon your request if we receive it in “Good Order.” To help protect against unauthorized or fraudulent telephone instructions, we will use reasonable procedures to confirm that telephone instructions given to us are genuine. We may record all telephone instructions.

In addition to Written Requests, we may allow requests to our Service Center:

- by fax at (785) 286-6106,
- by e-mail at MassMutual.services@se2.com,
- by telephone at (866) 645-2362, or
- by internet at www.MassMutual.com.

Fax, telephone, e-mail, or internet transactions may not always be available. Fax, telephone, and computer systems can experience outages or slowdowns for a variety of reasons. These outages or slowdowns may prevent or delay our receipt of your request. We may make these additional methods available at our discretion. They may be suspended or discontinued at any time without notice. Not all transaction types can be requested by fax, telephone, or the internet.

Transfers and Transfer Programs

General Overview

We have the right to terminate, suspend, or modify the transfer and transfer program provisions described in this prospectus. We will exercise this right to respond to changes in any of the following: (1) market or economic conditions, (2) regulatory requirements, (3) current and future anticipated expenses, (4) unfavorable mortality experience, or (5) our financial condition. If we exercise this right, we will do so in the same manner for all Owners, and we will provide Owners with prior Written Notice of any change in procedures related to the transfer and transfer program provisions.

Generally, you can transfer all or part of your Contract Value among investment choices. However, there are restrictions that are detailed later in this section. You can make transfers by Written Request, e-mail, telephone, fax, or other authorized means. You must clearly indicate the amount and investment choices from and to which you wish to transfer.

Your transfer is effective at the Close of Business on the Business Day we receive your Written Request, in Good Order, at our Service Center. If we receive your transfer request at our Service Center in Good Order on a Non-Business Day or after Close of Business, your transfer request will be effective on the next Business Day.

Transfers During the Accumulation Phase

You may transfer all or part of your Contract Value allocated to a Sub-Account. You can make a transfer to or from any Sub-Account. See “Death Benefit – Return of Purchase Payment Death Benefit” for transfer restrictions applicable to that feature. During the Accumulation Phase, we do not assess a transfer fee. However, we reserve the right to only allow 12 free transfers per calendar year and to charge \$20 for each additional transfer in excess of 12. We waive these requirements if the transfer is made in connection with the Automatic Rebalancing Program or Separate Account Dollar Cost Averaging.

Currently, we do not restrict the amount you can transfer during the Accumulation Phase. However, we reserve the right to impose a minimum transfer amount of \$1,000. Currently, we do not require that a minimum balance remain in a Sub-Account after a transfer. However, we reserve the right to require that \$1,000 remain in the Sub-Account after a transfer unless you transfer your entire Contract Value in the Sub-Account. We will exercise these rights should we see a significant increase in transfer activity by Owners that leads to an increase in cost to administer the Contract. If we exercise these rights, we will do so in the same manner for all Owners, and we will provide Owners with prior Written Notice of our decision to assess a fee, impose a minimum transfer amount, or impose a minimum value that must remain in a Sub-Account after a transfer.

Transfers During the Annuity Phase

Transfers are not allowed during the Annuity Phase.

Transfer Programs

For detailed rules and restrictions pertaining to these programs and instructions for electing a program contact our Service Center.

Overview. We currently offer the following transfer programs: Separate Account Dollar Cost Averaging Program and Automatic Rebalancing Program.

These programs are only available during the Accumulation Phase of your Contract.

You may participate only in one of these programs at any one time.

You may not elect the AIP if you have a Separate Account Dollar Cost Averaging Program in effect.

We do not charge you for participation in these programs, though we reserve the right to charge for the programs in the future. We will exercise this right should we see a significant increase in transfer activity by Owners that leads to an increase in cost to administer the Contract. If we exercise this right, we will do so in the same manner for all Owners, and we will provide Owners with prior Written Notice of our decision to assess a fee.

Certain Sub-Accounts are not available within these programs if you have elected the Return of Purchase Payment Death Benefit. While the ROP is in effect, you may transfer Contract Value amongst any of the Sub-Accounts except those identified in “Death Benefit – Return of Purchase Payment Death Benefit – Return of Purchase Payment Death Benefit Allocation Restrictions.”

Separate Account Dollar Cost Averaging Program. This program allows you to systematically transfer a set amount from a Sub-Account to any of the other Sub-Account(s). By allocating amounts on a regular schedule as opposed to allocating the total amount at one particular time, you may be less susceptible to the impact of market fluctuations. Dollar cost averaging does not assure a profit and does not protect you against loss in declining markets. Since dollar cost averaging involves continuous investment in securities regardless of fluctuating price levels of such securities, you should consider your financial ability to continue the program through periods of fluctuating price levels.

Your Separate Account Dollar Cost Averaging Program will terminate:

- if you withdraw the total Contract Value;
- upon payment of the death benefit;
- if the last transfer you selected has been made;
- if there is insufficient Contract Value in the selected Sub-Account to make the transfer; or
- if we receive from you a Written Request or a request over the telephone to terminate the program at our Service Center prior to the next transfer date.

Automatic Rebalancing Program. Over time, the performance of each Sub-Account may cause your allocation to shift from your original allocation. You can direct us to automatically rebalance your Contract Value allocated to the Sub-Accounts in order to return to your original percentage allocations by selecting our Automatic Rebalancing Program.

This program will terminate:

- if you withdraw the total Contract Value;
- upon payment of the death benefit;
- if we receive any unscheduled transfer request; or
- if we receive from you a Written Request or request over the telephone to terminate the program at our Service Center prior to the next transfer date.

Limits on Frequent Trading and Market Timing Activity

The Contract and its investment choices are not designed to serve as vehicles for what we have determined to be frequent trading or market timing trading activity. We consider these activities to be abusive trading practices that can disrupt the management of a Fund in the following ways:

- by requiring the Fund to keep more of its assets liquid rather than investing them for long-term growth, resulting in lost investment opportunity; and
- by causing unplanned portfolio turnover.

These disruptions, in turn, can result in increased expenses and can have an adverse effect on Fund performance that could impact all Owners and Beneficiaries under the Contract, including long-term Owners who do not engage in these activities. Therefore, we discourage frequent trading and market timing trading activity and will not accommodate frequent transfers of Contract Value among the Funds. Organizations and individuals that intend to trade frequently and/or use market timing investment strategies should not purchase the Contract.

We have adopted policies and procedures to help us identify those individuals or entities that we determine may be engaging in frequent trading and/or market timing trading activities. We monitor trading activity to uniformly enforce those procedures. However, those who engage in such activities may employ a variety of techniques to avoid detection. Our ability to detect frequent trading or market timing may be limited by operational or technological systems, as well as by our ability to predict strategies employed by Owners (or those acting on their behalf) to avoid detection. Therefore, despite our efforts to prevent frequent trading and the market timing of Funds among the Sub-Accounts, there can be no assurance that we will be able to identify and curtail every instance of trading of those who trade frequently or those who employ a market timing strategy or those who act as intermediaries on behalf of such persons. Moreover, our ability to discourage and restrict frequent trading or market timing may be limited by decisions of state regulatory bodies and court orders that we cannot predict.

In addition, some of the Funds are available with variable products issued by other insurance companies. We do not know the effectiveness of the policies and procedures used by these other insurance companies to detect frequent trading and/or market timing. As a result of these factors, the Funds may reflect lower performance and higher expenses across all Contracts as a result of undetected abusive trading practices.

If we, or any investment adviser to any of the Funds available with the Contract, determine that an Owner's transfer patterns reflect frequent trading or employment of a market timing strategy, we will allow the Owner to submit transfer requests by regular mail only. We will not accept other Owner transfer requests if submitted by overnight mail, fax, the telephone, our website, or any other type of electronic medium. Additionally, we may reject any single trade that we determine to be abusive or harmful to the Fund. Orders for the purchase of Fund shares may be subject to acceptance by the Fund. Therefore, we reserve the right to reject, without prior notice, any Fund transfer request if the investment in the Fund is not accepted for any reason.

The Funds may assess a redemption fee (which we reserve the right to collect) on shares held for a relatively short period. The prospectuses for the Funds describe the Funds' frequent trading and market timing policies and procedures, which may be

more or less restrictive than the policies and procedures we have adopted. We have entered into a written agreement, as required by SEC regulation, with each Fund or its principal underwriter that obligates us to provide to the Fund promptly upon request certain information about the trading activity of individual Owners, and to execute instructions from the Fund to restrict or prohibit further purchases or transfers by specific Owners who violate the frequent trading or market timing policies established by the Fund.

Owners and other persons with interests in the Contracts should be aware that the purchase and redemption orders received by the Funds generally are “omnibus” orders from intermediaries, such as retirement plans or separate accounts funding variable insurance contracts. The omnibus orders reflect the aggregation and netting of multiple orders from individual owners of variable contracts and/or individual retirement plan participants. The omnibus nature of these orders may limit the Funds in their ability to apply their frequent trading or market timing policies and procedures. It may also require that we restrict or prohibit further purchases or transfers as requested by a Fund on all contracts owned by an Owner whose trading activity under one variable contract has violated a Fund’s frequent trading or market timing policy. If a Fund believes that an omnibus order reflects one or more transfer requests from Owners engaged in frequent trading or market timing activity, the Fund may reject the entire omnibus order.

We will notify you in writing if we reject a transfer or if we implement a restriction due to frequent trading or the use of market timing investment strategies. If we do not accept a transfer request, no change will be made to your allocations per that request. We will then allow you to resubmit the rejected transfer by regular mail only.

Additionally, we may in the future take any of the following restrictive actions that are designed to prevent the employment of a frequent trading or market timing strategy:

- not accept transfer instructions from an Owner or other person authorized to conduct a transfer;
- limit the number of transfer requests that can be made during a Contract Year; and
- require the value transferred into a Fund to remain in that Fund for a particular period of time before it can be transferred out of the Fund.

We will apply any restrictive action we take uniformly to all Owners we believe are employing a frequent trading or market timing strategy. These restrictive actions may not work to deter frequent trading or market timing activity.

We reserve the right to revise our procedures for detecting frequent trading and/or market timing at any time without prior notice if we determine it is necessary to do so in order to better detect frequent trading and/or market timing, to comply with state or federal regulatory requirements, or to impose different restrictions on frequent traders and/or market timers. If we modify our procedures, we will apply the new procedure uniformly to all Owners.

Withdrawals

Your ability to take a withdrawal may be restricted by certain provisions of the Internal Revenue Code. Furthermore, if your Contract is issued under a qualified plan, your ability to take a withdrawal may be restricted by your plan documents. Income taxes, tax penalties, a CDSC and certain restrictions may apply to any withdrawal you make.

During the Accumulation Phase you may make either partial or full withdrawals of your Contract Value. When making a partial withdrawal, you must withdraw at least \$100 or your entire Contract Value in a Sub-Account, if less. We reserve the right to increase the minimum withdrawal amount to \$500. We will exercise this right should we see a significant increase in withdrawal activity by Owners that leads to an increase in cost to administer the Contract. If we exercise this right, we will do so in the same manner for all Owners, and we will provide Owners with prior Written Notice of our decision to increase the minimum withdrawal amount.

You may only make a partial withdrawal if at least \$2,000 in Contract Value remains following the partial withdrawal, unless the payment is under a Systematic Withdrawal Program (SWP) and the withdrawal is an RMD or is made under a SWP intended to qualify as a series of substantially equal periodic payments for purposes of avoiding the additional 10% tax applicable to distributions that occur prior to age 59½. Otherwise, you may only make a full withdrawal. Unless you instruct us otherwise, we take any partial withdrawal proportionally from your Contract Value in your selected investment choices.

When a partial withdrawal is made from a Contract, we reflect the withdrawal as a pro rata reduction to the value of the Contract’s death benefit if you have elected the Return of Purchase Payment Death Benefit. We describe this reduction under “Death Benefit – Return of Purchase Payment Death Benefit” and “Appendix C – Return of Purchase Payment Death Benefit Example – Impact of Withdrawal and Determination of Benefit.”

After you withdraw your full Contract Value, the Contract terminates when there are no Annuity Payments remaining and does not provide a death benefit other than any death benefit that may be provided under any portion of your Contract that was previously applied to an Annuity Option.

When you make a full withdrawal you will receive the value of your Contract:

- less any applicable CDSC;

- less any applicable Premium Tax;
- less any applicable annual contract maintenance charge; and
- less any Purchase Payments we credited to your Contract that have not cleared the bank, until they clear the bank.

See “Appendix B – Contingent Deferred Sales Charge Example.”

Requests in Writing. To request a withdrawal in writing, submit either our partial withdrawal or full withdrawal form in Good Order to our Service Center. If your withdrawal involves an exchange or transfer of assets to another financial institution, we also require a “letter of acceptance” from the financial institution.

Requests by Other Means. You may request certain partial and full withdrawals by other means we authorize such as e-mail, telephone, or fax. Contact our Service Center for details.

Withdrawal Effective Date. For Written Requests, your withdrawal is effective on the Business Day we receive, in Good Order at our Service Center:

- a) our partial withdrawal or full withdrawal form; and
- b) if applicable, a “letter of acceptance.”

If we receive this/these item(s) at our Service Center on a Non-Business Day or after the Close of Business, your withdrawal request will be effective on the next Business Day. For e-mail, telephone or fax requests, your withdrawal is effective on the Business Day we receive your request in Good Order, provided it is received prior to the Close of Business. For requests received after the Close of Business, your withdrawal will be effective on the next Business Day.

Delivery of Withdrawal Amount. We will pay any withdrawal amount within seven calendar days of the withdrawal effective date unless we are required to suspend or postpone withdrawal payments. See “Other Information – Payments We Make.”

We will generally pay any full or partial withdrawal to the Owner, unless you direct otherwise. If the Owner is a non-natural person, withdrawals will be paid to the Owner with the exception of RMD payments from a Contract owned by a qualified plan.

Systematic Withdrawal Program. *For detailed rules and restrictions pertaining to this program and instructions for electing the program contact our Service Center.*

The Systematic Withdrawal Program (SWP) allows you to set up automatic periodic withdrawals from your Contract Value. We will take any withdrawal under this program proportionally from your Contract Value in your selected investment choices.

Your SWP will end:

- if you withdraw your total Contract Value;
- if we receive, in Good Order, a notification of the Owner’s death;
- if we receive, in Good Order, a notification of the Annuitant’s death if the Owner is a non-natural person;
- if we process the last withdrawal for the period you selected, if applicable;
- if the next withdrawal will lower your Contract Value below the minimum Contract Value we allow following a partial withdrawal, unless your withdrawal is an RMD or is made under a SWP intended to qualify as a series of substantially equal periodic payments for purposes of avoiding the additional 10% tax applicable to distributions that occur prior to age 59½;
- if you apply your full Contract Value to an Annuity Option; or
- if you give us a Written Request or request over the telephone, in Good Order, to terminate your program any time on or before the next withdrawal date. If your Contract is a Non-Qualified Beneficiary Annuity or a Beneficiary IRA, your SWP cannot be terminated.

Charges and Deductions

This section describes the charges and deductions we make under the Contract to compensate us for the services and benefits we provide, costs and expenses we incur and risks we assume. We may profit from the charges deducted and we may use any such profits for any purpose, including payment of marketing and distribution expenses. These charges and deductions reduce the return on your investment in the Contract.

Insurance Charges

Each Business Day we deduct our insurance charges from the assets of the Separate Account. We do this as part of our calculation of the value of the Accumulation Units and the Annuity Units. The insurance charge has two parts: (1) the mortality and expense risk charge and (2) the administrative charge. If you select the Return of Purchase Payment Death Benefit, we will deduct an additional charge.

Mortality and Expense Risk Charge. The mortality and expense risk charge is for:

- the mortality risk associated with the insurance benefits provided, including our obligation to make Annuity Payments after the Annuity Date regardless of how long all Annuitants live, the death benefits, and the guarantee of rates used to determine your Annuity Payments during the Annuity Phase; and
- the expense risk that the current charges will be insufficient to cover the actual cost of administering the Contract.

| Mortality and Expense Risk Charge | | | |
|--|---|------------------------------|------------------------------|
| | <i>When Charge is Deducted</i> | <i>Current (annual rate)</i> | <i>Maximum (annual rate)</i> |
| B-Share | Daily as a percentage of the daily value of the assets invested in each Sub-Account | 0.85% | 0.85% |
| C-Share | Daily as a percentage of the daily value of the assets invested in each Sub-Account | 1.30% ¹ | 1.30% ¹ |

¹ After your fifth Contract Anniversary, the mortality and expense risk charge will be reduced to 0.85%. Note your share class will not change nor will your CDSC schedule assigned to each Purchase Payment. The B-Share will retain the five year CDSC schedule. The C-Share class will still not have a CDSC schedule assigned to Purchase Payments.

For all Contracts, if the amount of the charge is more than sufficient to cover the mortality and expense risk, we will make a profit on the charge. We may use this profit for any purpose, including the payment of marketing and distribution expenses for the Contract. If the mortality and expense risk charge is not sufficient to cover the mortality and expense risk, we will bear the loss.

Administrative Charge. This charge reimburses us for the expenses associated with the administration of the Contract and the Separate Account. Some of these expenses are: preparation of the Contract, confirmations, annual reports and statements, maintenance of Contract records, personnel costs, legal and accounting fees, filing fees, and computer and systems costs. This charge is calculated based on a percentage of the daily value of the assets invested in each Fund, after Fund expenses are deducted. The table below reflects the current and maximum charge.

| Administrative Charge | | |
|---|------------------------------|------------------------------|
| <i>When Charge is Deducted</i> | <i>Current (annual rate)</i> | <i>Maximum (annual rate)</i> |
| Daily as a percentage of the daily value of the assets invested in each Sub-Account | 0.15% | 0.15% |

Return of Purchase Payment Death Benefit Charge

If you elect the Return of Purchase Payment Death Benefit (ROP), we will deduct an additional charge as a percentage of the daily values of the assets invested in each Sub-Account. The charge for the ROP compensates us for the costs associated with this optional death benefit and is in addition to other standard Contract fees and expenses you are assessed. The table below reflects the current and maximum charge.

| Return of Purchase Payment Death Benefit Charge | | |
|---|------------------------------|------------------------------|
| <i>When Charge is Deducted</i> | <i>Current (annual rate)</i> | <i>Maximum (annual rate)</i> |
| Daily as a percentage of the daily value of the assets invested in each Sub-Account | 0.35% | 0.35% |

Annual Contract Maintenance Charge

This charge reimburses us for the costs of maintaining the Contract. We will deduct the annual contract maintenance charge proportionately from the Sub-Account(s) you have selected. The table below reflects the current and maximum charge.

| Annual Contract Maintenance Charge | | | |
|--|---|----------------|----------------|
| <i>Contract Value at Time Charge is Deducted</i> | <i>When Charge is Deducted</i> | <i>Current</i> | <i>Maximum</i> |
| Less than \$100,000 | On each Contract Anniversary or full withdrawal, and on a pro-rated basis in the event you annuitize your entire Contract Value on a date other than a Contract Anniversary (For Contracts issued in New York, the charge is deducted on a pro-rated basis for full withdrawals). | \$40 | \$40 |
| \$100,000 or more | Not applicable | \$ 0 | \$ 0 |

If you apply your entire Contract Value to an Annuity Option on any date other than your Contract Anniversary, we will deduct a pro-rated charge based on the ratio of (a) the total calendar days elapsed since the last Contract Anniversary and (b) the total calendar days in the Contract Year. For Contracts issued in New York, the charge is also deducted on a pro-rated basis for full withdrawals in the same manner.

Transfer Fee

| Transfer Fee | | | |
|---------------------------------------|-----------------------------|----------------|---|
| | <i>When Fee is Deducted</i> | <i>Current</i> | <i>Maximum</i> |
| <i>During Accumulation Phase Only</i> | Upon each transfer | \$0 | \$20 per transfer for each additional transfer in excess of the 12 free transfers per calendar year |

Contingent Deferred Sales Charge (CDSC) C-Share Class

None.

Contingent Deferred Sales Charge (CDSC) B-Share Class

We do not deduct a sales charge when we receive a Purchase Payment. However, we may assess a CDSC for withdrawals that exceed the free withdrawal amount. We use this charge to cover certain expenses relating to the sale of the Contract. The charge is a percentage of the Purchase Payments you withdraw that exceed the free withdrawal amount.

If we assess a CDSC, we will deduct it from the amount you withdraw.

Each Purchase Payment has its own CDSC schedule. The amount of the charge depends on the length of time between the date Purchase Payments were applied and the date of withdrawal. To determine if a CDSC applies, we process withdrawals as follows:

- first from earnings (Contract Value less Purchase Payments not previously withdrawn);
- then from Purchase Payments no longer subject to a CDSC according to the CDSC schedule;
- then from the free withdrawal amount (taken from Purchase Payments not previously withdrawn from the order they were received with the oldest Purchase Payment first); and
- then from Purchase Payments not previously withdrawn in the order they were received with the oldest Purchase Payment being first.

Each Purchase Payment will have the following CDSC schedule.

| CDSC – B-Share | |
|---|--|
| <i>Number of full Years from Application of each Purchase Payment</i> | <i>CDSC (as a percentage of each Purchase Payment withdrawn)</i> |
| 0 | 7% |
| 1 | 7% |
| 2 | 6% |
| 3 | 5% |
| 4 | 4% |
| 5 or more | 0% |

See “Appendix B – Contingent Deferred Sales Charge Example.”

In addition to the free withdrawals described later in this section, we will not impose a CDSC under the following circumstances.

- Upon payment of the death benefit.
- On amounts withdrawn as RMDs to the extent they exceed the free withdrawal amount. In order to qualify for this exception, you must be participating in a systematic withdrawal program established for the payment of RMDs, under which the annual RMD is calculated by us, based solely on the fair market value of the Contract (RMD program). If you choose to take withdrawals to satisfy your RMD for the Contract outside of our RMD program, or if you choose to take withdrawals from the Contract to satisfy your RMDs for other qualified assets, CDSC may apply.
- Upon application of all or a portion of the Contract Value to any Annuity Option.
- If you redeem excess contributions from a plan qualifying for special income tax treatment. These types of plans are referred to as Qualified Plans, including Individual Retirement Annuities (IRAs). We look to the Internal Revenue Code for the definition and description of excess contributions.
- When the Contract is exchanged for another variable annuity contract issued by us or one of our affiliated insurance companies, of the type and class which we determine is eligible for such an exchange. A contingent deferred sales charge may apply to the contract received in the exchange. A reduced CDSC schedule may apply under the Contract if another variable annuity contract issued by us or one of our affiliated insurance companies is exchanged for the Contract. Exchange programs may not be available in all states. If you want more information about our current exchange programs, contact your registered representative or us at our Service Center.
- If you are eligible for waiver of the CDSC due to your election of the Nursing Home and Hospital Withdrawal Benefit or the Terminal Illness Withdrawal Benefit described in “Additional Features.”
- If you apply your entire Contract Value to purchase a single premium immediate life annuity or a fixed deferred annuity issued by us or one of our affiliates.
- On distributions required to be made to a Beneficiary under IRC Section 72(s), to the extent that they exceed the free withdrawal amount. See “Ownership – Non-Qualified Beneficiary Annuity” for more information.
- On any withdrawals made or amounts applied to an Annuity Option when you reach the latest permitted Annuity Date for your Contract.

Free Withdrawal Amount. The free withdrawal amount is an amount you may withdraw that is not subject to the CDSC. For the first Contract Year, you may withdraw up to 10% of the initial Purchase Payment applied on the Issue Date, reduced by any free withdrawal amount(s) previously taken during that Contract Year. For each subsequent Contract Year, you may withdraw up to 10% of your total Purchase Payments still subject to a CDSC as of the previous Contract Anniversary, reduced by any

free withdrawal amount(s) previously taken during such Contract Year. Any withdrawals taken during a previous Contract Year may result in an adjustment of the free withdrawal amount available. See “Appendix D – Free Withdrawal Amount Examples.” Any Purchase Payments you make after your Contract Anniversary in a Contract Year will not be included in the calculation of the free withdrawal amount for that Contract Year.

Any unused free withdrawal amount(s) during any particular Contract Year may not be carried over to any succeeding Contract Year.

Premium Taxes

Some states and other governmental entities charge Premium Taxes or similar taxes. We are responsible for the payment of these taxes and may make a deduction from your Contract Value for them, or we may adjust the annuity rates for Premium Tax assessed. Some of these taxes are due when your Contract is issued, others are due when Annuity Payments begin. Premium Taxes generally range from 0% to 3.5%, depending on the state.

Income Taxes

We will deduct from the Contract any income taxes which we incur because of the operation of the Separate Account. We will deduct any withholding taxes required by law.

Fund Expenses

The Separate Account purchases shares of the Funds at net asset value. The net asset value of each Fund reflects investment management fees and other expenses already deducted from the assets of the Fund. In addition, one or more of the Funds available as an investment choice may pay a distribution fee out of the Fund’s assets to us known as a 12b-1 fee. Any investment in one or more of the Funds with a 12b-1 fee will increase the cost of your investment in the Contract. Please see the Fund prospectuses for more information regarding these expenses.

The Annuity Phase

Overview. If you want to receive regular income from your Annuity, you can elect to apply your Contract Value so that you can receive fixed Annuity Payments under one of the Annuity Options described in this section. If you have reached your Annuity Date and you have not chosen an Annuity Option, we will assume that you elected a “Single Life Annuity with Period Certain” with fixed payments and ten years of payments guaranteed. If the Contract has joint Annuitants, we will assume you elected the “Joint and Survivor Life Annuity” with fixed payments and ten years of payments guaranteed. If your Contract is a Qualified Contract, additional requirements may apply. We may base Annuity Payments on the Age and sex of the Annuitant under all options except the non-lifetime contingent Annuity Option. We consider a non-lifetime contingent Annuity Option to be an Annuity Option which provides an Annuity Payment for a fixed period of time only. See “The Annuity Phase – Non-Lifetime Contingent Option – Period Certain Annuity Option.” We may require proof of Age and sex before Annuity Payments begin.

If the Contract Value to be applied is less than \$10,000 on the Annuity Date, we will pay you a lump sum rather than a series of Annuity Payments. If any Annuity Payment is less than \$100, we will change the payment basis to equivalent less frequent payments. For Contracts issued in New York, the minimum amount that may be applied to an Annuity Option is \$5,000 and the minimum Annuity Payment is \$20.

Applying Part of Your Contract Value to an Annuity Option. You may elect to apply part of the Contract Value from your Non-Qualified Contract to an Annuity Option instead of your full Contract Value. We will treat the amount applied as a withdrawal of Contract Value that may qualify for favorable tax treatment under federal law. See “Taxes – Partial Annuitization of Non-Qualified Contracts.” You must specify the portion of your Contract Value to be applied to an Annuity Option, and if it is not the full Contract Value, the amount must be at least \$10,000. The number of partial annuitizations allowed is one per Contract Year.

If you choose to apply part of your Contract Value to an Annuity Option, there may be adverse tax consequences. For additional information, see “Taxes – Partial Annuitization of Non-Qualified Contracts.” **Before you apply part of your Contract Value to an Annuity Option, you should consult a qualified tax professional and discuss the tax implications associated with such a transaction.** We do not provide tax advice or recommendations.

Annuity Payment Start Date. You can choose the day, month and year in which Annuity Payments begin; however, the day must be between the 1st and 28th day of the month. We call that date the Annuity Date. According to your Contract, your Annuity Date cannot be earlier than five years after you buy the Contract (unless state law requires a shorter waiting period).

When you purchase the Contract, your Annuity Date is the latest permitted Annuity Date. After you purchase your Contract you can request an earlier Annuity Date by Written Request. If you have elected an Annuity Date earlier than your latest permitted Annuity Date, you can request that we delay your Annuity Date by Written Request or by telephone any time before the Annuity Date.

Latest Permitted Annuity Date

Unless the laws or regulations of the state in which your Contract was issued requires an earlier date, Annuity Payments must begin by the later of:

- the tenth Contract Anniversary; or
- the 90th birthday of the oldest Annuitant or the oldest Owner (whichever is sooner).

Annuity Payments. On the Annuity Date, you will begin receiving Annuity Payments under the Annuity Option that you elected. Your Annuity Payments will be fixed, meaning that the payments will not vary unless you elect either of the Joint and 2/3 Survivor Annuity Options that reduce payments upon the death of the first Annuitant. The amount of your Annuity Payments will depend upon the following:

- the value of your Contract on the Annuity Date;
- the Annuity Option you elect;
- the Age and sex of the Annuitant or joint Annuitants, if applicable;
- the minimum guaranteed payout rates associated with your Contract; and
- the deduction of Premium Taxes, if applicable.

See “Fixed Annuity Payout Rates” section in the SAI for more information.

Annuity Age. When calculating Annuity Payments, we determine Age based on each Annuitant’s nearest birthday on the Annuity Date. For example, we consider age 80 to be the period of time between age 79 years, 6 months, and 1 day and age 80 years and 6 months.

Annuity Options. The available fixed Annuity Options are listed in this section in the Annuity Options table. We may consent to other plans of payment in addition to those listed. After Annuity Payments begin, you cannot change the Annuity Option, the frequency of Annuity Payments, or make withdrawals. For all lifetime contingent Annuity Options, the Annuitant must be at least 18 as of the Annuity Date.

Contingent Deferred Sales Charge (CDSC). We will not deduct a CDSC to the extent you apply all or a portion of your Contract Value to any Annuity Option. In addition, we will not deduct a CDSC for any Annuity Payments that commence on the latest permitted Annuity Date for your Contract.

Limitation on Payment Options

If you purchased the Contract as a Qualified Contract, the IRC may impose restrictions on the types of payment options that you may elect. Furthermore, if your Contract is issued under an ERISA plan, and you are married when your Contract enters the Annuity Phase, your ability to elect certain Annuity Options may be limited and/or require spousal consent.

| Single Lifetime Contingent Options (fixed payments only) | | | |
|---|--|---|--|
| | <i>Single Life Annuity</i> | <i>Single Life Annuity with Cash Refund</i> | <i>Single Life Annuity with Period Certain</i> |
| Number of Annuitants: | One | One | One |
| Length of Payment Period: | For as long as the Annuitant lives. | For as long as the Annuitant lives. | For a guaranteed period of either 10 or 20 years or as long as the Annuitant lives, whichever is longer. |
| Annuity Payments After Death of the Annuitant: | None. All payments end upon the Annuitant’s death. | If the total of all Annuity Payments made is less than the amount applied to the Annuity Option, the Beneficiary will receive the difference in a lump sum. If the total of all Annuity Payments made is equal to or greater than the amount applied to the Annuity Option, no additional payment will be made. | When the Annuitant dies, if there are remaining guaranteed payments, the Beneficiary may elect to continue receiving remaining guaranteed payments or the Beneficiary may elect a lump sum payment equal to the commuted value of the remaining guaranteed Annuity Payments. We compute the commuted value of the remaining guaranteed Annuity Payments at an interest rate determined by us. |

| Joint Lifetime Contingent Options (fixed payments only) | | | | |
|--|---|--|---|---|
| | <i>Joint and Survivor Annuity</i> | <i>Joint and Survivor Annuity with Period Certain</i> | <i>Joint and 2/3 Survivor Life Annuity</i> | <i>Joint and 2/3 Survivor Life Annuity with Period Certain</i> |
| Number of Annuitants: | Two | Two | Two | Two |
| Length of Payment Period: | For as long as either Annuitant lives. | For a guaranteed period of either 10 or 20 years or as long as either Annuitant lives, whichever is longer. | For as long as either Annuitant lives. | For a guaranteed period of either 10 or 20 years or as long as either Annuitant lives, whichever is longer. |
| Annuity Payments After Death of the Annuitant: | 100% of the payment will continue to the surviving Annuitant. No payments will continue after the death of both Annuitants. | 100% of the payment will continue to the surviving Annuitant. When both Annuitants have died, if there are remaining guaranteed payments, the Beneficiary(ies) may elect to continue receiving remaining guaranteed payments or the Beneficiary(ies) may elect a lump sum payment equal to the commuted value of the remaining guaranteed Annuity Payments. We compute the commuted value of the remaining guaranteed Annuity Payments at an interest rate determined by us. | Two-thirds of the payment will continue to the surviving Annuitant. No payments will continue after the death of both Annuitants. | If there are remaining guaranteed payments, 100% of the payment will continue to the surviving Annuitant until the end of the guarantee period. When the end of the guarantee period has been reached, two-thirds of the payment will continue to the surviving Annuitant. When both Annuitants have died, if there are remaining guaranteed payments, the Beneficiary(ies) may elect to continue receiving remaining guaranteed payments or the Beneficiary(ies) may elect a lump sum payment equal to the commuted value of the remaining guaranteed Annuity Payments. We compute the commuted value of the remaining guaranteed Annuity Payments at an interest rate determined by us. |

| Non-Lifetime Contingent Option (fixed payments only) | |
|---|---|
| | <i>Period Certain Annuity Option</i> ¹ |
| Number of Annuitants: | One or two |
| Length of Payment Period: | For a specified period no less than ten years and no greater than 30 years. |
| Annuity Payments after Death of the Annuitant: | When the last Annuitant dies, if there are remaining guaranteed payments, the Beneficiary may elect to continue receiving remaining guaranteed payments or the Beneficiary may elect a lump sum payment equal to the commuted value of the remaining guaranteed Annuity Payments. |

¹ We consider this Annuity Option to be a non-lifetime contingent Annuity Option.

Death Benefit

Death of Owner During the Accumulation Phase

If you, or any Joint Owner, die during the Accumulation Phase, we will pay a death benefit to the primary Beneficiary. If any Owner dies, we will treat the surviving Owner as the primary Beneficiary and treat any other Beneficiary designation, on record at the time of death, as a contingent Beneficiary.

The Beneficiary may request that the death benefit be paid under one of the death benefit options. If the sole primary Beneficiary is your spouse and your Contract is a Non-Qualified Contract or is held as a traditional IRA (including SEP and SIMPLE IRAs) or Roth IRA, he or she may elect to become the Owner of the Contract by continuing the Contract at the death benefit amount payable. Generally, if the Contract is continued then:

- 1) the initial Contract Value will equal the death benefit amount;
- 2) all applicable Contract features and benefits will be in the surviving spouse's name;
- 3) the surviving spouse will exercise all of the Owner's rights under the Contract.

However, if at the time the Owner purchased the Contract the surviving spouse was over the maximum contract issue age for the death benefit selected (age 75 for the ROP, age 85 for the Contract Value Death Benefit), the Contract cannot be continued. If the Contract is continued, the death benefit will remain the same.

If the sole primary Beneficiary is a domestic partner or civil union partner, as defined under applicable state laws, we will treat him or her as a spouse for this provision, and he or she may elect to continue the Contract as described herein. However, a domestic partner or civil union partner cannot elect to continue the Contract if it is a traditional IRA or Roth IRA. Since current federal tax law does not define a spouse to include a domestic partner or civil union partner, such domestic partner or civil union partner who elects to continue the Contract must still meet the distribution requirements of Section 72(s) of the IRC. In order to meet these requirements, the amount of any gain in the Contract will become subject to income tax at the time the election to continue the Contract is made.

The right to continue the Contract by a surviving spouse, a domestic partner, or a civil union partner can only be exercised once while the Contract is in effect.

See "Taxes – Civil Unions and Domestic Partnerships" if you are in a domestic partnership or civil union.

Death Benefit Amount During the Accumulation Phase

The death benefit amount depends upon the death benefit feature in effect at the time of your death or, if the Contract is owned by a non-natural person, the Annuitant's death.

There are two death benefit features available. When you purchase your Contract, you must select one death benefit feature. Once you have selected a death benefit feature and we issue the Contract, you cannot later select another death benefit feature.

- Contract Value Death Benefit (no additional charge)
- Return of Purchase Payment Death Benefit (has an additional charge)

Contract Value Death Benefit

The death benefit during the Accumulation Phase will be the Contract Value determined as of the Close of Business on the Business Day on which we receive both due proof of death and an election of the payment method in Good Order at our Service Center. Where there is more than one Beneficiary, we will determine the death benefit as of the Business Day the first Beneficiary submits due proof of death and election of payment method in Good Order. Each Beneficiary's portion of the death benefit will be applied to their chosen death benefit payout option on the Business Day we receive their election of the payment method in Good Order and will be paid from the Sub-Accounts on a pro rata basis. The balance of the death benefit will remain in the Sub-Accounts until each of the other Beneficiaries submits a Written Request to claim his/her death benefit. From the time the death benefit is determined until complete distribution is made, any amount in a Sub-Account will be subject to investment risk. This risk is borne by the Beneficiary(ies).

Return of Purchase Payment Death Benefit (ROP)

The death benefit during the Accumulation Phase will be the greater of 1 and 2 below.

- 1) The total Purchase Payments, reduced by an adjustment for each withdrawal. The adjustment is equal to A divided by B, with the result multiplied by C, where:
A = the Contract Value withdrawn, including any applicable CDSC;
B = the Contract Value immediately prior to the withdrawal; and
C = the total Purchase Payments adjusted for any prior withdrawals.
- 2) The Contract Value.

The withdrawal will reduce the death benefit amount in direct proportion to the Contract Value reduction. For example, if you take a 20% withdrawal from your Contract Value, the death benefit will be reduced by 20%. Since withdrawals result in a pro-rata adjustment to the death benefit amount, the death benefit amount may be reduced by more than the actual dollar amount of the withdrawals. See “Appendix C – Return of Purchase Payment Death Benefit Example – Impact of Withdrawal and Determination of Benefit.”

The death benefit that is payable during the Accumulation Phase is determined as of the Close of Business on the Business Day on which we receive both due proof of death and an election of the payment method at our Service Center. Where there is more than one Beneficiary, we will determine the death benefit as of the Business Day the first Beneficiary submits due proof of death and election of payment method. If the death benefit payable is greater than the Contract Value, we will apply an amount equal to the difference between the death benefit and Contract Value to each Sub-Account in the ratio that your value in each Sub-Account bears to your Contract Value. Each Beneficiary’s portion of the death benefit will be applied to their chosen death benefit payout option on the Business Day we receive their election of the payment method in Good Order and will be paid from the current allocation on a pro-rata basis. The balance of the death benefit will remain in the Sub-Accounts based on the current allocation until each of the other Beneficiaries submits a Written Request to claim his/her death benefit. From the time the death benefit is determined until complete distribution is made, any amount in a Sub-Account will be subject to investment risk. This risk is borne by the Beneficiary(ies).

We consider the application of a portion of your Contract Value to an Annuity Option as a withdrawal for purposes of calculating the death benefit.

Election

You may elect the ROP only at the time you apply for a Contract. The ROP is not available for selection if the oldest Owner (or Annuitant, if the Owner is a non-natural person) is over the age of 75.

Return of Purchase Payment Death Benefit Charge

We deduct a Return of Purchase Payment Death Benefit Charge from each Sub-Account in which you are invested. The charge compensates us for the costs associated with this death benefit. See “Charges and Deductions – Return of Purchase Payment Death Benefit Charge.”

Return of Purchase Payment Death Benefit Allocation Restrictions

While the ROP is in effect, you may allocate Purchase Payments or transfer Contract Value amongst any of the Sub-Accounts available with the Contract except those listed below.

- BlackRock 60/40 Target Allocation EFT V.I.
- MML Asset Momentum
- MML Equity Rotation
- MML Special Situations

We reserve the right to modify the available Sub-Accounts with this feature from time to time. We will notify you by Written Notice at least 30 days before any change in Sub-Account restrictions. The restrictions in the type of Sub-Accounts available to you under the ROP are intended to help us manage the risk associated with providing the ROP death benefit.

Death Benefit Payment Options During the Accumulation Phase

The availability of certain death benefit options may be limited for tax-qualified contracts in order to comply with RMD rules. Each Beneficiary must elect the death benefit to be paid under one of the following options in the event that a death benefit becomes payable during the Accumulation Phase.

- **Option 1** – Lump sum payment of the death benefit.
- **Option 2** – Payment of the entire death benefit within five years of the date of any Owner’s death. This option may not be available if there are multiple Beneficiaries.
- **Option 3** – Payment of the death benefit under an Annuity Option over the lifetime of the Beneficiary or over a period not extending beyond the life expectancy of the Beneficiary. For Non-Qualified Contracts, distribution must begin within one year of the date of any Owner’s death. For Qualified Contracts, distribution must generally begin by the end of the calendar year following the year of the Owner’s death. Additional deferral may be available for a spouse Beneficiary. This option is not available for a Beneficiary that is a non-natural person, other than certain trusts as Beneficiary of an IRA.
- **Option 4** – Payment of the death benefit from a deferred annuity contract over the life expectancy of the Beneficiary through a series of non-annuitized withdrawals made at least annually. For Non-Qualified Contracts, distribution must begin within one year of the date of any Owner’s death. For Qualified Contracts, distribution must generally begin by the end of the calendar year following the year of the Owner’s death. Additional deferral may be available for a spouse Beneficiary. Additional withdrawals, including full withdrawals, are available. This option may not be available for a Beneficiary that is a non-natural person, other than certain trusts as Beneficiary of an IRA, or if there

are multiple Beneficiaries. See “Death Benefit – Death Benefit Payment Options During the Accumulation Phase – Non-Qualified Beneficiary Annuity” or “Death Benefit – Death Benefit Payment Options During the Accumulation Phase – Beneficiary IRA” for rules and restrictions.

If the sole primary Beneficiary is a spouse, continuation of the Contract in his or her own name is described previously in this section under “Death Benefit – Death of Owner During the Accumulation Phase”.

Any portion of the death benefit not applied to Option 3 or Option 4 within the time period specified must be distributed within five years of the date of the Owner’s death under Option 1 or Option 2.

You may restrict a Beneficiary’s right to elect a death benefit payout option. If you do so, such rights or options will not be available to the Beneficiary.

We may also consent to other death benefit payout options in addition to those described in this section as long as they comply with IRC Section 72(s) or Section 401(a)(9), as applicable.

Lump Sum Payments. If a lump sum payment is requested, we will pay the amount within seven calendar days after we receive proof of death and election of the payment method in Good Order at our Service Center, unless we are required to suspend or delay payment.

Non-Qualified Beneficiary Annuity. A Non-Qualified Beneficiary Annuity, also referred to as a “non-qualified stretch” or “inherited non-qualified annuity,” is an annuity contract that is held for the benefit of the beneficiary of a deceased annuity contract owner in order to distribute death proceeds of a non-qualified annuity to the beneficiary over that beneficiary’s life expectancy in accordance with the required distribution rules of IRC Section 72(s). See “Taxes – Taxation of Non-Qualified Contracts – Distributions After Death of Owner” for more information.

If a Beneficiary(ies) elects payment under Option 4 as a Non-Qualified Beneficiary Annuity after the death of the Owner, the following rules apply (*Note, these restrictions differ from those imposed when a Contract is purchased as a Non-Qualified Beneficiary Annuity. See “Ownership – Non-Qualified Beneficiary Annuity.”*):

- The annuity Contract will be titled in the Beneficiary’s name as Beneficiary of the deceased Owner, and cannot be transferred. The Beneficiary must be the Annuitant, and the Annuitant cannot be changed.
- Distributions must begin within one year of the Owner’s death. Required distributions will be calculated based on the Beneficiary’s life expectancy as determined under the applicable IRS table, and will be withdrawn from each Sub-Account in the ratio that your value in each bears to your Contract Value.
- Distributions required under IRC Section 72(s) must be made at least annually through a SWP that we administer. This SWP cannot be changed or terminated. Distributions made under the SWP will be treated as variable Annuity Payments for income tax purposes. In order to qualify as Annuity Payments for income tax purposes, payments under the SWP will continue to be made even if you take additional withdrawals from the Contract.
- Withdrawals will not be subject to a CDSC.
- The Beneficiary’s initial Contract Value will be equal to the death benefit that would have been payable to the Beneficiary if a lump sum distribution had been elected.
- Additional Purchase Payments cannot be applied to the Contract.
- Joint ownership is not allowed.
- Upon the death of the Annuitant, any remaining Contract Value will be paid to the succeeding Beneficiary in a lump sum or over the Annuitant’s remaining life expectancy as determined under the applicable IRS table.
- This option is not available for a Beneficiary who is a non-natural person.
- A Non-Qualified Beneficiary Annuity may only be established by the Beneficiary of the Contract Owner whose death triggered the required distribution requirements of IRC Section 72(s). A Non-Qualified Beneficiary Annuity may not be established as a “second generation” Non-Qualified Beneficiary Annuity by a successor Beneficiary.

Beneficiaries should consult a qualified tax adviser for advice prior to establishing a Non-Qualified Beneficiary Annuity.

Beneficiary IRA. Beneficiary, Inherited, Legacy or “Stretch” IRAs are all terms used to describe an IRA that is used exclusively to distribute death proceeds of an IRA or other qualified investment to the beneficiary over that beneficiary’s life expectancy in order to meet the RMD rules of IRC Section 401(a)(9). See “Taxes – Required Minimum Distributions for Qualified Contracts” for more information.

Eligibility Requirements/Restrictions:

If a Beneficiary(ies) elects payment under Option 4 as a Beneficiary IRA after the death of the Owner, the following rules apply (*Note, these restrictions differ from those imposed when a Contract is purchased as a Beneficiary IRA. See “Ownership – Beneficiary IRA.”*):

- The annuity Contract will be titled in the Beneficiary’s name as Beneficiary for the deceased Owner. The Beneficiary must be the Annuitant, and the Annuitant cannot be changed.
- For non-spousal Beneficiary IRAs, RMDs must begin by December 31st of the year following the year of the date of the Owner’s death. For spousal Beneficiary IRAs, RMDs may be deferred until April 1st of the year following the

year the original Owner would have attained age 70½. The RMD amount will generally be calculated based on the Beneficiary's life expectancy and will be withdrawn from each Sub-Account in the ratio that your value in each bears to your Contract Value. If the original Owner died after attaining age 70½ and was younger than the Beneficiary, the RMD amount may be calculated based on the original Owner's life expectancy in the year of his or her death.

- If the Beneficiary is a trust, a Beneficiary IRA may only be established if the trust qualifies as a "see-through" trust. For see-through trusts, RMDs must be calculated based upon the life expectancy of the oldest trust beneficiary and the oldest trust beneficiary must be the Annuitant. In order to be a see-through trust, the trust must be valid under state law and be irrevocable, and all beneficiaries, current and future, must be identifiable from the trust instrument. If any beneficiary of the trust is not an individual, the trust is not a see-through trust and cannot establish a Beneficiary IRA.
- RMDs must be made at least annually through a SWP that we administer. This SWP cannot be terminated.
- Withdrawals will not be subject to a CDSC.
- The Beneficiary's initial Contract Value will be equal to the death benefit that would have been payable to the Beneficiary if a lump sum distribution had been elected.
- Additional contributions cannot be applied to the contract.
- Upon the death of the Annuitant, any remaining Contract Value will be paid to the succeeding Beneficiary in a lump sum or over the Annuitant's remaining life expectancy as determined by the applicable IRS table.
- A Beneficiary IRA may only be established by the Beneficiary of the IRA owner/qualified plan participant whose death triggered the RMD requirements of IRC Section 401(a)(9). A Beneficiary IRA may not be established as a "second generation" Beneficiary IRA by a successor Beneficiary.
- Joint ownership of a Beneficiary IRA is not allowed.

Beneficiaries should consult a qualified tax adviser for advice prior to establishing a Beneficiary IRA.

Death of Owner During the Annuity Phase

Upon any Owner's death during the Annuity Phase, if the Annuitant is still alive, the surviving Owner will retain the ownership of the Contract. If there is no surviving Owner, the Beneficiary will become the Owner. Any remaining Annuity Payments under the Annuity Option elected will continue to be paid at least as rapidly as under the method of distribution in effect at such Owner's death.

Death of Annuitant

If an Annuitant, who is not the Owner or Joint Owner, dies during the Accumulation Phase, you can name a new Annuitant subject to our approval. If there is no surviving Annuitant and you do not name an Annuitant within 30 calendar days after we receive notification of the death of the Annuitant, the oldest Owner will become the Annuitant. If the Owner is a non-natural person and an Annuitant dies, you may not name a new Annuitant. In this case we will treat the death of an Annuitant as the death of the Owner and pay the death benefit as described in "Death Benefit – Death of Owner During the Accumulation Phase."

Upon the death of the last surviving Annuitant on or after the Annuity Date, the death benefit, if any, is as specified in the Annuity Option elected. Upon the death of the last surviving Annuitant during the Annuity Phase, any remaining payment under the elected Annuity Option will be paid to the Beneficiary. We will treat a surviving Owner as the primary Beneficiary and treat any other Beneficiary designation on record at the time of death as a contingent Beneficiary.

Death Benefit and Partial Annuitizations. If you apply a portion of your non-qualified Contract Value to an Annuity Option, the death benefit for that portion will be determined in accordance with "Death Benefit – Death of Owner During the Annuity Phase" and "Death Benefit – Death of Annuitant." The death benefit for the portion of the Contract Value remaining in the Accumulation Phase will be determined in accordance with "Death Benefit – Death of Owner During the Accumulation Phase" and "Death Benefit – Death of Annuitant."

Due Proof of Death. For purposes of determining due proof of death, we require:

- 1) a certified death certificate; or
- 2) a certified decree of a court of competent jurisdiction as to the finding of death; or
- 3) any other proof satisfactory to us.

Additional Features

Terminal Illness Withdrawal Benefit

With this benefit, which is applicable only if you elect the B-Share class, you may withdraw all or a portion of your Contract Value without incurring a CDSC if we receive a Written Request in Good Order at our Service Center that you (or an Annuitant, if the Owner is a non-natural person) have met the following conditions:

- 1) For purposes of this benefit, you (or an Annuitant, if the Owner is a non-natural person) were not diagnosed with a terminal illness or a terminal condition resulting from bodily injury or disease or both as of the Issue Date.
- 2) Each withdrawal request is made on or after the “Eligibility Date for Waiver of Contingent Deferred Sales Charge,” which is one year after the Issue Date.
- 3) We will require proof that you (or an Annuitant, if the Owner is a non-natural person) are terminally ill, as described in Item 1 above, and not expected to live more than 12 months. This proof will include, but is not limited to, certification by a state licensed medical practitioner performing within the scope of his/her license. The state licensed medical practitioner must not be you or your parent, sibling, spouse or child (or an Annuitant or an Annuitant’s parent, sibling, spouse or child if the Owner is a non-natural person).

If we determine that your Written Request for a withdrawal free of CDSC does not meet the qualifying conditions, we will provide a Written Notice of such determination. We will not proceed with your Written Request for a withdrawal until we receive notification from you that you accept or reject the withdrawal including the CDSC assessed. If you do not accept the withdrawal including the CDSC, the withdrawal request will not be processed. If you do accept the withdrawal including the CDSC, we will process it on the Business Day you notify us of your acceptance.

The Terminal Illness Withdrawal Benefit is not available in Connecticut. Please contact your registered representative or call the Service Center for more information.

Nursing Home and Hospital Withdrawal Benefit

With this benefit, which is applicable only if you elect the B-Share class, you may withdraw all or a portion of your Contract Value without incurring a CDSC if we receive a Written Request in Good Order at our Service Center that you (or an Annuitant, if the Owner is a non-natural person) have been admitted to a licensed nursing care facility or accredited hospital or its successor, subject to the following requirements:

- 1) For purposes of this benefit, you (or the Annuitant, if the Owner is a non-natural person) are not confined in a licensed nursing care facility or accredited hospital or its successor on the Issue Date.
- 2) Each withdrawal request is made on or after the “Eligibility Date for Waiver of Contingent Deferred Sales Charge,” which is one year after the Issue Date.
- 3) Each withdrawal request is made within 120 calendar days after services were provided to you (or the Annuitant, if the Owner is a non-natural person). You must have been confined at a licensed nursing care facility and/or accredited hospital or its successor for a consecutive period of at least 90 consecutive calendar days.
- 4) The confinement must be prescribed by a state licensed medical practitioner performing within the scope of his/her license.
- 5) Each withdrawal is accompanied by proof satisfactory to us that you (or the Annuitant, if the Owner is a non-natural person) meet the qualifying conditions above.

You may not participate in the Systematic Withdrawal Program if we are currently waiving the CDSC in accordance with this benefit.

A licensed nursing care facility is an institution licensed by the state in which it is located to provide skilled nursing care, intermediate nursing care, or custodial nursing care. An accredited hospital is a hospital licensed, or recognized as a general hospital, by the state in which it is located or by the Joint Commission on the Accreditation of Hospitals, or its successors.

If we determine that your Written Request for a withdrawal free of CDSC does not meet the qualifying conditions, we will provide a Written Notice of such determination. We will not proceed with your Written Request for a withdrawal until we receive notification from you that you accept or reject the withdrawal including the CDSC assessed. If you do not accept the withdrawal including the CDSC, the withdrawal request will not be processed. If you do accept the withdrawal including the CDSC, we will process it on the Business Day you notify us of your acceptance.

The Nursing Home and Hospital Withdrawal Benefit is not available in California and Connecticut. Please contact your registered representative or call the Service Center for more information.

Taxes

The information in this prospectus is general and is not an exhaustive discussion of all tax questions that might arise under the Contract. The information is not written or intended as tax or legal advice. You should consult a tax adviser about your own circumstances. In addition, we do not profess to know the likelihood that current federal income tax laws and Treasury Regulations or the current interpretations of the Internal Revenue Code, Regulations, and other guidance will continue. We cannot make any guarantee regarding the future tax treatment of any Contract. We reserve the right to make changes in the Contract to assure that it continues to qualify as an annuity for tax purposes.

No attempt is made in this prospectus to consider any applicable state or other tax laws.

Taxation of the Company. MassMutual is taxed as a life insurance company under the Internal Revenue Code of 1986, as amended (IRC). For federal income tax purposes, the Separate Account is not a separate entity from MassMutual, and its operations form a part of MassMutual.

Investment income and any realized gains on Separate Account assets generally are reflected in the Contract Value, although treated as accruing to the Company and not to you. As a result, no taxes are due currently on interest, dividends and short or long-term gains earned by the Separate Account with respect to your Contract. The Company may be entitled to certain tax benefits related to the investment of Company assets, including assets of the Separate Account. These tax benefits, which may include foreign tax credits and the corporate dividends received deduction, are not passed back to you since the Company is the owner of the assets from which the tax benefits are derived.

Annuities in General. Annuity contracts are a means of both setting aside money for future needs — usually retirement — and for providing a mechanism to administer the payout of those funds. Congress recognized how important providing for retirement was and created special rules in the IRC for annuities. Simply stated, these rules provide that you will generally not be taxed on the earnings on the money held in your annuity Contract until you take the money out. This is referred to as tax deferral.

Diversification. IRC Section 817(h) imposes certain diversification standards on the underlying assets of variable annuity contracts. The IRC provides that a variable annuity contract will not be treated as an annuity contract for any period (and any subsequent period) for which the investments are not, in accordance with regulations prescribed by the United States Treasury Department, adequately diversified. Disqualification of the Contract as an annuity contract would result in a loss of tax deferral, meaning the imposition of federal income tax to the Owner with respect to earnings under the Contract prior to the receipt of payments under the Contract. We intend that all investment portfolios underlying the contracts will be managed in such a manner as to comply with these diversification requirements.

Investor Control of Assets. For variable annuity contracts, tax deferral also depends on the insurance company, and not you, having control of the assets held in the separate accounts. You can transfer among the Sub-Accounts but cannot direct the investments each underlying Fund makes. If you have too much investor control of the assets supporting the Separate Account Funds, then you will be taxed on the gain in the Contract as it is earned rather than when it is withdrawn. The IRS has provided some guidance on investor control by issuing Revenue Rulings 2003-91 and 2003-92, but some issues remain unclear. One unanswered question is whether an owner will be deemed to own the assets in the contract if a variable contract offers too large a choice of Funds in which to invest, and if so, what that number might be. We do not know if the IRS will issue any further guidance on this question. We do not know if any guidance would have a retroactive effect. Consequently, we reserve the right to modify the Contract, as necessary, so that you will not be treated as having investor control of the assets held under the Separate Account.

Non-Qualified Contracts. Your Contract is referred to as a Non-Qualified Contract if you do not purchase the Contract under a qualified plan such as an Individual Retirement Annuity (IRA), Roth IRA, tax-sheltered annuity plan (TSA or TSA plan), corporate pension and profit-sharing plan (including 401(k) plans and H.R. 10 plans), or a governmental 457(b) deferred compensation plan.

Qualified Contracts. Your Contract is referred to as a Qualified Contract if it is purchased under a qualified retirement plan (qualified plan) such as an Individual Retirement Annuity (IRA), Roth IRA, tax-sheltered annuity plan (TSA or TSA plan), corporate pension and profit-sharing plan (including 401(k) plans and H.R. 10 plans), or a governmental 457(b) deferred compensation plan. Qualified plans are subject to various limitations on eligibility, contributions, transferability and distributions based on the type of plan. The tax rules regarding qualified plans are very complex and will have differing applications depending on individual facts and circumstances. You should consult a tax adviser as to the tax treatment and suitability of such an investment.

Taxation of participants in each qualified plan varies with the type of plan and terms and conditions of each specific plan. Owners, Annuitants and Beneficiaries are cautioned that benefits under a qualified plan may be subject to the terms and conditions of the plan regardless of the terms and conditions of the contracts issued pursuant to the plan. Some retirement plans are subject to distribution and other requirements that are not incorporated into our administrative procedures. Owners, participants and Beneficiaries are responsible for determining that contributions, distributions and other transactions with respect to the contracts comply with applicable law.

Contracts issued under a qualified plan include special provisions restricting Contract provisions that may otherwise be available as described in this prospectus. Generally, Contracts issued under a qualified plan are not transferable. Various penalty and excise taxes may apply to contributions or distributions made in violation of applicable limitations. Furthermore, certain withdrawal penalties and restrictions may apply to distributions from qualified contracts. See “Taxes – Taxation of Qualified Contracts.”

Eligible rollover distributions from an IRA, TSA, qualified plan or governmental 457(b) deferred compensation plan may generally be rolled over into another IRA, TSA, qualified plan or governmental 457(b) deferred compensation plan, if permitted by the plan. These amounts may be transferred directly from one qualified plan or account to another, or as an indirect rollover, in which the plan participant receives a distribution from the qualified plan or account, and reinvests it in the receiving qualified plan or account within 60 days of receiving the distribution.

IRC Section 408(d)(3)(B) provides that an individual is only permitted to make one indirect rollover from an IRA to another IRA in any 1-year period. The IRS previously applied this limitation on an IRA-by-IRA basis, allowing a taxpayer to make an indirect rollover from an IRA, so long as he or she had not made an indirect rollover from that same IRA within the preceding 1-year period, even if he or she had made indirect rollovers from a different IRA. Effective for distributions on or after January 1, 2015 the limitation applies on an aggregate basis, meaning that an individual cannot make an indirect rollover from one IRA to another if he or she has made an indirect rollover involving any IRA (including a Roth, SEP, or SIMPLE IRA) within one year. It is important to note that the one rollover per year limitation does not apply to amounts transferred directly between IRAs in a trustee-to-trustee transfer.

On July 6, 1983, the Supreme Court decided in *Arizona Governing Committee v. Norris* that optional annuity benefits provided under an employer’s deferred compensation plan could not, under Title VII of the Civil Rights Act of 1964, vary between men and women. The Contracts we sell in connection with qualified plans use annuity tables which do not differentiate on the basis of sex. Such annuity tables are also available for use in connection with certain non-qualified deferred compensation plans.

Following are general descriptions of the types of qualified plans with which the Contracts may be used. Such descriptions are not exhaustive and are for general informational purposes only. The tax rules regarding qualified plans are very complex and will have differing applications depending on individual facts and circumstances. You should consult a tax adviser as to the tax treatment and suitability of your investment. The contribution limits referenced in the plan descriptions below are the limits for 2019, and may change in subsequent years.

Individual Retirement Annuities

IRC Section 408(b) permits eligible individuals to contribute to an individual retirement program known as an Individual Retirement Annuity (IRA). IRAs are subject to limitations on eligibility, contributions, transferability and distributions. See “Taxes – Taxation of Qualified Contracts.” IRA contributions are limited to the lesser of \$6,000 or 100% of compensation, and an additional catch-up contribution of \$1,000 is available for individuals age 50 and over. Contributions are deductible, unless you are an active participant in a qualified plan and your modified adjusted gross income exceeds certain limits. Contracts issued for use with IRAs are subject to special requirements by the IRC, including the requirement that certain informational disclosure be given to persons desiring to establish an IRA. You should consult a tax adviser as to the tax treatment and suitability of such an investment.

SEP IRAs

IRC Section 408(k) permits certain employers to establish IRAs for employees that qualify as Simplified Employee Pension (SEP) IRAs. Contributions to the plan for the benefit of employees will not be includible in the gross income of the employees until distributed from the plan. SEP IRAs are treated as defined contribution plans for purposes of the limits on employer contributions. Employer contributions cannot exceed the lesser of:

- i) \$56,000; or
- ii) 25% of compensation (a maximum of \$280,000 of compensation may be considered).

The employee may treat the SEP account as a traditional IRA and make deductible and non-deductible contributions if the general IRA requirements are met. SEP IRAs are subject to additional restrictions, including on items such as: the form, manner and timing of distributions; transferability of benefits; vesting and nonforfeatability of interests; nondiscrimination in eligibility and participation; and the tax treatment of distributions and withdrawals. See “Taxes – Taxation of Qualified Contracts.” You should consult a tax adviser as to the tax treatment and suitability of such an investment.

SIMPLE IRAs

IRC Section 408(p) permits certain small employers to establish a Savings Incentive Match Plan for Employees (SIMPLE) IRA. SIMPLE IRA plans permit employees to make elective contributions only through a qualified salary reduction agreement. Employers can make contributions to the plan through either matching contributions or non-elective contributions. An employee’s annual elective salary reduction contributions are limited to the lesser of \$13,000 or 100% of compensation, and an additional catch-up contribution is available for individuals age 50 and over, up to the lesser of \$3,000 or total compensation less any other elective deferrals. Elective contributions made to a SIMPLE IRA are counted against the overall limit on elective

deferrals by any individual (the lesser of \$19,000 or 100% of compensation). The employer must make certain matching contributions or non-elective contributions to the employee's account. SIMPLE IRAs are subject to additional restrictions, including on items such as: the form, manner and timing of distributions; transferability of benefits; vesting and nonforfeatability of interests; nondiscrimination in eligibility and participation; and the tax treatment of distributions and withdrawals. See "Taxes – Taxation of Qualified Contracts." You should consult a tax adviser as to tax treatment and suitability of such an investment.

Roth IRAs

IRC Section 408A permits eligible individuals to contribute to a non-deductible IRA, known as a Roth IRA. Roth IRAs are subject to limitations on eligibility, contributions, transferability and distributions. Roth IRA contributions are limited to the lesser of \$6,000 or 100% of compensation, and an additional catch-up contribution of \$1,000 is available for individuals age 50 or over. The maximums are decreased by any contributions made to a traditional IRA for the same tax year. Lower maximum Roth IRA contribution limits apply to individuals whose modified adjusted gross income exceeds certain limits. Amounts may be rolled over from one Roth IRA to another Roth IRA. Furthermore, an individual may make a rollover contribution from a non-Roth IRA to a Roth IRA, known as a conversion. The individual must pay tax on any portion of the IRA being rolled over that represents income or previously deductible IRA contributions. The determination of taxable income is based on the fair market value of the IRA at the time of the conversion. See "Taxes – Required Minimum Distributions for Qualified Contracts" for information on the determination of the fair market value of an annuity contract that provides additional benefits (such as certain living or death benefits). You should consult a tax adviser as to the tax treatment and suitability of such an investment.

Corporate Pension and Profit-Sharing Plans

IRC Sections 401(a) and 401(k) permit employers to establish various types of retirement plans for employees. Contributions made to the plan for the benefit of the employees and the earnings on those contributions are generally not included in gross income of the employees until distributed from the plan. The tax consequences to participants may vary depending upon the particular plan design. In general, annual contributions made by an employer and employee to a defined contribution plan may not exceed the lesser of:

- i) \$56,000; or
- ii) 100% of compensation or earned income (a maximum of \$280,000 of compensation may be considered).

An employee's elective salary reduction contributions under a cash or deferred arrangement (i.e. a 401(k) plan) are limited to \$19,000, with an additional catch-up contribution of up to \$6,000 available for eligible participants age 50 or over. Defined benefit plans are limited to contributions necessary to fund a promised level of benefit. The annual benefit under a defined benefit plan is limited to:

- i) 100% of compensation for a participant's highest three years; or
- ii) \$225,000.

Plans are subject to additional restrictions, including on such items as: the form, manner and timing of distributions; transferability of benefits; vesting and nonforfeatability of interests; nondiscrimination in eligibility and participation; and the tax treatment of distributions and withdrawals. See "Taxes – Taxation of Qualified Contracts." You should consult a tax adviser as to the tax treatment and suitability of such an investment.

H.R. 10 Plans

IRC Section 401(a) permits self-employed individuals to establish qualified plans for themselves and their employees, commonly referred to as "H.R.10" or "Keogh" plans. Contributions made to the plan for the benefit of the employees and the earnings on those contributions are generally not included in gross income of the employees until distributed from the plan. The tax consequences to participants may vary depending upon the particular plan design. In general, H.R. 10 Plans are subject to the same restrictions as corporate pension and profit-sharing plans (see "Taxes – Qualified Contracts – Corporate Pension and Profit-Sharing Plans"), including limitations on eligibility, participation, contributions, time and manner of distributions, transferability and taxation of distributions. See "Taxes – Taxation of Qualified Contracts." You should consult a tax adviser as to the tax treatment and suitability of such an investment.

Taxation of Non-Qualified Contracts. You, as the Owner of a non-qualified annuity, will generally not be taxed on any increases in the value of your Contract until a distribution occurs. There are different rules as to how you are taxed depending on whether the distribution is a withdrawal or an Annuity Payment.

Withdrawals

The IRC generally treats any withdrawal:

- 1) allocable to investment in the Contract made after August 13, 1982 in an annuity contract entered into prior to August 14, 1982 and
- 2) from an annuity contract entered into after August 13, 1982,

as first coming from earnings and then from your investment in the Contract. The withdrawn earnings are subject to tax as ordinary income.

Annuity Payments

Annuity Payments occur as the result of the Contract reaching its annuity start date. Non-annuitized life expectancy distributions made to a Beneficiary, under a Non-Qualified Beneficiary Annuity SWP program that we administer, are also treated as Annuity Payments. A portion of each Annuity Payment is treated as a partial return of your investment in the Contract and is not taxed. The remaining portion of the Annuity Payment is treated as ordinary income. The Annuity Payment is divided between these taxable and non-taxable portions based on the calculation of an exclusion amount. The exclusion amount for Annuity Payments based on a fixed Annuity Option is determined by multiplying the payment by the ratio that the cost basis of the Contract (adjusted for any period certain or refund feature) bears to the expected return under the Contract. The exclusion amount for Annuity Payments based on a variable Annuity Option is determined by dividing the cost basis of the Contract (adjusted for any period certain or refund guarantee) by the number of years over which the annuity is expected to be paid. If, in any year, total payments received under a variable Annuity Option are less than the exclusion amount allocable to that year, Treasury Regulations allow you to choose to recalculate your exclusion amount in subsequent years, by filing a statement with your income tax return. We will continue to report distributions using the exclusion amount as originally calculated. For additional information, please consult with your tax advisor and see IRS Publication 939. Annuity Payments received after you have recovered all of your investment in the Contract are fully taxable.

The IRC also provides that any amount received (both Annuity Payments and withdrawals) under an annuity contract which is included in income may be subject to a tax penalty. The amount of the penalty is an additional tax equal to 10% of the amount that is includible in income. Some withdrawals will be exempt from the penalty. They include any amounts:

- 1) paid on or after you reach age 59½;
- 2) paid to your Beneficiary after you die;
- 3) paid if you become totally disabled (as that term is defined in the IRC);
- 4) paid in a series of substantially equal periodic payments made annually (or more frequently) for your life or life expectancy or for the joint lives or joint life expectancies of you and your designated Beneficiary;
- 5) paid under an immediate annuity; or
- 6) which come from investment in the Contract made before August 14, 1982.

With respect to (4) above, if the series of substantially equal periodic payments is modified before the later of your attaining age 59½ or five years from the date of the first periodic payment, then the tax for the year of the modification is increased by an amount equal to the tax which would have been imposed (the 10% tax penalty), but for the exception, plus interest for the tax years in which the exception was used. The rules governing substantially equal periodic payments are complex. You should consult a tax adviser for more specific information.

Multiple Contracts

The IRC provides that multiple non-qualified annuity contracts which are issued within a calendar year to the same owner by one company or its affiliates are treated as one deferred annuity contract for purposes of determining the tax consequences of any distribution. Such treatment may result in adverse tax consequences including more rapid taxation of the distributed amounts from such combination of contracts. This rule does not apply to immediate annuities.

Tax Treatment of Assignments

An assignment or pledge of a contract may be a taxable event. You should consult a tax adviser if you wish to assign or pledge your Contract. Annuity contracts issued after April 22, 1987 that are transferred for less than full and adequate consideration (including gifts) are subject to tax to the extent of gain in the contract. This does not apply to transfers between spouses or certain transfers incident to a divorce under IRC Section 1041.

Distributions After Death of Owner

In order to be treated as an annuity contract for federal income tax purposes, IRC Section 72(s) requires any Non-Qualified Contract to contain certain provisions specifying how your interest in the Contract will be distributed in the event of the death of an Owner of the Contract. Specifically, IRC Section 72(s) requires that:

- a) if any Owner dies on or after the annuity start date, but prior to the time the entire interest in the Contract has been distributed, the entire interest in the Contract will be distributed at least as rapidly as under the method of distribution being used as of the date of such Owner's death; and
- b) if any Owner dies prior to the annuity start date, the entire interest in the contract will be distributed within five years after the date of such Owner's death.

These requirements will be considered satisfied as to any portion of an Owner's interest which is payable to or for the benefit of a designated Beneficiary and which is distributed over the life of such designated Beneficiary or over a period not extending beyond the life expectancy of that Beneficiary, provided that such distributions begin within one year of the Owner's death. The designated Beneficiary refers to a natural person designated by the Owner as a Beneficiary and to whom ownership of the

contract passes by reason of death. However, if the designated Beneficiary is the surviving spouse of the deceased Owner, the Contract may be continued with the surviving spouse as the new Owner. The Non-Qualified Contracts contain provisions that are intended to comply with these IRC requirements, although no regulations interpreting these requirements have yet been issued. We intend to review such provisions and modify them if necessary to assure that they comply with the applicable requirements when such requirements are clarified by regulation or otherwise. Non-annuitized life expectancy distributions made to a Beneficiary, under a Non-Qualified Beneficiary Annuity SWP program that we administer, will be treated as variable Annuity Payments for income tax purposes.

Taxation of Qualified Contracts. If you have no cost basis for your interest in a Qualified Contract, the full amount of any distribution is taxable to you as ordinary income. If you do have a cost basis for all or some of your interest, a portion of the distribution is taxable, generally based on the ratio of your cost basis to your total Contract Value. Special tax rules may be available for certain distributions from a qualified plan.

IRC Section 72(t) imposes a 10% penalty tax on the taxable portion of any distribution from qualified plans, including contracts issued and qualified under IRC Sections 401 (pension and profit-sharing plans), 403 (TSAs), 408 (IRAs), and 408A (Roth IRAs). With respect to SIMPLE IRAs, the 10% penalty is increased to 25% if the distribution occurs within the first two years after the commencement of the employee's participation in the plan. Exceptions from the penalty tax are as follows:

- a) distributions made on or after you reach age 59½;
- b) distributions made after your death;
- c) distributions made that are attributable to the employee being disabled as defined in the IRC;
- d) after severance from employment, distributions that are part of a series of substantially equal periodic payments made not less frequently than annually for your life (or life expectancy) or the joint lives (or joint life expectancies) of you and your designated Beneficiary (in applying this exception to distributions from IRAs, a severance of employment is not required);
- e) distributions made after severance from employment if you have reached age 55 (not applicable to distributions from IRAs);
- f) distributions made to you up to the amount allowable as a deduction to you under IRC Section 213 for amounts you paid during the taxable year for medical care;
- g) distributions made on account of an IRS levy made on a qualified retirement plan or IRA;
- h) distributions made to an alternate payee pursuant to a qualified domestic relations order (not applicable to distributions from IRAs);
- i) distributions from an IRA for the purchase of medical insurance (as described in IRC Section 213(d)(1)(D)) for you and your spouse and dependents if you received unemployment compensation for at least 12 weeks and have not been re-employed for at least 60 days;
- j) certain qualified reservist distributions;
- k) distributions from an IRA to the extent they do not exceed your qualified higher education expenses (as defined in IRC Section 72(t)(7)) for the taxable year; and
- l) distributions from an IRA which are qualified first-time homebuyer distributions (as defined in IRC Section 72(t)(8)).

With respect to (d) above, if the series of substantially equal periodic payments is modified before the later of your attaining age 59½ or five years from the date of the first periodic payment, then the tax for the year of the modification is increased by an amount equal to the tax which would have been imposed (the 10% penalty tax) but for the exception, plus interest for the tax years in which the exception was used. The IRS has indicated that a modification will occur if, after the first valuation date, there is:

- i) any addition to the account balance other than gains or losses,
- ii) any non-taxable transfer of a portion of the account balance to another retirement plan, or
- iii) a rollover by the individual of the amount received resulting in such amount not being taxable.

The rules governing substantially equal periodic payments are complex. You should consult a tax adviser or IRS Revenue Ruling 2002-62 for more specific information.

Required Minimum Distributions for Qualified Contracts. For Qualified Contracts other than Roth IRAs, distributions generally must begin no later than April 1st of the calendar year following the later of:

- a) the calendar year in which you attain age 70½ or
- b) the calendar year in which you retire.

The date set forth in (b) does not apply to an IRA or to a five-percent owner of the employer maintaining the plan. Required distributions generally must be over a period not exceeding your life or life expectancy or the joint lives or joint life expectancies

of you and your designated Beneficiary. Upon your death, additional distribution requirements are imposed. If your Contract has not entered the Annuity Phase and your death occurs after your required beginning date, distributions must be made at least as rapidly as under the method in effect at the time of your death or over the life or life expectancy of the designated Beneficiary. If your Contract has not entered the Annuity Phase and your death occurs before your required beginning date, the remaining interest must be distributed within five years or over the life or life expectancy of the designated Beneficiary. If your death occurs after your Contract has entered the Annuity Phase, distributions must be made at least as rapidly as under the method in effect at the time of your death. If your Contract is held as a Roth IRA, there are no RMDs during your life. However, upon your death your Beneficiary is subject to RMD requirements. Any remaining interest must be distributed within 5 years or over your Beneficiary's life expectancy. If RMDs are not made, a 50% penalty tax is imposed on the amount that should have been distributed.

The Regulations under IRC Section 401(a)(9) include a provision that could increase the dollar amount of RMDs for individuals who fund their IRA or qualified retirement plan with an annuity contract. During the Accumulation Phase of the annuity Contract, Treasury Regulations Section 1.401(a)(9)-6, Q&A-12 requires that individuals add the actuarial present value of any additional benefits provided under the annuity (such as certain living or death benefits) to the dollar amount credited to the Owner or Beneficiary under the Contract in order to determine the fair market value of the Contract. A larger fair market value will result in the calculation of a higher RMD amount. You should consult a tax adviser to determine how this may impact your specific circumstances.

Partial Annuitization of Non-Qualified Contracts. The ability to apply only a portion of your Contract Value to an Annuity Option is commonly referred to as "partial annuitization" or "partially annuitizing." Federal tax law provides favorable tax treatment of partial annuitization of a non-qualified annuity contract under certain circumstances. **You should consult a tax adviser before electing to partially annuitize your Contract.**

As part of the Small Business Jobs Act of 2010, IRC Section 72 was amended to provide that if part of an annuity contract's value is applied to an Annuity Option that provides payments for one or more lives or for a period of at least ten years, the portion of the contract that is annuitized will be treated as a separate Contract and Annuity Payments received as a result of the partial annuitization will be treated as amounts received as an annuity instead of withdrawals, and given exclusion ratio treatment. The exclusion ratio is calculated by allocating the current investment in the Contract between the amount applied to the Annuity Option and the remaining portion of the original contract.

If the Annuity Option you elect does not meet one of the two above-described criteria, we will report all payments from your Contract, whether from the annuitized or the deferred portions of the Contract Value, to the IRS as a distribution with the taxable amount not determined beginning with the date of the partial annuitization. It is your responsibility to document to the IRS how much, if any, of a distribution is allocable to cost basis.

Taxation of Death Benefit Proceeds. Amounts may be distributed from a Contract because of your death or the death of the Annuitant. Generally, such amounts are includible in the income of the recipient as follows:

- i) if distributed under Death Benefit Payment Option 1 (lump sum) or Option 2 (payment within five years of the date of the Owner's death), they will be treated in the same manner as a withdrawal from the Contract; or
- ii) if distributed under Death Benefit Payment Option 3 or 4, they will be treated as Annuity Payments.

Section 1035 Tax Free Exchanges. IRC Section 1035 provides that a life insurance, endowment, or annuity contract may be exchanged for an annuity contract on a tax free basis. When this type of exchange occurs, the gain in the original contract is preserved in the new contract by transferring the cost basis under the original contract to the new contract. The IRS has provided guidance on the partial exchange of an annuity contract for another annuity contract. According to the guidance, partial exchanges occurring on or after October 24, 2011 will be tax free if no distribution takes place from either contract within 180 days after the exchange. If a distribution occurs within 180 days after the exchange, the IRS will apply general tax principles to determine the tax treatment of the transfer. The limitation on distributions within 180 days does not apply to Annuity Payments that are based on life expectancy or on a period certain of ten or more years. You should consult a tax adviser before entering into any 1035 exchange.

Partial exchanges which occurred prior to October 24, 2011 were subject to more restrictive guidance. You should consult a tax adviser if you have questions regarding the taxation of a prior exchange.

Beginning January 1, 2010, the Pension Protection Act of 2006 permits the exchange of an annuity contract for a qualified long-term care contract to qualify as a tax free 1035 exchange. However, if an annuity contract has entered the Annuity Phase, there is uncertainty and a lack of guidance regarding whether the exchange can qualify. Therefore, if an annuity contract has entered the Annuity Phase and the contract or the resulting Annuity Payments are exchanged for a qualified long-term care contract, we will not treat that as a tax free 1035 exchange.

The IRS has also issued guidance allowing a Beneficiary of a non-qualified annuity contract to enter into a 1035 exchange of the death benefit for a new annuity contract, provided that the new contract will be administered as if the owner is deceased for purposes of the death benefit requirements of IRC Section 72(s). In order to allow the death benefit under a non-qualified annuity contract to be exchanged, we may require additional documentation from the issuer of the new contract, in order to ensure that this requirement is met.

Income Tax Reporting and Withholding. Federal law requires that we file an information return on Form 1099-R with the IRS (with a copy to you) reporting any taxable amounts paid to you under the annuity contract. By January 31st of the calendar year following the year of any payment(s), we will issue the Form 1099-R to the owner of the annuity contract. Following the death of the Owner the Form 1099-R will be sent to each Beneficiary who receives a payment under the Contract.

The portion of any distribution that is includible in the gross income of the Owner is subject to federal income tax withholding. The amount of the withholding depends on the type of distribution. Withholding for periodic payments is at the same rate as wages and at the rate of 10% from non-periodic payments. However, the Owner, in most cases, may elect not to have taxes withheld or to have withholding done at a different rate (but not lower). Distributions from certain retirement plans, excluding IRAs, that are not directly rolled over to another eligible retirement plan or IRA, are subject to a mandatory 20% withholding. The 20% withholding requirement generally does not apply to:

- a) a series of substantially equal payments made at least annually for:
 - i) the life or life expectancy of the Owner, or joint and last survivor expectancy of the Owner and a designated Beneficiary, or
 - ii) for a specified period of ten years or more;
- b) distributions which are RMDs; or
- c) hardship distributions from a 401(k) plan.

You should consult a tax adviser regarding withholding requirements.

Generation Skipping Transfer Tax Withholding. Under certain circumstances, the IRC may impose a generation skipping transfer tax when all or part of an annuity contract is transferred to, or a death benefit is paid to, an individual two or more generations younger than the Owner. Regulations issued under the IRC may require us to deduct the tax from your Contract, or from any applicable payment, and pay it directly to the IRS.

Medicare Hospital Insurance Tax. A Medicare Hospital Insurance Tax (known as the Unearned Income Medicare Contribution) applies to all or part of a taxpayer's net investment income, at a rate of 3.8%, when certain income thresholds are met. Net investment income is defined to include, among other things, non-qualified annuities and net gain attributable to the disposition of property. Under final tax regulations, the taxable portion of any distribution from a non-qualified annuity contract – including withdrawals, and Annuity Payments – is included in net investment income. Net investment income also includes the gain from the sale of a non-qualified annuity contract. Under current guidance, we are required to report to the IRS whether a distribution is potentially subject to the tax. You should consult a tax adviser as to the potential impact of the Medicare Hospital Insurance Tax on your Contract.

Non-Resident Aliens and Foreign Entities. Generally, a distribution from a Contract to a non-resident alien or foreign entity is subject to federal tax withholding at a rate of 30% of the amount of income that is distributed. A non-resident alien is a person who is neither a citizen, nor a resident, of the United States of America (U.S.). We are required to withhold the tax and send it to the IRS. Some distributions to non-resident aliens or foreign entities may be subject to a lower (or no) tax if a treaty applies. In order to obtain the benefits of such a treaty, the non-resident alien must claim the treaty benefit on Form W-8BEN (or the equivalent form), providing us with:

- 1) proof of residency (in accordance with IRS requirements), and
- 2) the applicable taxpayer identification number.

If the above conditions are not met, we will withhold 30% of the income from the distribution. Additionally, under the Foreign Account Tax Compliance Act effective July 1, 2014, U.S. withholding may occur with respect to certain foreign entity owners (including foreign financial institutions and non-financial foreign entities (such as corporations, partnerships, and trusts)) at a 30% rate without regard to lower treaty rates.

Civil Unions and Domestic Partnerships. Parties to a civil union or domestic partnership are not treated as spouses under federal law. Consequently, certain transactions, such as a change of ownership or continuation of the Contract after death, may be taxable to those individuals. You should consult a tax adviser for more information on this subject.

Non-Natural Owner. When a Non-Qualified Contract is owned by a non-natural person (e.g., a corporation, limited liability company, partnership, trust or certain other entities) the Contract will generally not be treated as an annuity for tax purposes. This means that gain in the Contract will be taxed each year while the Contract is in the Accumulation Phase. This treatment is not generally applied to a Contract held by a trust or other entity as an agent for a natural person. If any beneficiary (including a contingent beneficiary) of a trust is a non-natural person, the Contract will not be treated as owned by an agent for a natural person, and gain in the Contract will be taxed annually, whether or not the trust is a grantor trust for income tax purposes. This treatment also does not apply to a Contract that qualifies as an immediate annuity. Before purchasing a Contract to be owned by a non-natural person or changing ownership on an existing Contract that will result in it being owned by a non-natural person, you should consult a tax adviser to determine the tax impact.

Distribution

The Contract is sold by both registered representatives of MML Investors Services, LLC (MMLIS), a subsidiary of MassMutual, and by registered representatives of other broker-dealers who have entered into distribution agreements with MML Strategic Distributors, LLC (MSD), a subsidiary of MassMutual. Pursuant to separate underwriting agreements with MassMutual, on its own behalf and on behalf of the Separate Account, MMLIS serves as principal underwriter of the Contracts sold by its registered representatives, and MSD serves as principal underwriter of the Contracts sold by registered representatives of other broker-dealers who have entered into distribution agreements with MSD.

MMLIS and MSD are registered with the SEC as broker-dealers under the Securities Exchange Act of 1934 and are members of the Financial Industry Regulatory Authority (FINRA). MMLIS and MSD also receive compensation for their actions as principal underwriters of the Contracts.

Commissions and Allowances Paid. Commissions for sales of the Contract by MMLIS registered representatives are paid on behalf of MMLIS by MassMutual to MMLIS registered representatives. Commissions for sales of the Contract by registered representatives of other broker-dealers are paid on behalf of MSD by MassMutual to those broker-dealers. The maximum commission payable for the Contract is 8.63% of Purchase Payments made to a Contract and/or up to 2.4% of Contract Value annually.

Additional Compensation Paid to MMLIS. Most MMLIS registered representatives are also MassMutual insurance agents, and as such, are eligible for certain cash and non-cash benefits from MassMutual. Cash compensation includes bonuses and allowances based on factors such as sales, productivity and persistency. Non-cash compensation includes various recognition items such as prizes and awards as well as attendance at, and payment of the costs associated with attendance at, conferences, seminars and recognition trips, and also includes contributions to certain individual plans such as pension and medical plans. Sales of the Contract may help these registered representatives and their supervisors qualify for such benefits. MMLIS registered representatives who are also general agents or sales managers of MassMutual also may receive overrides, allowances and other compensation that is based on sales of the Contract by their registered representatives.

Additional Compensation Paid to Certain Broker-Dealers. We and MSD make additional commission payments to certain broker-dealers in the form of asset-based payments and sales-based payments. We also make cash payments and non-cash payments to certain broker-dealers. The asset-based and sales-based payments are made to participate in those broker-dealers' preferred provider programs or marketing support programs, or to otherwise promote the Contract. Asset-based payments are based on the value of the assets in the MassMutual contracts sold by that broker-dealer. Sales-based payments are paid on each sale of the Contract and each subsequent Purchase Payment applied to the Contract. Cash payments are made to attend sales conferences and educational seminars sponsored by certain broker-dealers. Non-cash payments include various promotional items. **For a list of the broker-dealers to whom we currently pay additional compensation for selling the Contract, visit www.MassMutual.com/legal/compensation-arrangements or call our Service Center at the number shown on page 1 of this prospectus.**

The additional compensation arrangements described in the preceding paragraphs are not offered to all broker-dealers and the terms of such arrangements may differ among broker-dealers. Some broker-dealers may receive two or more of these payments. Such payments may give us greater access to the registered representatives of the broker-dealers that receive such compensation or may influence the way that a broker-dealer markets the Contract. Any such compensation will be paid by MSD or us and will not result in any additional direct charge to you.

Compensation in General. The compensation arrangements described above may provide a registered representative with an incentive to sell the Contract over other available contracts whose issuers do not provide such compensation. You may want to take these compensation arrangements into account when evaluating any recommendation regarding the Contract.

We intend to recoup a portion of the cash and non-cash compensation payments that we make through the assessment of certain charges described in this prospectus. We may also use some of the 12b-1 distribution fee payments and other payments that we receive from certain Funds to help us make these cash and non-cash payments.

You may want to contact MMLIS or your registered representative to find out more about the compensation they receive in connection with your purchase of a Contract.

Commissions or overrides may also be paid to entities providing wholesaling services (such as providing sales support and training for sales representatives who sell the Contracts).

Other Information

Collateral Assignment

In certain states, you cannot assign the Contract without our approval. We will refuse or accept any request to assign the Contract on a non-discriminatory basis. Please refer to your Contract.

We must receive Written Notice of the assignment, in Good Order, for any assignment we allow to be binding on us. We will not be liable for any payment or other action we take in accordance with the Contract before we receive notice of the assignment. We are not responsible for the validity of an assignment. You may be subject to tax consequences if you assign your Contract.

If the Contract is issued pursuant to a qualified plan, there may be limitations on your ability to assign the Contract. If you assign your Contract, your rights may only be exercised with the consent of the assignee of record.

Registered Representative Transaction Authority

You may authorize us to accept instructions from the registered representative assigned to your Contract in order to make transfers among investment choices and changes to allocations for future Purchase Payments. To authorize the registered representative assigned to your Contract to make premium allocations and transfers, you must send a completed Transactional Authorization Form to our Service Center. We may revoke transaction authorization privileges for certain Owners. Transaction authorization may be elected, changed or canceled at any time. We will confirm all transactions in writing.

We are not liable for any loss, cost or expense for action on instructions which are believed to be genuine in accordance with the procedures. As these parties act on your behalf, you are responsible for and bear the consequences of their instructions and other actions, including any limits on transfers.

Unclaimed Property

Every state has some form of unclaimed property law that imposes varying legal and practical obligations on insurers and, indirectly, on Contract Owners, Beneficiaries, and any other payees of proceeds from a Contract. Unclaimed property laws generally provide for the transfer of benefits or payments under various circumstances to the abandoned property division or unclaimed property office in the state of last residence. This process is known as escheatment. To help avoid escheatment, keep your own information, as well as Beneficiary and any other payee information up-to-date, including: full names, postal and electronic media addresses, telephone numbers, dates of birth, and social security numbers. To update this information, contact our Service Center.

Anti-Money Laundering

Federal laws designed to counter terrorism and prevent money laundering might, in certain circumstances, require us to reject a Purchase Payment or block a Contract Owner's ability to make certain transactions and thereby refuse to accept any request for transfers, withdrawals, or death benefits, 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.

Voting Rights

We are the legal owner of the Fund shares. When a Fund solicits proxies in conjunction with a vote of shareholders, we are required to obtain, from you and other Owners, instructions as to how to vote those shares. When we receive those instructions, we will vote all of the shares for which we have not received voting instructions, in proportion to those instructions. This will also include any shares that we own on our own behalf. This may result in a small number of Owners controlling the outcome of the vote. If we determine that we are no longer required to comply with the above, we will vote the shares in our own right.

During the Accumulation Phase of your Contract, we determine the number of shares you may vote by dividing your Contract Value in each Fund, if any, by \$100. Fractional shares are counted. During the Annuity Phase, you have no voting rights.

Payments We Make

We may be required to suspend or postpone payments for withdrawals or transfers from the Sub-Accounts for any period when:

- the NYSE is closed (other than customary weekend and holiday closings);
- trading on the NYSE is restricted;
- an emergency exists as a result of which disposal of shares of the Funds is not reasonably practicable or we cannot reasonably value the shares of the Funds; or
- during any other period when the SEC, by order, so permits for your protection.

In addition, if, pursuant to the SEC's rules, a money market Fund suspends payment of redemption proceeds in connection with a liquidation of that Fund, we will delay payment of any transfer, withdrawal or death benefit from the applicable money market Sub-Account until the Fund is liquidated.

Federal laws designed to counter terrorism and prevent money laundering might, in certain circumstances, require us to reject a Purchase Payment or block an Owner's ability to make certain transactions and thereby refuse to accept any request for transfers, withdrawals, or death benefits, 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.

Changes to the Contract

We reserve the right to amend the Contract to meet the requirements of applicable federal or state laws or regulations, or as otherwise provided in the Contract. We will notify you by Written Notice of such amendments.

Services and Administration

MassMutual has entered into an administrative services agreement with SE2, LLC (se2), 5801 SW 6th Avenue, Topeka, Kansas 66636, whereby se2 will provide the primary services required for the service and administration of the Contract. These services include, but are not limited to: document management services, new business processing, fund transfer, withdrawal, and death benefit processing as well as customer service call handling for all calls from both registered representatives and Owners.

Special Arrangements

For certain group or sponsored arrangements there may be expense savings that can be passed on to the customer because our cost for sales, administration, and mortality generally vary with the size of the customer. We will consider factors such as the size of the group, the nature of the sale, the expected Purchase Payment volume, and other factors we consider significant in determining whether to reduce charges. Subject to applicable state laws and regulations, we reserve the right to reduce or waive the mortality and expense risk charge, the administrative charge, the annual contract maintenance charge or any other charge that is appropriate to reflect any expense savings. We will make any reductions according to our rules in effect when an application for a Contract is approved. We may change these rules from time to time. Any reduction in charges will reflect differences in costs or services, and will not be unfairly discriminatory.

We reserve the right to modify or terminate such arrangements.

Termination of the Contract

We will terminate your Contract upon the occurrence of any of the following events:

- 1) the date of the last Annuity Payment if you have applied your entire Contract Value to an Annuity Option;
- 2) the date payment is made of the entire Contract Value when there are no Annuity Payments remaining;
- 3) the date of the last payment upon death to the last Beneficiary; or
- 4) the date your Contract is returned under the right to examine Contract provision.

In addition, in most states we reserve the right to terminate your Contract if no Purchase Payment has been made for at least two consecutive years measured from the date we received the last Purchase Payment; and each of the following amounts is less than \$2,000 on the date we send notice of our election to terminate your Contract:

- your Contract Value less any Premium Tax deducted; and
- the sum of all Purchase Payments made into your Contract adjusted for any partial withdrawals.

Our Financial Statements

The financial statements for the Separate Account and the Company are included in the SAI. Our financial statements should be distinguished from the financial statements of the Separate Account, and you should consider our financial statements as bearing only upon our ability to meet our obligations under the Contracts. Contact us at our Service Center for a free copy of these financial statements and the SAI.

Computer System Failures and Cybersecurity

The Company and its business partners rely on computer systems to conduct business, including customer service, marketing and sales activities, customer relationship management and producing financial statements. While the Company and its business partners have policies, procedures, automation and backup plans designed to prevent or limit the effect of failures, our respective computer systems may be vulnerable to disruptions or breaches as the result of natural disasters, man-made disasters, criminal activity, pandemics, or other events beyond our control. The failure of our or our business partners' computer systems for any reason could disrupt operations, result in the loss of customer business and adversely impact profitability.

The Company and its business partners retain confidential information on our respective computer systems, including customer information and proprietary business information. Any compromise of the security of our or our business partners' computer systems that results in the disclosure of personally identifiable customer information could damage our reputation, expose us to litigation, increase regulatory scrutiny and require us to incur significant technical, legal, and other expenses.

Legal Proceedings

The Company is subject to legal and regulatory actions, including class action lawsuits, in the ordinary course of its business. Our pending legal and regulatory actions include proceedings specific to us, as well as proceedings generally applicable to business practices in the industry in which we operate. From time to time, we also are subject to governmental and administrative proceedings and regulatory inquiries, examinations, and investigations in the ordinary course of our business. In addition, we, along with other industry participants, may occasionally be subject to investigations, examinations, and inquiries (in some cases industry-wide) concerning issues upon which regulators have decided to focus. Some of these proceedings involve requests for substantial and/or unspecified amounts, including compensatory or punitive damages.

While it is not possible to predict with certainty the ultimate outcome of any pending litigation proceedings or regulatory action, management believes, based on information currently known to it, that the ultimate outcome of all pending litigation and regulatory matters, after consideration of applicable reserves and rights to indemnification, is not likely to have a material adverse effect upon the Separate Account, the ability of the principal underwriter(s) to perform in accordance with its contracts with the Company on behalf of the Separate Account, or the ability of the Company to meet its obligations under the contract.

For more information regarding the Company's litigation and other legal proceedings, see the notes to the Company's financial statements contained within the SAI.

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To obtain a free copy of the Statement of Additional Information with more details concerning subjects discussed in this prospectus, return this request form to the address shown below or call our Service Center at (866) 645-2362.

To: MassMutual
P.O. Box 758511
Topeka, Kansas 66675-8550

Please send me the **Statement of Additional Information** for MassMutual Capital Vantage® (AN2603SAI).

Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____

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Appendix A

Condensed Financial Information

The following schedules include Accumulation Unit values for the periods indicated. We have extracted some of this data from the Separate Account's audited financial statements. You should read this information in conjunction with the Separate Account's audited financial statements and related notes that are included in the Statement of Additional Information.

Accumulation Unit Values – B-Share

Without Election of the Return of Purchase Payment Death Benefit

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 | Value at Inception | Commencement of Public Offering |
|---|---------------|---------------|---------------|---------------|--------------------|---------------------------------|
| BlackRock iShares® Alternative Strategies (a) | \$ — | \$11.37 | \$10.22 | \$ 9.72 | \$10.00 | 10/26/2015 |
| BlackRock iShares® Dynamic Allocation (b) | 10.87 | 11.58 | 10.20 | 9.70 | 10.00 | 10/26/2015 |
| BlackRock iShares® Dynamic Fixed Income (c) | — | 10.29 | 10.03 | 9.81 | 10.00 | 10/26/2015 |
| BlackRock iShares® Equity Appreciation (c) | — | 12.47 | 10.36 | 9.59 | 10.00 | 10/26/2015 |
| Fidelity® VIP Contrafund® | 11.79 | 12.76 | 10.60 | 9.93 | 10.00 | 10/26/2015 |
| Ivy VIP Asset Strategy | 10.18 | 10.88 | 9.29 | 9.63 | 10.00 | 10/26/2015 |
| MML Aggressive Allocation | 11.15 | 12.30 | 10.49 | 9.79 | 10.00 | 10/26/2015 |
| MML Asset Momentum | 11.52 | 14.01 | 10.58 | 9.72 | 10.00 | 10/26/2015 |
| MML Balanced Allocation | 10.67 | 11.32 | 10.28 | 9.81 | 10.00 | 10/26/2015 |
| MML Blend | 11.47 | 12.15 | 10.67 | 9.88 | 10.00 | 10/26/2015 |
| MML Blue Chip Growth | 13.60 | 13.51 | 10.04 | 10.08 | 10.00 | 10/26/2015 |
| MML Conservative Allocation | 10.57 | 11.09 | 10.25 | 9.81 | 10.00 | 10/26/2015 |
| MML Core Allocation * | 11.31 | 12.01 | 10.55 | 9.78 | 10.00 | 10/26/2015 |
| MML Dynamic Bond | 10.37 | 10.51 | 10.20 | 9.84 | 10.00 | 10/26/2015 |
| MML Equity | 11.05 | 12.43 | 10.87 | 9.78 | 10.00 | 10/26/2015 |
| MML Equity Income | 11.77 | 13.15 | 11.45 | 9.76 | 10.00 | 10/26/2015 |
| MML Equity Rotation | 13.34 | 14.83 | 11.55 | 9.95 | 10.00 | 10/26/2015 |
| MML Focused Equity | 13.50 | 13.51 | 11.22 | 9.62 | 10.00 | 10/26/2015 |
| MML Foreign | 9.43 | 11.34 | 9.43 | 9.41 | 10.00 | 10/26/2015 |
| MML Fundamental Growth | 12.81 | 12.86 | 10.20 | 9.95 | 10.00 | 10/26/2015 |
| MML Fundamental Value | 10.99 | 12.41 | 10.92 | 9.76 | 10.00 | 10/26/2015 |
| MML Global | 11.28 | 12.64 | 10.30 | 9.69 | 10.00 | 10/26/2015 |
| MML Growth * | 13.39 | 13.61 | 10.76 | 9.97 | 10.00 | 10/26/2015 |
| MML Growth & Income | 12.12 | 12.95 | 10.60 | 9.87 | 10.00 | 10/26/2015 |
| MML Growth Allocation | 10.97 | 11.93 | 10.40 | 9.80 | 10.00 | 10/26/2015 |
| MML High Yield | 11.25 | 11.78 | 11.03 | 9.58 | 10.00 | 10/26/2015 |
| MML Income & Growth | 11.57 | 13.27 | 11.43 | 9.95 | 10.00 | 10/26/2015 |
| MML Inflation-Protected and Income | 10.17 | 10.43 | 10.23 | 9.85 | 10.00 | 10/26/2015 |
| MML International * | 10.81 | 12.62 | 9.68 | 9.50 | 10.00 | 10/26/2015 |
| MML International Equity | 9.74 | 12.95 | 10.05 | 9.40 | 10.00 | 10/26/2015 |
| MML Large Cap Growth | 12.50 | 12.95 | 9.83 | 9.98 | 10.00 | 10/26/2015 |
| MML Managed Bond | 10.11 | 10.28 | 9.94 | 9.80 | 10.00 | 10/26/2015 |
| MML Managed Volatility | 10.39 | 11.04 | 10.25 | 10.01 | 10.00 | 10/26/2015 |
| MML Mid Cap Growth | 12.51 | 12.96 | 10.51 | 10.01 | 10.00 | 10/26/2015 |
| MML Mid Cap Value | 11.31 | 13.18 | 11.94 | 9.82 | 10.00 | 10/26/2015 |
| MML Moderate Allocation | 10.81 | 11.58 | 10.35 | 9.81 | 10.00 | 10/26/2015 |
| MML Short-Duration Bond | 10.17 | 10.14 | 10.02 | 9.86 | 10.00 | 10/26/2015 |
| MML Small Cap Equity | 11.63 | 13.11 | 11.61 | 9.94 | 10.00 | 10/26/2015 |
| MML Small Cap Growth Equity | 12.37 | 13.17 | 10.86 | 9.75 | 10.00 | 10/26/2015 |

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 | Value at Inception | Commencement of Public Offering |
|---|---------------|---------------|---------------|---------------|--------------------|---------------------------------|
| MML Small Company Value | \$11.85 | \$13.79 | \$12.50 | \$ 9.56 | \$10.00 | 10/26/2015 |
| MML Small/Mid Cap Value | 11.23 | 13.36 | 11.93 | 9.66 | 10.00 | 10/26/2015 |
| MML Special Situations | 12.06 | 12.84 | 10.94 | 9.56 | 10.00 | 10/26/2015 |
| MML Strategic Emerging Markets | 11.45 | 13.23 | 9.99 | 9.51 | 10.00 | 10/26/2015 |
| MML Total Return Bond | 10.07 | 10.20 | 10.03 | 9.90 | 10.00 | 10/26/2015 |
| MML U.S. Government Money Market | 9.86 | 9.83 | 9.89 | 9.98 | 10.00 | 10/26/2015 |
| Oppenheimer Discovery Mid Cap Growth | 11.92 | 12.85 | 10.10 | 10.00 | 10.00 | 10/26/2015 |
| Oppenheimer Global | 11.13 | 12.98 | 9.61 | 9.73 | 10.00 | 10/26/2015 |
| Oppenheimer Global Multi-Alternatives (d) | 9.52 | 9.94 | 10.02 | 9.78 | 10.00 | 10/26/2015 |
| Oppenheimer Global Strategic Income | 10.16 | 10.75 | 10.24 | 9.73 | 10.00 | 10/26/2015 |
| Oppenheimer International Growth | 9.42 | 11.83 | 9.45 | 9.81 | 10.00 | 10/26/2015 |
| Oppenheimer Main Street | 11.49 | 12.62 | 10.93 | 9.92 | 10.00 | 10/26/2015 |

Accumulation Unit Values – B-Share

With Election of the Return of Purchase Payment Death Benefit

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 | Value at Inception | Commencement of Public Offering |
|---|---------------|---------------|---------------|---------------|--------------------|---------------------------------|
| BlackRock iShares® Alternative Strategies (a) | \$ — | \$11.29 | \$10.17 | \$ 9.71 | \$10.00 | 10/26/2015 |
| BlackRock iShares® Dynamic Allocation (b) | 10.75 | 11.49 | 10.15 | 9.69 | 10.00 | 10/26/2015 |
| BlackRock iShares® Dynamic Fixed Income (c) | — | 10.21 | 9.99 | 9.80 | 10.00 | 10/26/2015 |
| BlackRock iShares® Equity Appreciation (c) | — | 12.37 | 10.31 | 9.59 | 10.00 | 10/26/2015 |
| Fidelity® VIP Contrafund® | 11.66 | 12.66 | 10.55 | 9.93 | 10.00 | 10/26/2015 |
| Ivy VIP Asset Strategy | 10.07 | 10.79 | 9.25 | 9.62 | 10.00 | 10/26/2015 |
| MML Aggressive Allocation | 11.03 | 12.21 | 10.45 | 9.78 | 10.00 | 10/26/2015 |
| MML Asset Momentum | 11.39 | 13.90 | 10.53 | 9.72 | 10.00 | 10/26/2015 |
| MML Balanced Allocation | 10.56 | 11.24 | 10.24 | 9.81 | 10.00 | 10/26/2015 |
| MML Blend | 11.35 | 12.05 | 10.63 | 9.87 | 10.00 | 10/26/2015 |
| MML Blue Chip Growth | 13.45 | 13.41 | 10.00 | 10.07 | 10.00 | 10/26/2015 |
| MML Conservative Allocation | 10.46 | 11.01 | 10.20 | 9.80 | 10.00 | 10/26/2015 |
| MML Core Allocation * | 11.19 | 11.92 | 10.51 | 9.77 | 10.00 | 10/26/2015 |
| MML Dynamic Bond | 10.26 | 10.43 | 10.15 | 9.83 | 10.00 | 10/26/2015 |
| MML Equity | 10.93 | 12.34 | 10.83 | 9.77 | 10.00 | 10/26/2015 |
| MML Equity Income | 11.64 | 13.05 | 11.40 | 9.76 | 10.00 | 10/26/2015 |
| MML Equity Rotation | 13.19 | 14.71 | 11.50 | 9.94 | 10.00 | 10/26/2015 |
| MML Focused Equity | 13.35 | 13.40 | 11.17 | 9.62 | 10.00 | 10/26/2015 |
| MML Foreign | 9.32 | 11.25 | 9.39 | 9.41 | 10.00 | 10/26/2015 |
| MML Fundamental Growth | 12.67 | 12.76 | 10.16 | 9.94 | 10.00 | 10/26/2015 |
| MML Fundamental Value | 10.87 | 12.32 | 10.88 | 9.75 | 10.00 | 10/26/2015 |
| MML Global | 11.16 | 12.54 | 10.26 | 9.68 | 10.00 | 10/26/2015 |
| MML Growth * | 13.24 | 13.51 | 10.71 | 9.96 | 10.00 | 10/26/2015 |
| MML Growth & Income | 11.99 | 12.86 | 10.56 | 9.86 | 10.00 | 10/26/2015 |
| MML Growth Allocation | 10.85 | 11.84 | 10.36 | 9.79 | 10.00 | 10/26/2015 |
| MML High Yield | 11.12 | 11.69 | 10.98 | 9.58 | 10.00 | 10/26/2015 |
| MML Income & Growth | 11.44 | 13.17 | 11.39 | 9.94 | 10.00 | 10/26/2015 |
| MML Inflation-Protected and Income | 10.05 | 10.35 | 10.19 | 9.85 | 10.00 | 10/26/2015 |
| MML International * | 10.69 | 12.53 | 9.64 | 9.49 | 10.00 | 10/26/2015 |
| MML International Equity | 9.63 | 12.86 | 10.01 | 9.40 | 10.00 | 10/26/2015 |
| MML Large Cap Growth | 12.36 | 12.85 | 9.79 | 9.98 | 10.00 | 10/26/2015 |

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 | Value at Inception | Commencement of Public Offering |
|---|---------------|---------------|---------------|---------------|--------------------|---------------------------------|
| MML Managed Bond | \$10.00 | \$10.21 | \$ 9.90 | \$ 9.79 | \$10.00 | 10/26/2015 |
| MML Managed Volatility | 10.27 | 10.95 | 10.21 | 10.00 | 10.00 | 10/26/2015 |
| MML Mid Cap Growth | 12.37 | 12.86 | 10.47 | 10.01 | 10.00 | 10/26/2015 |
| MML Mid Cap Value | 11.18 | 13.08 | 11.89 | 9.81 | 10.00 | 10/26/2015 |
| MML Moderate Allocation | 10.69 | 11.49 | 10.31 | 9.80 | 10.00 | 10/26/2015 |
| MML Short-Duration Bond | 10.06 | 10.07 | 9.97 | 9.86 | 10.00 | 10/26/2015 |
| MML Small Cap Equity | 11.50 | 13.01 | 11.56 | 9.94 | 10.00 | 10/26/2015 |
| MML Small Cap Growth Equity | 12.24 | 13.07 | 10.81 | 9.75 | 10.00 | 10/26/2015 |
| MML Small Company Value | 11.72 | 13.69 | 12.45 | 9.55 | 10.00 | 10/26/2015 |
| MML Small/Mid Cap Value | 11.10 | 13.26 | 11.88 | 9.65 | 10.00 | 10/26/2015 |
| MML Special Situations | 11.93 | 12.74 | 10.89 | 9.56 | 10.00 | 10/26/2015 |
| MML Strategic Emerging Markets | 11.32 | 13.13 | 9.94 | 9.50 | 10.00 | 10/26/2015 |
| MML Total Return Bond | 9.95 | 10.12 | 9.99 | 9.90 | 10.00 | 10/26/2015 |
| MML U.S. Government Money Market | 9.75 | 9.76 | 9.85 | 9.98 | 10.00 | 10/26/2015 |
| Oppenheimer Discovery Mid Cap Growth | 11.79 | 12.75 | 10.06 | 9.99 | 10.00 | 10/26/2015 |
| Oppenheimer Global | 11.00 | 12.88 | 9.57 | 9.72 | 10.00 | 10/26/2015 |
| Oppenheimer Global Multi-Alternatives (d) | 9.41 | 9.86 | 9.98 | 9.77 | 10.00 | 10/26/2015 |
| Oppenheimer Global Strategic Income | 10.04 | 10.66 | 10.19 | 9.72 | 10.00 | 10/26/2015 |
| Oppenheimer International Growth | 9.32 | 11.74 | 9.41 | 9.80 | 10.00 | 10/26/2015 |
| Oppenheimer Main Street | 11.36 | 12.53 | 10.89 | 9.91 | 10.00 | 10/26/2015 |

Accumulation Unit Values – C-Share

Without Election of the Return of Purchase Payment Death Benefit

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 | Value at Inception | Commencement of Public Offering |
|---|---------------|---------------|---------------|---------------|--------------------|---------------------------------|
| BlackRock iShares® Alternative Strategies (a) | \$ — | \$11.26 | \$10.16 | \$ 9.71 | \$10.00 | 10/26/2015 |
| BlackRock iShares® Dynamic Allocation (b) | 10.72 | 11.47 | 10.14 | 9.69 | 10.00 | 10/26/2015 |
| BlackRock iShares® Dynamic Fixed Income (c) | — | 10.19 | 9.98 | 9.80 | 10.00 | 10/26/2015 |
| BlackRock iShares® Equity Appreciation (c) | — | 12.34 | 10.30 | 9.59 | 10.00 | 10/26/2015 |
| Fidelity® VIP Contrafund® | 11.62 | 12.63 | 10.54 | 9.93 | 10.00 | 10/26/2015 |
| Ivy VIP Asset Strategy | 10.04 | 10.77 | 9.24 | 9.62 | 10.00 | 10/26/2015 |
| MML Aggressive Allocation | 10.99 | 12.18 | 10.44 | 9.78 | 10.00 | 10/26/2015 |
| MML Asset Momentum | 11.36 | 13.87 | 10.52 | 9.72 | 10.00 | 10/26/2015 |
| MML Balanced Allocation | 10.52 | 11.21 | 10.23 | 9.81 | 10.00 | 10/26/2015 |
| MML Blend | 11.31 | 12.03 | 10.61 | 9.87 | 10.00 | 10/26/2015 |
| MML Blue Chip Growth | 13.41 | 13.38 | 9.99 | 10.07 | 10.00 | 10/26/2015 |
| MML Conservative Allocation | 10.42 | 10.98 | 10.19 | 9.80 | 10.00 | 10/26/2015 |
| MML Core Allocation * | 11.15 | 11.89 | 10.49 | 9.77 | 10.00 | 10/26/2015 |
| MML Dynamic Bond | 10.22 | 10.41 | 10.14 | 9.83 | 10.00 | 10/26/2015 |
| MML Equity | 10.89 | 12.31 | 10.81 | 9.77 | 10.00 | 10/26/2015 |
| MML Equity Income | 11.60 | 13.02 | 11.39 | 9.76 | 10.00 | 10/26/2015 |
| MML Equity Rotation | 13.15 | 14.68 | 11.49 | 9.94 | 10.00 | 10/26/2015 |
| MML Focused Equity | 13.31 | 13.38 | 11.16 | 9.62 | 10.00 | 10/26/2015 |
| MML Foreign | 9.29 | 11.23 | 9.38 | 9.41 | 10.00 | 10/26/2015 |
| MML Fundamental Growth | 12.63 | 12.73 | 10.15 | 9.94 | 10.00 | 10/26/2015 |
| MML Fundamental Value | 10.84 | 12.29 | 10.87 | 9.75 | 10.00 | 10/26/2015 |
| MML Global | 11.12 | 12.52 | 10.24 | 9.68 | 10.00 | 10/26/2015 |
| MML Growth * | 13.20 | 13.48 | 10.70 | 9.96 | 10.00 | 10/26/2015 |

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 | Value at Inception | Commencement of Public Offering |
|---|---------------|---------------|---------------|---------------|--------------------|---------------------------------|
| MML Growth & Income | \$11.95 | \$12.83 | \$10.55 | \$ 9.86 | \$10.00 | 10/26/2015 |
| MML Growth Allocation | 10.81 | 11.81 | 10.35 | 9.79 | 10.00 | 10/26/2015 |
| MML High Yield | 11.09 | 11.67 | 10.97 | 9.57 | 10.00 | 10/26/2015 |
| MML Income & Growth | 11.40 | 13.14 | 11.37 | 9.94 | 10.00 | 10/26/2015 |
| MML Inflation-Protected and Income | 10.02 | 10.33 | 10.18 | 9.84 | 10.00 | 10/26/2015 |
| MML International * | 10.65 | 12.50 | 9.63 | 9.49 | 10.00 | 10/26/2015 |
| MML International Equity | 9.60 | 12.83 | 10.00 | 9.40 | 10.00 | 10/26/2015 |
| MML Large Cap Growth | 12.32 | 12.82 | 9.78 | 9.97 | 10.00 | 10/26/2015 |
| MML Managed Bond | 9.97 | 10.18 | 9.89 | 9.79 | 10.00 | 10/26/2015 |
| MML Managed Volatility | 10.24 | 10.93 | 10.19 | 10.00 | 10.00 | 10/26/2015 |
| MML Mid Cap Growth | 12.33 | 12.83 | 10.46 | 10.01 | 10.00 | 10/26/2015 |
| MML Mid Cap Value | 11.15 | 13.05 | 11.88 | 9.81 | 10.00 | 10/26/2015 |
| MML Moderate Allocation | 10.65 | 11.46 | 10.29 | 9.80 | 10.00 | 10/26/2015 |
| MML Short-Duration Bond | 10.03 | 10.04 | 9.96 | 9.86 | 10.00 | 10/26/2015 |
| MML Small Cap Equity | 11.47 | 12.99 | 11.55 | 9.94 | 10.00 | 10/26/2015 |
| MML Small Cap Growth Equity | 12.20 | 13.04 | 10.80 | 9.74 | 10.00 | 10/26/2015 |
| MML Small Company Value | 11.69 | 13.66 | 12.44 | 9.55 | 10.00 | 10/26/2015 |
| MML Small/Mid Cap Value | 11.07 | 13.23 | 11.87 | 9.65 | 10.00 | 10/26/2015 |
| MML Special Situations | 11.89 | 12.72 | 10.88 | 9.55 | 10.00 | 10/26/2015 |
| MML Strategic Emerging Markets | 11.29 | 13.10 | 9.93 | 9.50 | 10.00 | 10/26/2015 |
| MML Total Return Bond | 9.92 | 10.10 | 9.98 | 9.90 | 10.00 | 10/26/2015 |
| MML U.S. Government Money Market | 9.72 | 9.73 | 9.84 | 9.97 | 10.00 | 10/26/2015 |
| Oppenheimer Discovery Mid Cap Growth | 11.75 | 12.72 | 10.05 | 9.99 | 10.00 | 10/26/2015 |
| Oppenheimer Global | 10.97 | 12.85 | 9.56 | 9.72 | 10.00 | 10/26/2015 |
| Oppenheimer Global Multi-Alternatives (d) | 9.38 | 9.84 | 9.97 | 9.77 | 10.00 | 10/26/2015 |
| Oppenheimer Global Strategic Income | 10.01 | 10.64 | 10.18 | 9.72 | 10.00 | 10/26/2015 |
| Oppenheimer International Growth | 9.29 | 11.71 | 9.40 | 9.80 | 10.00 | 10/26/2015 |
| Oppenheimer Main Street | 11.32 | 12.50 | 10.87 | 9.91 | 10.00 | 10/26/2015 |

Accumulation Unit Values – C-Share

With Election of the Return of Purchase Payment Death Benefit

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 | Value at Inception | Commencement of Public Offering |
|---|---------------|---------------|---------------|---------------|--------------------|---------------------------------|
| BlackRock iShares® Alternative Strategies (a) | \$ — | \$11.18 | \$10.12 | \$ 9.70 | \$10.00 | 10/26/2015 |
| BlackRock iShares® Dynamic Allocation (b) | 10.60 | 11.38 | 10.10 | 9.69 | 10.00 | 10/26/2015 |
| BlackRock iShares® Dynamic Fixed Income (c) | — | 10.11 | 9.94 | 9.79 | 10.00 | 10/26/2015 |
| BlackRock iShares® Equity Appreciation (c) | — | 12.25 | 10.26 | 9.58 | 10.00 | 10/26/2015 |
| Fidelity® VIP Contrafund® | 11.49 | 12.54 | 10.50 | 9.92 | 10.00 | 10/26/2015 |
| Ivy VIP Asset Strategy | 9.93 | 10.69 | 9.20 | 9.61 | 10.00 | 10/26/2015 |
| MML Aggressive Allocation | 10.87 | 12.09 | 10.39 | 9.77 | 10.00 | 10/26/2015 |
| MML Asset Momentum | 11.23 | 13.77 | 10.48 | 9.71 | 10.00 | 10/26/2015 |
| MML Balanced Allocation | 10.41 | 11.13 | 10.19 | 9.80 | 10.00 | 10/26/2015 |
| MML Blend | 11.19 | 11.94 | 10.57 | 9.86 | 10.00 | 10/26/2015 |
| MML Blue Chip Growth | 13.26 | 13.28 | 9.95 | 10.07 | 10.00 | 10/26/2015 |
| MML Conservative Allocation | 10.31 | 10.90 | 10.15 | 9.80 | 10.00 | 10/26/2015 |
| MML Core Allocation * | 11.03 | 11.80 | 10.45 | 9.77 | 10.00 | 10/26/2015 |
| MML Dynamic Bond | 10.11 | 10.33 | 10.10 | 9.82 | 10.00 | 10/26/2015 |
| MML Equity | 10.77 | 12.22 | 10.77 | 9.76 | 10.00 | 10/26/2015 |

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 | Value at Inception | Commencement of Public Offering |
|---|---------------|---------------|---------------|---------------|--------------------|---------------------------------|
| MML Equity Income | \$11.47 | \$12.92 | \$11.34 | \$ 9.75 | \$10.00 | 10/26/2015 |
| MML Equity Rotation | 13.01 | 14.57 | 11.44 | 9.93 | 10.00 | 10/26/2015 |
| MML Focused Equity | 13.16 | 13.27 | 11.11 | 9.61 | 10.00 | 10/26/2015 |
| MML Foreign | 9.19 | 11.14 | 9.34 | 9.40 | 10.00 | 10/26/2015 |
| MML Fundamental Growth | 12.49 | 12.64 | 10.10 | 9.94 | 10.00 | 10/26/2015 |
| MML Fundamental Value | 10.72 | 12.20 | 10.82 | 9.75 | 10.00 | 10/26/2015 |
| MML Global | 11.00 | 12.42 | 10.20 | 9.68 | 10.00 | 10/26/2015 |
| MML Growth * | 13.05 | 13.38 | 10.66 | 9.95 | 10.00 | 10/26/2015 |
| MML Growth & Income | 11.82 | 12.73 | 10.50 | 9.85 | 10.00 | 10/26/2015 |
| MML Growth Allocation | 10.69 | 11.72 | 10.30 | 9.78 | 10.00 | 10/26/2015 |
| MML High Yield | 10.97 | 11.58 | 10.92 | 9.57 | 10.00 | 10/26/2015 |
| MML Income & Growth | 11.28 | 13.04 | 11.33 | 9.93 | 10.00 | 10/26/2015 |
| MML Inflation-Protected and Income | 9.91 | 10.25 | 10.14 | 9.84 | 10.00 | 10/26/2015 |
| MML International * | 10.53 | 12.40 | 9.59 | 9.48 | 10.00 | 10/26/2015 |
| MML International Equity | 9.50 | 12.73 | 9.96 | 9.39 | 10.00 | 10/26/2015 |
| MML Large Cap Growth | 12.19 | 12.72 | 9.74 | 9.97 | 10.00 | 10/26/2015 |
| MML Managed Bond | 9.86 | 10.11 | 9.85 | 9.79 | 10.00 | 10/26/2015 |
| MML Managed Volatility | 10.13 | 10.84 | 10.15 | 9.99 | 10.00 | 10/26/2015 |
| MML Mid Cap Growth | 12.20 | 12.73 | 10.41 | 10.00 | 10.00 | 10/26/2015 |
| MML Mid Cap Value | 11.02 | 12.95 | 11.83 | 9.80 | 10.00 | 10/26/2015 |
| MML Moderate Allocation | 10.54 | 11.38 | 10.25 | 9.79 | 10.00 | 10/26/2015 |
| MML Short-Duration Bond | 9.92 | 9.97 | 9.92 | 9.85 | 10.00 | 10/26/2015 |
| MML Small Cap Equity | 11.34 | 12.89 | 11.50 | 9.93 | 10.00 | 10/26/2015 |
| MML Small Cap Growth Equity | 12.06 | 12.94 | 10.76 | 9.74 | 10.00 | 10/26/2015 |
| MML Small Company Value | 11.56 | 13.56 | 12.39 | 9.54 | 10.00 | 10/26/2015 |
| MML Small/Mid Cap Value | 10.94 | 13.13 | 11.82 | 9.64 | 10.00 | 10/26/2015 |
| MML Special Situations | 11.76 | 12.62 | 10.83 | 9.55 | 10.00 | 10/26/2015 |
| MML Strategic Emerging Markets | 11.16 | 13.00 | 9.89 | 9.49 | 10.00 | 10/26/2015 |
| MML Total Return Bond | 9.81 | 10.03 | 9.94 | 9.89 | 10.00 | 10/26/2015 |
| MML U.S. Government Money Market | 9.61 | 9.66 | 9.80 | 9.97 | 10.00 | 10/26/2015 |
| Oppenheimer Discovery Mid Cap Growth | 11.62 | 12.63 | 10.01 | 9.98 | 10.00 | 10/26/2015 |
| Oppenheimer Global | 10.85 | 12.75 | 9.52 | 9.71 | 10.00 | 10/26/2015 |
| Oppenheimer Global Multi-Alternatives (d) | 9.28 | 9.77 | 9.93 | 9.77 | 10.00 | 10/26/2015 |
| Oppenheimer Global Strategic Income | 9.90 | 10.56 | 10.14 | 9.71 | 10.00 | 10/26/2015 |
| Oppenheimer International Growth | 9.18 | 11.63 | 9.36 | 9.80 | 10.00 | 10/26/2015 |
| Oppenheimer Main Street | 11.20 | 12.41 | 10.83 | 9.91 | 10.00 | 10/26/2015 |

Accumulation Units Outstanding – B-Share

Without Election of the Return of Purchase Payment Death Benefit

See Accumulation Unit Values table(s) above for Commencement Dates.

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 |
|---|---------------|---------------|---------------|---------------|
| BlackRock iShares® Alternative Strategies (a) | — | 91,604 | 52,585 | 8,066 |
| BlackRock iShares® Dynamic Allocation (b) | 94,222 | 76,335 | 33,837 | 11,536 |
| BlackRock iShares® Dynamic Fixed Income (c) | — | 155,471 | 101,923 | 38,473 |
| BlackRock iShares® Equity Appreciation (c) | — | 61,368 | 49,255 | 5,572 |
| Fidelity® VIP Contrafund® | 1,011,335 | 696,991 | 367,893 | 20,482 |
| Ivy VIP Asset Strategy | 52,343 | 24,633 | 21,681 | 2,824 |

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| MML Aggressive Allocation | 360,262 | 299,046 | 132,667 | 7,801 |
| MML Asset Momentum | 115,410 | 101,522 | 63,783 | 8,199 |
| MML Balanced Allocation | 750,632 | 592,868 | 261,827 | 29,232 |
| MML Blend | 1,453,773 | 782,569 | 271,079 | 43,897 |
| MML Blue Chip Growth | 652,045 | 387,070 | 170,035 | 34,024 |
| MML Conservative Allocation | 818,567 | 778,369 | 294,590 | 22,873 |
| MML Core Allocation * | 1,068,704 | 831,751 | 337,346 | 12,635 |
| MML Dynamic Bond | 285,336 | 236,060 | 181,081 | 21,135 |
| MML Equity | 282,487 | 207,782 | 109,674 | 26,866 |
| MML Equity Income | 217,957 | 139,931 | 56,805 | 3,493 |
| MML Equity Rotation | 107,376 | 81,041 | 27,425 | 2,973 |
| MML Focused Equity | 69,215 | 41,215 | 5,251 | 2,141 |
| MML Foreign | 41,670 | 27,658 | 15,079 | 3,577 |
| MML Fundamental Growth | 78,574 | 54,501 | 38,267 | 4,258 |
| MML Fundamental Value | 180,516 | 123,511 | 68,637 | 16,237 |
| MML Global | 75,732 | 58,521 | 28,717 | 3,113 |
| MML Growth * | 504,800 | 348,400 | 169,921 | 5,800 |
| MML Growth & Income | 301,565 | 126,807 | 64,215 | 697 |
| MML Growth Allocation | 1,034,420 | 873,620 | 579,773 | 117,648 |
| MML High Yield | 368,687 | 244,538 | 71,330 | 4,735 |
| MML Income & Growth | 223,916 | 181,072 | 85,022 | 10,483 |
| MML Inflation-Protected and Income | 164,794 | 109,419 | 63,617 | 3,735 |
| MML International * | 132,655 | 67,633 | 33,573 | 569 |
| MML International Equity | 105,699 | 46,196 | 10,726 | 2,788 |
| MML Large Cap Growth | 70,200 | 43,053 | 29,398 | 5,489 |
| MML Managed Bond | 694,875 | 474,279 | 255,416 | 16,253 |
| MML Managed Volatility | 127,616 | 111,300 | 84,614 | 26,072 |
| MML Mid Cap Growth | 365,883 | 266,371 | 123,718 | 18,375 |
| MML Mid Cap Value | 248,668 | 186,109 | 75,929 | 9,761 |
| MML Moderate Allocation | 2,157,971 | 1,497,812 | 845,567 | 126,877 |
| MML Short-Duration Bond | 309,390 | 275,927 | 207,424 | 7,153 |
| MML Small Cap Equity | 168,245 | 90,178 | 19,689 | 5,394 |
| MML Small Cap Growth Equity | 92,997 | 49,403 | 23,991 | 886 |
| MML Small Company Value | 145,896 | 85,517 | 25,236 | 1,699 |
| MML Small/Mid Cap Value | 88,996 | 56,605 | 32,417 | 3,820 |
| MML Special Situations | 52,572 | 37,326 | 22,202 | 9,178 |
| MML Strategic Emerging Markets | 119,361 | 64,829 | 36,378 | 2,476 |
| MML Total Return Bond | 205,842 | 113,292 | 69,637 | 7,588 |
| MML U.S. Government Money Market | 636,631 | 226,991 | 84,667 | 31,486 |
| Oppenheimer Discovery Mid Cap Growth | 75,356 | 45,780 | 25,650 | 9,451 |
| Oppenheimer Global | 316,866 | 173,871 | 59,150 | 7,383 |
| Oppenheimer Global Multi-Alternatives (d) | 27,677 | 27,367 | 16,792 | 5,328 |
| Oppenheimer Global Strategic Income | 298,039 | 152,304 | 41,141 | 4,442 |
| Oppenheimer International Growth | 139,124 | 85,023 | 40,800 | 1,646 |
| Oppenheimer Main Street | 110,370 | 84,775 | 34,786 | 10,391 |

Accumulation Units Outstanding – B-Share

With Election of the Return of Purchase Payment Death Benefit

See Accumulation Unit Values table(s) above for Commencement Dates.

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 |
|---|------------------|------------------|------------------|------------------|
| BlackRock iShares® Alternative Strategies (a) | — | — | — | — |
| BlackRock iShares® Dynamic Allocation (b) | — | — | — | — |
| BlackRock iShares® Dynamic Fixed Income (c) | — | — | — | — |
| BlackRock iShares® Equity Appreciation (c) | — | 4,762 | 4,765 | — |
| Fidelity® VIP Contrafund® | 159,096 | 208,215 | 137,145 | 10,928 |
| Ivy VIP Asset Strategy | 13,643 | 11,468 | 9,075 | 6,019 |
| MML Aggressive Allocation | 59,947 | 60,347 | 43,761 | — |
| MML Asset Momentum | — | — | — | — |
| MML Balanced Allocation | 214,410 | 148,434 | 103,006 | 20,522 |
| MML Blend | 223,134 | 185,586 | 85,646 | 10,328 |
| MML Blue Chip Growth | 104,231 | 91,500 | 59,530 | 8,495 |
| MML Conservative Allocation | 300,220 | 302,868 | 89,627 | — |
| MML Core Allocation * | 212,122 | 184,513 | 149,952 | — |
| MML Dynamic Bond | 14,831 | 20,260 | 18,335 | — |
| MML Equity | 68,491 | 65,845 | 46,347 | 1,679 |
| MML Equity Income | 27,186 | 27,323 | 15,726 | — |
| MML Equity Rotation | — | — | — | — |
| MML Focused Equity | 5,326 | 6,823 | 4,583 | — |
| MML Foreign | 953 | 952 | — | — |
| MML Fundamental Growth | 13,290 | 10,218 | 6,395 | — |
| MML Fundamental Value | 26,855 | 29,159 | 11,308 | — |
| MML Global | 8,159 | 7,277 | 1,957 | — |
| MML Growth * | 109,884 | 102,505 | 35,529 | — |
| MML Growth & Income | 31,076 | 43,490 | 31,378 | — |
| MML Growth Allocation | 146,836 | 133,775 | 118,042 | 31,699 |
| MML High Yield | 48,997 | 54,380 | 28,534 | — |
| MML Income & Growth | 84,091 | 63,001 | 34,704 | — |
| MML Inflation-Protected and Income | 34,180 | 30,367 | 17,409 | — |
| MML International * | 17,893 | 18,674 | 13,453 | — |
| MML International Equity | 11,007 | 11,039 | 6,470 | 4,392 |
| MML Large Cap Growth | 16,567 | 8,218 | 1,959 | — |
| MML Managed Bond | 184,860 | 130,001 | 72,085 | 3,430 |
| MML Managed Volatility | 8,901 | 8,840 | 1,563 | — |
| MML Mid Cap Growth | 113,923 | 98,768 | 42,056 | 9,648 |
| MML Mid Cap Value | 58,820 | 69,686 | 36,563 | — |
| MML Moderate Allocation | 472,520 | 470,849 | 365,959 | 98,396 |
| MML Short-Duration Bond | 13,715 | 10,570 | 64,030 | — |
| MML Small Cap Equity | 38,694 | 28,816 | 14,591 | 1,092 |
| MML Small Cap Growth Equity | 10,665 | 11,012 | 4,992 | — |
| MML Small Company Value | 38,614 | 41,730 | 23,128 | 5,884 |
| MML Small/Mid Cap Value | 15,882 | 18,727 | 7,659 | 2,842 |
| MML Special Situations | — | — | — | — |
| MML Strategic Emerging Markets | 10,645 | 10,731 | 4,003 | — |
| MML Total Return Bond | 57,629 | 45,343 | 23,810 | 5,578 |
| MML U.S. Government Money Market | 87,234 | 47,415 | 47,362 | 2,774 |

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 |
|---|---------------|---------------|---------------|---------------|
| Oppenheimer Discovery Mid Cap Growth | 5,541 | 6,138 | 2,686 | — |
| Oppenheimer Global | 16,006 | 13,459 | 10,114 | 1,142 |
| Oppenheimer Global Multi-Alternatives (d) | 6,193 | 5,427 | 1,880 | — |
| Oppenheimer Global Strategic Income | 54,083 | 33,045 | 10,490 | — |
| Oppenheimer International Growth | 23,549 | 9,647 | 5,006 | — |
| Oppenheimer Main Street | 43,712 | 37,401 | 18,603 | 2,719 |

Accumulation Units Outstanding – C-Share

Without Election of the Return of Purchase Payment Death Benefit

See Accumulation Unit Values table(s) above for Commencement Dates.

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 |
|---|---------------|---------------|---------------|---------------|
| BlackRock iShares® Alternative Strategies (a) | — | 519 | 1,765 | 987 |
| BlackRock iShares® Dynamic Allocation (b) | 2,498 | — | 1,812 | 778 |
| BlackRock iShares® Dynamic Fixed Income (c) | — | 7,163 | 9,305 | 1,013 |
| BlackRock iShares® Equity Appreciation (c) | — | 4,770 | 5,142 | 1,200 |
| Fidelity® VIP Contrafund® | 41,612 | 30,123 | 9,855 | 404 |
| Ivy VIP Asset Strategy | 1,625 | 1,564 | 209 | — |
| MML Aggressive Allocation | 9,100 | 9,534 | 9,932 | — |
| MML Asset Momentum | 4,512 | 6,978 | 14,300 | 5,965 |
| MML Balanced Allocation | 123,069 | 57,703 | 17,195 | 10,962 |
| MML Blend | 63,511 | 44,958 | 17,344 | 507 |
| MML Blue Chip Growth | 51,398 | 34,419 | 18,448 | 299 |
| MML Conservative Allocation | 122,302 | 85,374 | 65,407 | 2,030 |
| MML Core Allocation * | 49,826 | 49,841 | 37,759 | 5,212 |
| MML Dynamic Bond | 20,067 | 13,070 | 7,480 | 1,384 |
| MML Equity | 40,610 | 38,952 | 34,020 | 13,293 |
| MML Equity Income | 21,995 | 19,480 | 7,867 | — |
| MML Equity Rotation | 2,265 | 5,811 | — | — |
| MML Focused Equity | 3,689 | 110 | 215 | — |
| MML Foreign | 296 | 267 | 299 | — |
| MML Fundamental Growth | 4,987 | 923 | 679 | — |
| MML Fundamental Value | 3,346 | 2,974 | 259 | — |
| MML Global | — | — | — | — |
| MML Growth * | 28,537 | 18,405 | 2,173 | 301 |
| MML Growth & Income | 17,337 | 21,316 | 21,080 | 17,535 |
| MML Growth Allocation | 83,412 | 58,631 | 13,907 | — |
| MML High Yield | 13,062 | 9,079 | 921 | — |
| MML Income & Growth | 29,562 | 1,663 | 1,219 | 402 |
| MML Inflation-Protected and Income | 22,599 | 13,306 | 5,017 | 1,164 |
| MML International * | 2,014 | 1,211 | — | — |
| MML International Equity | 13,582 | 8,816 | 1,000 | — |
| MML Large Cap Growth | 5,435 | 2,564 | 2,723 | — |
| MML Managed Bond | 71,839 | 61,477 | 52,564 | 13,392 |
| MML Managed Volatility | 2,932 | 1,757 | 1,919 | — |
| MML Mid Cap Growth | 31,810 | 19,286 | 6,550 | — |
| MML Mid Cap Value | 15,779 | 9,034 | 4,722 | — |
| MML Moderate Allocation | 121,188 | 190,108 | 160,714 | 104,510 |
| MML Short-Duration Bond | 61,788 | 21,766 | 62,882 | 214 |

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 |
|---|---------------|---------------|---------------|---------------|
| MML Small Cap Equity | 8,902 | 5,994 | 998 | — |
| MML Small Cap Growth Equity | 6,534 | 2,178 | 971 | — |
| MML Small Company Value | 6,133 | 7,042 | 2,170 | — |
| MML Small/Mid Cap Value | 6,557 | 5,414 | 1,172 | — |
| MML Special Situations | 706 | 508 | 1,696 | 1,168 |
| MML Strategic Emerging Markets | 4,496 | 1,034 | 2,058 | 788 |
| MML Total Return Bond | 22,984 | 9,144 | 16,112 | — |
| MML U.S. Government Money Market | 150,099 | 16,410 | 2,006 | 6,467 |
| Oppenheimer Discovery Mid Cap Growth | 12,549 | 10,894 | 2,165 | — |
| Oppenheimer Global | 18,089 | 12,051 | 2,171 | 104 |
| Oppenheimer Global Multi-Alternatives (d) | 1,378 | — | — | — |
| Oppenheimer Global Strategic Income | 31,210 | 26,234 | 14,063 | — |
| Oppenheimer International Growth | 8,605 | 7,014 | 1,462 | — |
| Oppenheimer Main Street | 11,652 | 5,279 | 2,464 | — |

Accumulation Units Outstanding – C-Share

With Election of the Return of Purchase Payment Death Benefit

See Accumulation Unit Values table(s) above for Commencement Dates.

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 |
|---|---------------|---------------|---------------|---------------|
| BlackRock iShares [®] Alternative Strategies (a) | — | — | — | — |
| BlackRock iShares [®] Dynamic Allocation (b) | — | — | — | — |
| BlackRock iShares [®] Dynamic Fixed Income (c) | — | — | — | — |
| BlackRock iShares [®] Equity Appreciation (c) | — | — | — | — |
| Fidelity [®] VIP Contrafund [®] | 1,685 | 10,270 | 6,094 | — |
| Ivy VIP Asset Strategy | — | — | — | — |
| MML Aggressive Allocation | — | 4,070 | 4,070 | 4,072 |
| MML Asset Momentum | — | — | — | — |
| MML Balanced Allocation | 18,738 | 18,742 | 4,902 | — |
| MML Blend | 1,505 | 7,152 | 1,554 | 808 |
| MML Blue Chip Growth | 454 | 1,916 | 1,916 | — |
| MML Conservative Allocation | 33,741 | 60,947 | 28,453 | — |
| MML Core Allocation * | 9,408 | 11,401 | 11,409 | 5,088 |
| MML Dynamic Bond | 3,097 | 3,106 | 3,094 | — |
| MML Equity | 749 | 4,909 | 3,337 | — |
| MML Equity Income | 87 | 87 | 87 | — |
| MML Equity Rotation | — | — | — | — |
| MML Focused Equity | 30 | 30 | 30 | — |
| MML Foreign | 65 | 65 | 65 | — |
| MML Fundamental Growth | 454 | 91 | 91 | — |
| MML Fundamental Value | 119 | 1,031 | 119 | — |
| MML Global | 60 | 60 | 60 | — |
| MML Growth * | 1,975 | 2,730 | 993 | — |
| MML Growth & Income | 2,552 | 2,554 | 2,556 | — |
| MML Growth Allocation | 6,009 | 6,012 | 6,016 | — |
| MML High Yield | 113 | 113 | 113 | — |
| MML Income & Growth | 2,708 | 2,708 | 1,042 | 806 |
| MML Inflation-Protected and Income | 3,876 | 3,876 | 1,044 | — |
| MML International * | — | — | — | — |

| Sub-Account | Dec. 31, 2018 | Dec. 31, 2017 | Dec. 31, 2016 | Dec. 31, 2015 |
|---|------------------|------------------|------------------|------------------|
| MML International Equity | 64 | 64 | 64 | — |
| MML Large Cap Growth | 436 | 62 | 62 | — |
| MML Managed Bond | 2,140 | 9,715 | 3,382 | — |
| MML Managed Volatility | 350 | 744 | 743 | 399 |
| MML Mid Cap Growth | 60 | 60 | 60 | — |
| MML Mid Cap Value | 768 | 1,896 | 769 | — |
| MML Moderate Allocation | 10,393 | 50,277 | 4,365 | — |
| MML Short-Duration Bond | 309 | 2,435 | 5,569 | — |
| MML Small Cap Equity | — | — | — | — |
| MML Small Cap Growth Equity | — | 1,219 | 1,219 | 1,220 |
| MML Small Company Value | 27 | 2,101 | 1,267 | 1,240 |
| MML Small/Mid Cap Value | 28 | 28 | 28 | — |
| MML Special Situations | — | — | — | — |
| MML Strategic Emerging Markets | — | 868 | — | — |
| MML Total Return Bond | 2,018 | 2,020 | 2,022 | — |
| MML U.S. Government Money Market | 1,528 | 4,559 | 4,562 | 8,025 |
| Oppenheimer Discovery Mid Cap Growth | 29 | 901 | 30 | — |
| Oppenheimer Global | 445 | 1,825 | 64 | — |
| Oppenheimer Global Multi-Alternatives (d) | 214 | 624 | 624 | 410 |
| Oppenheimer Global Strategic Income | 891 | 1,950 | — | — |
| Oppenheimer International Growth | 63 | 63 | 63 | — |
| Oppenheimer Main Street | 737 | 738 | 739 | — |

Notes to Condensed Financial Information

- a) *Effective August 31, 2018, the corresponding Fund was liquidated and is no longer available as an investment choice.*
- b) *Effective May 1, 2019, BlackRock iShares[®] Dynamic Allocation Sub-Account is known as BlackRock 60/40 Target Allocation EFT V.I. Sub-Account.*
- c) *Effective March 29, 2018, the corresponding Fund was liquidated and is no longer available as an investment choice.*
- d) *Effective April 29, 2019, the corresponding Fund was liquidated and is no longer available as an investment choice.*

* *Individual Sub-Account Footnotes:*

MML Core Allocation Sub-Account invests in MML American Funds Core Allocation Fund.

MML Growth Sub-Account invests in MML American Funds[®] Growth Fund.

MML International Sub-Account invests in MML American Funds[®] International Fund.

Appendix B

Contingent Deferred Sales Charge (CDSC) Example

The values shown are based on the following assumptions:

- B-Share class is purchased
- The following Purchase Payments are made:

| Purchase Payment | Contract Year | Date | Amount |
|-------------------|---------------|------------|-----------|
| 1 (on Issue Date) | 1 | January 15 | \$100,000 |
| 2 | 1 | May 15 | 10,000 |
| 3 | 2 | January 15 | 200,000 |

- On February 15 of Contract Year 4, the Contract Value is \$350,000 and a partial withdrawal of \$150,000 is made.

To calculate the CDSC, we first determine the withdrawal amount not subject to a CDSC:

- First, the earnings of \$40,000 ($\$350,000 - \$310,000 = \$40,000$) is not subject to a CDSC.
- Next, we would take the withdrawal amount from any Purchase Payments no longer subject to a CDSC. Because all of the Purchase Payments were made within the last five years, and are therefore still subject to a CDSC, we can ignore this step.
- Finally, we look at the free withdrawal amount, which is 10% of the Purchase Payments still subject to a CDSC. The free withdrawal amount is \$31,000 ($10\% \times \$310,000 = \$31,000$) and is not subject to a CDSC.

Based on the withdrawal amount not subject to a CDSC, we can determine that \$79,000 ($\$150,000 - \$40,000 - \$31,000 = \$79,000$) is the withdrawal amount that is subject to a CDSC.

Next, we calculate the amount of the CDSC:

- First, we look at the amount of CDSC from Purchase Payment #1. The Purchase Payment #1 amount is reduced by the free withdrawal amount of \$69,000 ($\$100,000 - \$31,000 = \$69,000$). Since Purchase Payment #1 is three years from the date that purchase payment was applied, the CDSC charge is 5% or \$3,450 ($\$69,000 \times 5\% = \$3,450$).
- The remaining withdrawal amount still subject to a CDSC is \$10,000 ($\$79,000 - \$69,000 = \$10,000$).
- Next, we look at the amount of CDSC from Purchase Payment #2. The Purchase Payment #2 amount is \$10,000 and since Purchase Payment #2 is two years from the date that purchase payment was applied, the CDSC charge is 6% or \$600 ($\$10,000 \times 6\% = \600).
- There is no available remaining withdrawal amount still subject to a CDSC ($\$10,000 - \$10,000 = \$0$).
- The total CDSC is \$4,050, which is the sum of the charges on each Purchase Payment ($\$3,450 + \$600 = \$4,050$).

The total CDSC for this withdrawal is \$4,050, which is deducted from the withdrawal amount of \$150,000. The net amount of \$145,950 ($\$150,000 - \$4,050 = \$145,950$) is paid to the Owner, unless otherwise instructed.

Appendix C

Return of Purchase Payment Death Benefit Example – Impact of Withdrawal and Determination of Benefit

The values shown are based on the following assumptions:

- Initial Purchase Payment = \$100,000
- A subsequent Purchase Payment of \$10,000 is made at beginning of Contract Year 2
- A withdrawal of \$20,000 is made at beginning of Contract Year 3
- Contract Owner dies in Contract Year 5

| Beginning of Contract Year | Purchase Payment | Withdrawal | Contract Value | Total Purchase Payments Adjusted for Withdrawals |
|---|------------------|------------|----------------|--|
| 1 | \$100,000 | | \$100,000 | \$100,000 |
| 2 | 10,000 | | 115,000 | 110,000 |
| 3 (<i>immediately prior to withdrawal</i>) | | | 120,750 | 110,000 |
| 3 (<i>immediately after withdrawal</i>) | | \$20,000 | 100,750 | 91,781 |
| 4 | | | 95,713 | 91,781 |
| 5 (<i>receive due proof of Owner's death</i>) | | | 90,927 | 91,781 |

- On the Contract Issue Date, a \$100,000 Purchase Payment is made. This is the initial total Purchase Payments adjusted for withdrawals.
- At the beginning of Contract Year 2, a \$10,000 subsequent deposit is made, bringing the total Purchase Payments adjusted for withdrawals to \$110,000.
- At the beginning of Contract Year 3, a \$20,000 withdrawal (including any CDSC) is made.
- Immediately prior to when the withdrawal is made, the Contract Value is \$120,750, and the total Purchase Payments adjusted for withdrawals is \$110,000.
- Immediately after the withdrawal is made, the Contract Value becomes \$100,750 (\$120,750 – \$20,000 = \$100,750), and the total Purchase Payments adjusted for withdrawals is reduced by the same proportion that the Contract Value is reduced:

$$\begin{aligned}
 & \text{Total Purchase Payments adjusted for withdrawals (immediately after the withdrawal)} = \text{total Purchase Payments} \\
 & \text{adjusted for withdrawals (immediately prior to the withdrawal)} - (\text{withdrawal amount} / \text{Contract Value immediately} \\
 & \text{prior to the withdrawal}) \times \text{total Purchase Payments adjusted for withdrawals (immediately prior to the withdrawal)} \\
 & = \$110,000 - (\$20,000 / \$120,750) \times \$110,000 \\
 & = \$110,000 - \$18,219 \\
 & = \$91,781
 \end{aligned}$$

- Contract Owner dies in Contract Year 5. When we receive due proof of death, the Contract Value is \$90,927. The total Purchase Payments adjusted for withdrawals is \$91,781. The Return of Purchase Payment Death Benefit is the greater of the Contract Value and the total Purchase Payments adjusted for withdrawals. Therefore, the death benefit is \$91,781.

Appendix D

Free Withdrawal Amount Examples

Example 1 ~ Free Withdrawal Amount in First Contract Year

The values shown are based on the following assumptions:

- B-Share class is purchased
- The following Purchase Payments are made:

| Purchase Payment | Contract Year | Date | Amount |
|-------------------|---------------|------------|----------|
| 1 (on Issue Date) | 1 | January 15 | \$80,000 |
| 2 (on Issue Date) | 1 | January 15 | 20,000 |
| 3 | 1 | May 15 | 10,000 |

To calculate the free withdrawal amount for Contract Year 1, we do the following:

- We determine the total Purchase Payment subject to a CDSC on the Issue Date (\$80,000 + \$20,000 = \$100,000).
- We multiply the total Purchase Payment subject to a CDSC on the Issue Date by 10% (\$100,000 × 10% = \$10,000).
- We do not consider additional Purchase Payments made after the Issue Date during the first Contract Year when determining the free withdrawal amount in the first Contract Year. Any such Purchase Payments will be a factor in determining the free withdrawal amount in subsequent Contract Years.

Example 2 ~ Free Withdrawal Amount in Fifth Contract Year with a Withdrawal in Contract Year 4

The values shown are based on the following assumptions:

- B-Share class is purchased
- The following Purchase Payments are made:

| Purchase Payment | Contract Year | Date | Amount |
|-------------------|---------------|------------|-----------|
| 1 (on Issue Date) | 1 | January 15 | \$100,000 |
| 2 | 1 | May 15 | 10,000 |
| 3 | 2 | January 15 | 200,000 |
| 4 | 4 | March 15 | 15,000 |

- On February 15 of Contract Year 4, the Contract Value is \$350,000 and a partial withdrawal of \$145,000 is made.

To determine the total Purchase Payments still subject to a CDSC as of the previous Contract Anniversary (the fourth Contract Anniversary), we do the following:

Before calculating amounts for Contract Year 5, we first need to calculate the impact of the February 15 withdrawal in Contract Year 4 on the remaining Purchase Payments in the Contract:

- We calculate the total remaining Purchase Payments in the Contract as of February 15 is \$310,000 (\$100,000 + \$10,000 + \$200,000 = \$310,000). The March 15 Purchase Payment is not included because it happened after the February 15 withdrawal.
- Next, the earnings of \$40,000 (\$350,000 – \$310,000 = \$40,000) are withdrawn.
- The remaining withdrawal (\$145,000 – \$40,000 = \$105,000) is applied to Purchase Payment #1 of \$100,000, reducing Purchase Payment #1 to \$0.
- Then the remaining withdrawal after Purchase Payment #1 (\$105,000 – \$100,000 = \$5,000) is applied to reduce the amount of Purchase Payment #2 that is subject to a CDSC (\$10,000 – \$5,000 = \$5,000).
- Now, none of the \$145,000 withdrawal is left to apply to a previous Purchase Payment (\$5,000 – \$5,000 = \$0).

After the withdrawal, we also have a Purchase Payment in Contract Year 4 on March 15, so we have remaining Purchase Payments as follows at the beginning of Contract Year 5:

| Purchase Payment | Contract Year | Date | Amount Remaining |
|-------------------|---------------|------------|------------------|
| 1 (on Issue Date) | 1 | January 15 | \$ 0 |
| 2 | 1 | May 15 | 5,000 |
| 3 | 2 | January 15 | 200,000 |
| 4 | 4 | March 15 | 15,000 |

Having determined the impact of the withdrawal to the remaining Purchase Payments, we can now determine the free withdrawal amount available at the beginning of Contract Year 5. The free withdrawal amount is based on the remaining Purchase Payments subject to a CDSC at the beginning of Contract Year 5 (4th Contract Anniversary):

- All the remaining Purchase Payments are subject to a CDSC.
- We calculate the remaining Purchase Payments subject to a CDSC ($\$5,000 + \$200,000 + \$15,000 = \$220,000$).
- The free withdrawal amount is then calculated as 10% of the remaining Purchase Payments ($10\% \times \$220,000 = \$22,000$).

So if there are any withdrawals taken in Contract Year 5, a starting free withdrawal amount of \$22,000 is available.