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Two Financial Center
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Report of Independent Registered Public Accounting Firm

The Board of Directors of Massachusetts Mutual Life Insurance Company and Contract Owners of Massachusetts Mutual Variable Annuity Separate Account 1:

Opinion on the Financial Statements and Financial Highlights

We have audited the accompanying statements of assets and liabilities of Massachusetts Mutual Variable Annuity Separate Account 1 (comprised of the divisions listed in Appendix A to the opinion) (collectively, “the Separate Account”) as of December 31, 2020, the related statements of operations and changes in net assets for each of the years (as described in Appendix A) in the two-year period then ended, and the related notes (collectively, the “financial statements”) and the financial highlights for each of the years in the five-year period then ended. In our opinion, the financial statements and financial highlights present fairly, in all material respects, the financial position of the Separate Account as of December 31, 2020, the results of its operations and changes in its net assets for each of the years in the two-year period then ended, and the financial highlights for each of the years in the five-year period then ended, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

These financial statements and financial highlights are the responsibility of the Separate Account’s management. Our responsibility is to express an opinion on these financial statements and financial highlights based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Separate Account in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements and financial highlights are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements and financial highlights, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements and financial highlights. Such procedures also included confirmation of securities owned as of December 31, 2020, by correspondence with the underlying mutual funds or their transfer agent. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements and financial highlights. We believe that our audits provide a reasonable basis for our opinion.

KPMG LLP

We have served as the Separate Account’s auditor since 2004.

Boston, Massachusetts
March 10, 2021

Massachusetts Mutual Variable Annuity Separate Account 1 is comprised of the following divisions and the activities of each division have been included within the accompanying statements of assets and liabilities as of December 31, 2020 and the related statements of operations and changes in net assets for each of the years in the two-year period then ended.

Divisions

Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division *

Invesco Oppenheimer V.I. Global Division *

Invesco Oppenheimer V.I. Global Strategic Income Division *

MML Blend Division

MML Equity Division

MML Managed Bond Division

MML U.S. Government Money Market Division

* See Note 2 to the financial statements for information regarding the merger of this division.

Massachusetts Mutual Variable Annuity Separate Account 1

STATEMENTS OF ASSETS AND LIABILITIES

December 31, 2020

ASSETS	Invesco		Invesco		Invesco		MML		MML		MML U.S.	
	Oppenheimer V.I. Discovery Mid Cap Growth Division	Oppenheimer V.I. Global Division	Oppenheimer V.I. Strategic Income Division	MML Blend Division	MML Equity Division	MML Managed Bond Division	MML U.S. Government Money Market Division					
Investments												
Number of shares	1,310,663	2,237,911	2,057,516	9,478,949	7,807,100	1,348,132	7,213,487					
Identified cost	\$ 87,056,364	\$ 75,604,409	\$ 10,567,946	\$ 191,838,932	\$ 189,043,586	\$ 17,104,015	\$ 7,213,478					
Value	\$ 140,149,162	\$ 116,639,932	\$ 9,958,378	\$ 235,019,827	\$ 195,472,092	\$ 18,324,640	\$ 7,213,486					
Dividends receivable	-	-	-	-	-	-	1					
Receivable from Massachusetts Mutual Life Insurance Company	3,291	913	-	-	10,895	18	-					
Total assets	140,152,453	116,640,845	9,958,378	235,019,827	195,482,987	18,324,658	7,213,487					
LIABILITIES												
Annuitant mortality fluctuation reserve	72,709	45,313	3,142	200,558	129,627	10,727	48,307					
Payable to Massachusetts Mutual Life Insurance Company	-	-	162	43,330	-	-	621					
Total liabilities	72,709	45,313	3,304	243,888	129,627	10,727	48,928					
NET ASSETS	\$ 140,079,744	\$ 116,595,532	\$ 9,955,074	\$ 234,775,939	\$ 195,353,360	\$ 18,313,931	\$ 7,164,559					
Net Assets:												
Accumulation units - value	\$ 137,656,115	\$ 115,085,098	\$ 9,850,336	\$ 228,090,682	\$ 191,032,456	\$ 17,956,353	\$ 5,554,338					
Contracts in payout (annuitization) period	2,423,629	1,510,434	104,738	6,685,257	4,320,904	357,578	1,610,221					
Net assets	\$ 140,079,744	\$ 116,595,532	\$ 9,955,074	\$ 234,775,939	\$ 195,353,360	\$ 18,313,931	\$ 7,164,559					
Outstanding units												
Contract owners	17,285,180	13,321,943	3,190,830	23,854,964	21,487,056	3,509,103	3,919,070					
UNIT VALUE												
Flex-Extra (Qualified)	\$ 8.10	\$ 8.75	\$ 3.12	\$ 9.15	\$ 8.65	\$ 5.04	\$ 1.74					
Variable Annuity Fund 4	-	-	-	18.52	28.97	11.37	3.20					
Flex-Annuity IV (Qualified)	-	-	-	15.29	23.79	8.59	2.44					

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 1

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS For The Year Ended December 31, 2020

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division	Invesco Oppenheimer V.I. Global Division	Invesco Oppenheimer V.I. Global Strategic Income Division	MML Blend Division	MML Equity Division	MML Managed Bond Division	MML U.S. Government Money Market Division
Investment Income							
Dividends	\$ 45,430	\$ 687,263	\$ 570,499	\$ -	\$ 4,164,254	\$ 17,368	\$ 16,206
Expenses							
Mortality and expense risk fees and administrative charges	1,522,966	1,281,677	127,590	2,849,795	2,331,580	236,883	93,783
Net investment income (loss)	(1,477,536)	(594,414)	442,909	(2,849,795)	1,832,674	(219,515)	(77,577)
Net realized and unrealized gain (loss) on investments							
Realized gain (loss) on sale of fund shares	7,971,485	3,793,038	(206,737)	7,592,980	(1,917,260)	40,935	234
Realized gain distribution	9,470,769	3,580,841	-	9,705,644	20,221,100	-	-
Realized gain (loss)	17,442,254	7,373,879	(206,737)	17,298,624	18,303,840	40,935	234
Change in net unrealized appreciation/depreciation of investments	24,677,338	17,517,552	(69,143)	9,700,864	(19,016,176)	1,303,667	(239)
Net gain (loss) on investments	42,119,592	24,891,431	(275,880)	26,999,488	(712,336)	1,344,602	(5)
Net increase (decrease) in net assets resulting from operations	40,642,056	24,297,017	167,029	24,149,693	1,120,338	1,125,087	(77,582)
Capital transactions:							
Transfer of net premiums	2,014,782	1,360,992	126,974	1,756,881	2,508,301	171,051	108,468
Transfers due to death benefits	(826,940)	(554,244)	(109,065)	(2,527,572)	(1,607,677)	(224,912)	(111,324)
Transfers due to annuity benefit payments	(181,644)	(112,279)	(10,542)	(611,376)	(321,784)	(34,757)	(161,528)
Transfers due to withdrawal of funds	(10,573,587)	(8,315,780)	(804,793)	(16,920,113)	(14,609,655)	(1,681,564)	(1,547,627)
Transfers due to annual administrative and contingent deferred sales charges	(60,237)	(28,206)	(2,578)	(290,608)	(237,357)	(64,924)	(7,655)
Transfers due to net charge (credit) to annuitant mortality fluctuation reserve	(105,326)	(38,079)	(6,431)	(231,555)	(183,296)	(21,128)	(50,314)
Transfers between divisions and to/from Guaranteed Principal Account	(4,127,038)	(2,968,306)	(80,023)	(3,480,856)	(4,333,682)	237,155	2,305,618
Net increase (decrease) in net assets resulting from capital transactions	(13,859,990)	(10,655,902)	(886,458)	(22,305,199)	(18,785,150)	(1,619,079)	535,638
Total increase (decrease)	26,782,066	13,641,115	(719,429)	1,844,494	(17,664,812)	(493,992)	458,056
NET ASSETS, at beginning of the year	113,297,678	102,954,417	10,674,503	232,931,445	213,018,172	18,807,923	6,706,503
NET ASSETS, at end of the year	\$ 140,079,744	\$ 116,595,532	\$ 9,955,074	\$ 234,775,939	\$ 195,353,360	\$ 18,313,931	\$ 7,164,559

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 1

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS

For The Year Ended December 31, 2019

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division	Invesco Oppenheimer V.I. Global Division	Invesco Oppenheimer V.I. Strategic Income Division	MML Blend Division	MML Equity Division	MML Managed Bond Division	MML U.S. Government Money Market Division
Investment Income							
Dividends	\$ -	\$ 885,979	\$ 418,504	\$ 5,529,917	\$ 4,155,069	\$ 708,987	\$ 114,063
Expenses							
Mortality and expense risk fees and administrative charges	1,400,489	1,279,429	143,517	2,940,020	2,649,264	249,707	86,981
Net investment income (loss)	(1,400,489)	(393,450)	274,987	2,589,897	1,505,805	459,280	27,082
Net realized and unrealized gain (loss) on investments							
Realized gain (loss) on sale of fund shares	5,732,759	2,188,958	(73,145)	8,574,177	793,286	69,818	2,175
Realized gain distribution	13,669,726	13,994,626	-	11,327,102	10,763,661	-	-
Realized gain (loss)	19,402,485	16,183,584	(73,145)	19,901,279	11,556,947	69,818	2,175
Change in net unrealized appreciation/depreciation of investments	15,121,963	9,645,055	785,410	18,653,187	31,087,622	1,041,136	(2,175)
Net gain (loss) on investments	34,524,448	25,828,639	712,265	38,554,466	42,644,569	1,110,954	-
Net increase (decrease) in net assets resulting from operations	33,123,959	25,435,189	987,252	41,144,363	44,150,374	1,570,234	27,082
Capital transactions:							
Transfer of net premiums	1,385,772	1,080,217	199,870	2,818,900	3,875,473	270,610	167,967
Transfers due to death benefits	(370,960)	(375,550)	(18,032)	(2,157,616)	(1,281,612)	(123,144)	(25,502)
Transfers due to annuity benefit payments	(148,116)	(120,074)	(9,935)	(505,764)	(307,938)	(30,184)	(141,970)
Transfers due to withdrawal of funds	(10,814,950)	(9,434,240)	(1,027,572)	(22,535,264)	(19,423,105)	(1,993,383)	(1,496,428)
Transfers due to annual administrative and contingent deferred sales charges	(63,834)	(29,844)	(2,821)	(319,337)	(256,988)	(72,231)	(8,217)
Transfers due to net charge (credit) to annuitant mortality fluctuation reserve	(42,051)	(63,692)	(3,822)	(308,692)	(138,221)	(6,132)	(144,242)
Transfers between divisions and to/from Guaranteed Principal Account	(1,407,717)	(2,056,299)	(318,733)	(3,533,846)	(2,836,843)	(76,782)	1,541,422
Net increase (decrease) in net assets resulting from capital transactions	(11,461,856)	(10,999,482)	(1,181,045)	(26,541,819)	(20,369,234)	(2,031,246)	(106,970)
Total increase (decrease)	21,662,103	14,435,707	(193,793)	14,602,544	23,781,140	(461,012)	(79,888)
NET ASSETS, at beginning of the year	91,635,575	88,518,710	10,868,296	218,328,901	189,237,032	19,268,935	6,786,391
NET ASSETS, at end of the year	\$ 113,297,678	\$ 102,954,417	\$ 10,674,503	\$ 232,931,445	\$ 213,018,172	\$ 18,807,923	\$ 6,706,503

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 1

Notes To Financial Statements

1. ORGANIZATION

Massachusetts Mutual Variable Annuity Separate Account 1 (“the Separate Account”) is a separate investment account of Massachusetts Mutual Life Insurance Company (“MassMutual”) established on April 8, 1981. The Separate Account is registered as a unit investment trust under the Investment Company Act of 1940 (“the 1940 Act”).

MassMutual maintains three segments within the Separate Account, they are: Variable Annuity Fund 4, Flex-Annuity IV (Qualified) and Flex Extra (Qualified).

The assets and liabilities of the Separate Account are clearly identified and distinguished from MassMutual’s other assets and liabilities. The Separate Account assets are not chargeable with liabilities arising from any other MassMutual business.

2. INVESTMENT OF THE SEPARATE ACCOUNT’S ASSETS

As of December 31, 2020, the Separate Account consists of seven divisions which invest in the following mutual funds. All of the funds may not be available to all of the three segments of the Separate Account:

Divisions	The division listed in the first column invests in the fund in this column
Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Fund ^{1,2}
Invesco Oppenheimer V.I. Global Division	Invesco Oppenheimer V.I. Global Fund ^{1,2}
Invesco Oppenheimer V.I. Global Strategic Income Division	Invesco Oppenheimer V.I. Global Strategic Income Fund ^{1,2}
MML Blend Division	MML Blend Fund ³
MML Equity Division	MML Equity Fund ³
MML Managed Bond Division	MML Managed Bond Fund ³
MML U.S. Government Money Market Division	MML U.S. Government Money Market Fund ³

In addition to the seven divisions, some contract owners may also allocate funds to the Fixed Interest Account (“FIA”), which is part of MassMutual’s general investment account (“General Account”). Because of exemptive and exclusionary provisions in the securities law, interests in the FIA are not registered under the Securities Act of 1933, and the General Account and the FIA are not registered as an investment company under the 1940 Act.

¹ Effective after the close of the New York Stock Exchange on May 24, 2019, Invesco Ltd. completed its acquisition of OppenheimerFunds, Inc. The Acquiring Funds/Divisions assume the accounting and performance history of the corresponding Merging Funds/Divisions. In connection with that transaction the following Funds/Divisions merged:

MERGING FUND/DIVISION	ACQUIRING FUND/DIVISION
Fund: Oppenheimer Discovery Mid Cap Growth Fund/VA Division: Oppenheimer Discovery Mid Cap Growth Division	Fund: Invesco Oppenheimer V.I. Discovery Mid Cap Growth Fund Division: Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division
Fund: Oppenheimer Global Fund/VA Division: Oppenheimer Global Division	Fund: Invesco Oppenheimer V.I. Global Fund Division: Invesco Oppenheimer V.I. Global Division
Fund: Oppenheimer Global Strategic Income Fund/VA Division: Oppenheimer Global Strategic Income Division	Fund: Invesco Oppenheimer V.I. Global Strategic Income Fund Division: Invesco Oppenheimer V.I. Global Strategic Income Division

²Invesco Advisers, Inc. is the investment adviser to this Fund.

³BlackRock Investment Management, LLC is the investment adviser to this Fund.

Notes To Financial Statements (Continued)

3. SIGNIFICANT ACCOUNTING POLICIES

The following is a summary of significant accounting policies followed by the Separate Account in preparation of the financial statements in conformity with generally accepted accounting principles. Separate Account Massachusetts Mutual Variable Annuity Separate Account 1 follows the accounting and reporting guidance in FASB Accounting Standards Codification 946.

A. Investment Valuation

Investments in the investment divisions are valued at the closing net asset value of each of the respective underlying funds, which value their investment securities at fair value.

B. Accounting for Investments

Investment transactions are accounted for on a trade-date basis and identified cost is the basis followed in determining the cost of investments sold for financial statement purposes. Dividend income and gains from realized gain distributions are recorded on the ex-distribution date, and they are generally reinvested in the underlying investment divisions.

C. Federal Income Taxes

MassMutual is taxed under federal law as a life insurance company under the provisions of the 1986 Internal Revenue Code, as amended. Under existing federal law, no taxes are payable on net investment income and net realized capital gains attributable to contracts which depend on the Separate Account's investment performance. Accordingly, no provision for federal income tax has been made. MassMutual may, however, make such a charge in the future if an unanticipated change of current law results in a company tax liability attributable to the Separate Account.

D. Contract Charges

See Note 8B for charges associated with the contracts

E. Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

F. Loans

If the certificate is a tax-sheltered annuity ("TSA"), the contract owners may be able to take a loan under their certificate. All such loans must conform to the requirements of the Internal Revenue Code. There are limitations on the amount of the loan the participants can take, and there is a required loan repayment schedule. When a loan is made, the Separate Account transfers the amount of the loan to MassMutual, thereby decreasing both the investments and net assets of the Separate Account. The contract owner is charged interest on the outstanding loan amount based on the interest rate then in effect.

G. Annuitant Mortality Fluctuation

The Separate Account maintains a reserve as required by regulatory authorities to provide for mortality losses incurred. The reserve is adjusted quarterly for mortality losses and gains and its proportionate share of changes in value. Transfers to or from MassMutual are then made quarterly to adjust the Separate Account. Net transfers from the Separate Account to MassMutual totaled \$636,129 for the year ended December 31, 2020. Net transfers from the Separate Account to MassMutual totaled \$706,849 for the year ended December 31, 2019. The reserve is subject to a maximum of 3% of the Separate Account's annuity reserves. Any mortality losses in excess of this reserve will be borne by

Notes To Financial Statements (Continued)

MassMutual. The reserve is not available to owners of the contracts except to the extent necessary to cover mortality losses under the contracts.

H. Annuity Reserves

Annuity reserves are developed by using accepted actuarial methods and are computed using the 83 IAM, 1994 MGDB or Annuity 2000 table, depending on the year of issue.

4. FAIR VALUE OF FINANCIAL INSTRUMENTS

The Separate Account defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. In determining fair value, the Separate Account generally uses the market approach as the valuation technique due to the nature of the mutual fund investments offered in the Separate Account. This technique maximizes the use of observable inputs and minimizes the use of unobservable inputs. Investments in mutual funds are valued at the mutual fund's closing net asset value per share on the day of valuation.

Valuation Inputs: Various inputs are used to determine the value of the Separate Account's investments. These inputs are summarized in the three broad levels listed below:

- **Level 1** – quoted prices in active markets for identical securities
- **Level 2** – observable inputs other than Level 1 quoted prices (including, but not limited to, quoted prices for similar securities, interest rates, prepayment speeds and credit risk)
- **Level 3** – unobservable inputs

The investments of the Separate Account are measured at fair value. All the investments are categorized as Level 1 as of December 31, 2020. There have been no transfers between levels for the year ended December 31, 2020.

5. RELATED PARTY TRANSACTIONS

A. Sales Agreements

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

Both MMLIS and MSD are registered with the Securities and Exchange Commission (the "SEC") as broker-dealers under the Securities Exchange Act of 1934 and are members of the Financial Industry Regulatory Authority ("FINRA"). Commissions for sales of contracts by MMLIS registered representatives are paid on behalf of MMLIS to its registered representatives. Commissions for sales of contracts by registered representatives of other broker-dealers are paid on behalf of MSD to those broker-dealers. MMLIS and MSD also receive compensation for their actions as principal underwriters of the contracts.

The contracts are no longer offered for sale. Contract owners may continue, however, to make purchase payments under existing contracts.

B. Receivable from/Payable to MassMutual

Certain fees such as cost of insurance fees and mortality and expense risk fees are charges paid between the General Account and the Separate Account.

Notes To Financial Statements (Continued)

6. PURCHASES AND SALES OF INVESTMENTS

The cost of purchases and proceeds from sales investments for the year ended December 31, 2020 were as follows:

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division	Invesco Oppenheimer V.I. Global Division	Invesco Oppenheimer V.I. Global Strategic Income Division	MML Blend Division	MML Equity Division
Cost of purchases.....\$	10,903,909	\$ 5,070,267	\$ 794,566	\$ 11,425,524	\$ 25,956,105
Proceeds from sales	(16,746,505)	(12,729,470)	(1,237,702)	(26,809,579)	(22,668,166)

	MML Managed Bond Division	MML U.S. Government Money Market Division
Cost of purchases.....\$	549,345	\$ 3,143,956
Proceeds from sales	(2,386,849)	(2,679,888)

7. NET INCREASE (DECREASE) IN OUTSTANDING UNITS

The changes in outstanding units for the two years ended December 31, 2020 were as follows:

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division	Invesco Oppenheimer V.I. Global Division	Invesco Oppenheimer V.I. Global Strategic Income Division	MML Blend Division	MML Equity Division
2020					
Units purchased	405,865	225,798	57,763	321,821	492,518
Units withdrawn.....	(1,896,124)	(1,304,053)	(327,130)	(2,496,068)	(2,310,242)
Units transferred between divisions and to/from GPA	(639,447)	(420,382)	(31,883)	(412,634)	(545,544)
Net increase (decrease)	<u>(2,129,707)</u>	<u>(1,498,637)</u>	<u>(301,251)</u>	<u>(2,586,881)</u>	<u>(2,363,268)</u>

	MML Managed Bond Division	MML U.S. Government Money Market Division
2020 (continued)		
Units purchased	50,712	216,598
Units withdrawn.....	(413,890)	(1,172,357)
Units transferred between divisions and to/from GPA	45,033	1,240,043
Net increase (decrease)	<u>(318,145)</u>	<u>284,284</u>

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division	Invesco Oppenheimer V.I. Global Division	Invesco Oppenheimer V.I. Global Strategic Income Division	MML Blend Division	MML Equity Division
2019					
Units purchased	297,360	211,628	70,358	557,439	565,897
Units withdrawn.....	(2,216,602)	(1,643,015)	(359,627)	(3,343,715)	(2,689,488)
Units transferred between divisions and to/from GPA	(267,196)	(324,199)	(107,367)	(434,084)	(364,759)
Net increase (decrease)	<u>(2,186,437)</u>	<u>(1,755,586)</u>	<u>(396,636)</u>	<u>(3,220,361)</u>	<u>(2,488,350)</u>

Notes To Financial Statements (Continued)

7. NET INCREASE (DECREASE) IN OUTSTANDING UNITS (Continued)

	MML Managed Bond Division	MML U.S. Government Money Market Division
2019 (continued)		
Units purchased	68,402	477,804
Units withdrawn	(472,933)	(1,319,891)
Units transferred between divisions and to/from GPA	(15,079)	773,953
Net increase (decrease)	<u>(419,610)</u>	<u>(68,135)</u>

8. FINANCIAL HIGHLIGHTS

A. A summary of units outstanding, unit values, net assets, investment income ratios, expense ratios (excluding expenses of the underlying funds) and total return ratios for each of the five years in the period ended December 31, 2020 follows:

	At December 31,		For the Years Ended December 31,					
	Units	Unit Value ³ (Lowest to Highest)	Net Assets	Investment Income Ratio ¹	Expense Ratio ² (Lowest to Highest)	Total Return ³ (Lowest to Highest)		
Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division⁴								
2020	17,285,180	\$ 8.10	\$ 140,079,744	0.04 %	1.30 %	38.87 %		
2019	19,414,886	5.84	113,297,678	-	1.30	37.56		
2018	21,601,324	4.24	91,635,575	-	1.30	(7.30)		
2017	23,493,015	4.58	107,511,615	0.03	1.30	27.13		
2016	25,701,304	3.60	92,515,119	-	1.30	1.02		
Invesco Oppenheimer V.I. Global Division⁴								
2020	13,321,943	8.75	116,595,532	0.70	1.30	25.99		
2019	14,820,580	6.95	102,954,417	0.90	1.30	30.09		
2018	16,576,166	5.34	88,518,710	0.99	1.30	(14.31)		
2017	18,087,184	6.23	112,715,013	0.93	1.30	34.91		
2016	19,858,701	4.62	91,734,370	1.06	1.30	(1.21)		
Invesco Oppenheimer V.I. Global Strategic Income Division⁴								
2020	3,190,830	3.12	9,955,074	5.82	1.30	2.07		
2019	3,492,081	3.06	10,674,503	3.79	1.30	9.37		
2018	3,888,716	2.79	10,868,296	4.95	1.30	(5.64)		
2017	4,236,600	2.96	12,548,182	2.31	1.30	4.90		
2016	4,603,546	2.82	12,997,674	4.96	1.30	5.16		
MML Blend Division								
2020	23,854,964	9.15 to 18.52	234,775,939	-	0.73 to 1.30	11.41 to 12.05		
2019	26,441,844	8.21 to 16.53	232,931,445	2.42	0.73 to 1.30	19.81 to 20.50		
2018	29,662,205	6.85 to 13.72	218,328,901	2.11	0.73 to 1.30	(5.58) to (5.04)		
2017	32,461,158	7.26 to 14.45	253,241,743	2.11	0.73 to 1.30	13.77 to 14.42		
2016	35,971,265	6.38 to 12.62	246,315,604	2.14	0.73 to 1.30	8.01 to 8.62		
MML Equity Division								
2020	21,487,056	8.65 to 28.97	195,353,360	2.31	0.73 to 1.30	1.69 to 2.28		
2019	23,850,325	8.50 to 28.32	213,018,172	2.03	0.73 to 1.30	24.30 to 25.01		
2018	26,338,675	6.84 to 22.66	189,237,032	1.77	0.73 to 1.30	(11.16) to (10.65)		
2017	29,013,886	7.70 to 25.36	234,712,505	1.81	0.73 to 1.30	14.30 to 14.95		
2016	31,443,532	6.74 to 22.06	222,508,991	1.74	0.73 to 1.30	11.14 to 11.78		
MML Managed Bond Division								
2020	3,509,103	5.04 to 11.37	18,313,931	0.09	0.73 to 1.30	6.32 to 6.93		
2019	3,827,248	4.74 to 10.64	18,807,923	3.67	0.73 to 1.30	8.39 to 9.01		
2018	4,246,858	4.37 to 9.76	19,268,935	3.43	0.73 to 1.30	(1.73) to (1.17)		
2017	4,762,998	4.45 to 9.87	22,085,965	3.14	0.73 to 1.30	3.35 to 3.94		
2016	5,324,510	4.30 to 9.50	23,879,340	2.81	0.73 to 1.30	1.43 to 2.00		

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

	At December 31,			For the Years Ended December 31,						
	Units	Unit Value ³ (Lowest to Highest)		Net Assets	Investment		Expense Ratio ² (Lowest to Highest)		Total Return ³ (Lowest to Highest)	
						Income Ratio ¹				
MML U.S. Government Money Market Division										
2020	3,919,070	1.74	to 3.20	7,164,559	0.22	0.73	to 1.30	(1.06)	to	(0.50)
2019	3,634,786	1.76	to 3.22	6,706,503	1.69	0.73	to 1.30	0.40	to	0.97
2018	3,702,921	1.75	to 3.19	6,786,391	1.33	0.73	to 1.30	0.02	to	0.59
2017	3,868,270	1.75	to 3.17	7,092,906	0.35	0.73	to 1.30	(0.93)	to	(0.37)
2016	4,313,212	1.77	to 3.18	7,954,219	-	0.73	to 1.30	(1.18)	to	(0.62)

1 The investment income ratios represent the dividends, excluding distributions of capital gains, received by the division from the underlying mutual fund, net of management fees assessed by the fund manager, divided by the average net assets. These ratios exclude those expenses, such as mortality and expense charges, that are assessed against contract owner accounts either through reductions in the unit values or the redemption of units. The recognition of investment income by the division is affected by the timing of the declaration of dividends by the underlying fund in which the division invests.

2 The expense ratios represent the annualized contract expenses of the Separate Account, consisting primarily of mortality and expense charges, for each period indicated. The ratios include only those expenses that result in a direct reduction of unit values. Charges made directly to contract owner accounts through the redemption of units and expenses of the underlying fund have been excluded.

3 The total returns are for the periods indicated, including changes in the value of the underlying fund, and the expenses assessed through the reduction of unit values. These ratios do not include any expenses assessed through the redemption of units. Investment options with a date notation indicate the effective date of that investment option in the variable account. The total return is calculated for each period indicated or from the effective date through the end of the reporting period. As the total return is presented as a range of minimum to maximum values, based on the product grouping representing the minimum and maximum expense ratio amounts, some individual contract total returns and unit values are not within the ranges presented.

4 Effective after the close of the New York Stock Exchange on May 24, 2019, Invesco Ltd. completed its acquisition of OppenheimerFunds, Inc. See Note 2 to the financial statements for information regarding the merger of this division.

Notes To Financial Statements (Continued)

- B. The Separate Account assesses charges associated with the contract. These charges are either assessed as a direct reduction in unit values, a reduction in the number of units purchased, or through a redemption of units for all contracts contained within the Separate Account.

<p>Mortality and Expense Risk Charge</p> <p>This charge is assessed through reduction of unit values.</p>	<p>This charge is equal, on an annual basis, to 0.73%-1.25% of the daily value of the assets invested in each fund.</p>
<p>Administrative Expense Charge</p> <p>This charge is assessed through reduction of unit values.</p>	<p>This charge is equal, on an annual basis, to 0.00%-0.15% of the daily value of the assets invested in each fund.</p>
<p>Annual Administrative Charge</p> <p>This charge is assessed through the redemption of units.</p>	<p>\$30 - \$35 per contract year.</p>
<p>Contingent Deferred Sales Charge</p> <p>This charge is assessed through the redemption of units.</p>	<p>0.00% - 11.00%</p>
<p>Sales and Administrative Charges</p> <p>This charge is assessed through a reduction in the number of units purchased.</p>	<p>8.75% for single purchase payment 9.00% for periodic purchase payments</p>

9. SUBSEQUENT EVENTS

The Separate Account's management has reviewed events occurring through March 10, 2021, the date the financial statements were issued, and no subsequent events occurred requiring accrual or disclosure.



KPMG LLP
Two Financial Center
60 South Street
Boston, MA 02111

Report of Independent Registered Public Accounting Firm

The Board of Directors of Massachusetts Mutual Life Insurance Company and Contract Owners of Massachusetts Mutual Variable Annuity Separate Account 2:

Opinion on the Financial Statements and Financial Highlights

We have audited the accompanying statements of assets and liabilities of Massachusetts Mutual Variable Annuity Separate Account 2 (comprised of the divisions listed in Appendix A to the opinion) (collectively, “the Separate Account”) as of December 31, 2020, the related statements of operations and changes in net assets for each of the years (as described in Appendix A) in the two-year period then ended, and the related notes (collectively, the “financial statements”) and the financial highlights for each of the years in the five-year period then ended. In our opinion, the financial statements and financial highlights present fairly, in all material respects, the financial position of the Separate Account as of December 31, 2020, the results of its operations and changes in its net assets for each of the years in the two-year period then ended, and the financial highlights for each of the years in the five-year period then ended, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

These financial statements and financial highlights are the responsibility of the Separate Account’s management. Our responsibility is to express an opinion on these financial statements and financial highlights based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Separate Account in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements and financial highlights are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements and financial highlights, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements and financial highlights. Such procedures also included confirmation of securities owned as of December 31, 2020, by correspondence with the underlying mutual funds or their transfer agent. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements and financial highlights. We believe that our audits provide a reasonable basis for our opinion.

KPMG LLP

We have served as the Separate Account’s auditor since 2004.

Boston, Massachusetts
March 10, 2021

Appendix A

Massachusetts Mutual Variable Annuity Separate Account 2 is comprised of the following divisions and the activities of each division have been included within the accompanying statements of assets and liabilities as of December 31, 2020 and the related statements of operations and changes in net assets for each of the years in the two-year period then ended.

Divisions

Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division *
Invesco Oppenheimer V.I. Global Division *
Invesco Oppenheimer V.I. Global Strategic Income Division * MML Blend Division
MML Equity Division
MML Managed Bond Division
MML U.S. Government Money Market Division

*See Note 2 to the financial statements for information regarding the merger of this division.

Massachusetts Mutual Variable Annuity Separate Account 2

STATEMENTS OF ASSETS AND LIABILITIES

December 31, 2020

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division	Invesco Oppenheimer V.I. Global Division	Invesco Oppenheimer V.I. Global Strategic Income Division	MML Blend Division	MML Equity Division	MML Managed Bond Division	MML U.S. Government Money Market Division
ASSETS							
Investments							
Number of shares	420,560	902,069	849,111	2,590,030	2,319,050	557,529	2,348,203
Identified cost	\$ 28,488,412	\$ 31,124,293	\$ 4,378,951	\$ 52,159,137	\$ 56,319,929	\$ 7,081,135	\$ 2,348,067
Value	\$ 44,970,526	\$ 47,015,840	\$ 4,109,699	\$ 64,216,859	\$ 58,063,756	\$ 7,578,279	\$ 2,348,203
Receivable from Massachusetts Mutual Life Insurance Company	-	-	-	515	-	-	-
Total assets	\$ 44,970,526	\$ 47,015,840	\$ 4,109,699	\$ 64,217,374	\$ 58,063,756	\$ 7,578,279	\$ 2,348,203
LIABILITIES							
Annuitant mortality fluctuation reserve	14,478	10,937	1,463	46,849	40,557	5,967	8,008
Payable to Massachusetts Mutual Life Insurance Company	667	1,319	34	-	866	150	106
Total liabilities	15,145	12,256	1,497	46,849	41,423	6,117	8,114
NET ASSETS	\$ 44,955,381	\$ 47,003,584	\$ 4,108,202	\$ 64,170,525	\$ 58,022,333	\$ 7,572,162	\$ 2,340,089
Net Assets:							
Accumulation units - value	\$ 44,472,790	\$ 46,639,015	\$ 4,059,438	\$ 62,608,878	\$ 56,670,432	\$ 7,373,253	\$ 2,073,146
Contracts in payout (annuitization) period	482,591	364,569	48,764	1,561,647	1,351,901	198,909	266,943
Net assets	\$ 44,955,381	\$ 47,003,584	\$ 4,108,202	\$ 64,170,525	\$ 58,022,333	\$ 7,572,162	\$ 2,340,089
Outstanding units							
Contract owners	5,547,282	5,370,524	1,316,772	6,728,951	6,541,553	1,481,684	1,305,035
UNIT VALUE							
Flex-Extra (Non-Qualified)	\$ 8.10	\$ 8.75	\$ 3.12	\$ 9.15	\$ 8.65	\$ 5.04	\$ 1.74
Flex-Annuity IV (Non-Qualified)	-	-	-	15.66	22.96	9.17	2.47

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 2

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS For The Year Ended December 31, 2020

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division	Invesco Oppenheimer V.I. Global Division	Invesco Oppenheimer V.I. Strategic Income Division	MML Blend Division	MML Equity Division	MML Managed Bond Division	MML U.S. Government Money Market Division
Investment Income							
Dividends	\$ 14,419	\$ 273,740	\$ 230,730	\$ -	\$ 1,208,127	\$ 7,198	\$ 4,682
Expenses							
Mortality and expense risk fees and administrative charges	483,302	512,588	51,601	778,003	675,115	98,774	31,434
Net investment income (loss)	(468,883)	(238,848)	179,129	(778,003)	533,012	(91,576)	(26,752)
Net realized and unrealized gain (loss) on investments							
Realized gain (loss) on sale of fund shares	2,326,261	1,368,150	(40,777)	1,662,831	(167,238)	19,437	231
Realized gain distribution	3,005,939	1,426,266	-	2,619,503	5,866,515	-	-
Realized gain (loss)	5,332,200	2,794,416	(40,777)	4,282,334	5,699,277	19,437	231
Change in net unrealized appreciation/depreciation of investments	7,820,721	6,904,966	(73,897)	3,146,508	(5,477,528)	527,632	(235)
Net gain (loss) on investments	13,152,921	9,699,382	(114,674)	7,428,842	221,749	547,069	(4)
Net increase (decrease) in net assets resulting from operations	12,684,038	9,460,534	64,455	6,650,839	754,761	455,493	(26,756)
Capital transactions:							
Transfer of net premiums	395,589	154,920	12,397	581,854	1,645,867	44,251	229,732
Transfers due to death benefits	(371,872)	(423,589)	(81,610)	(1,232,617)	(485,698)	(227,462)	(5,266)
Transfers due to annuity benefit payments	(43,524)	(34,597)	(5,523)	(164,627)	(187,379)	(24,762)	(32,802)
Transfers due to withdrawal of funds	(2,106,506)	(1,900,573)	(211,121)	(2,705,863)	(1,534,937)	(181,036)	(309,939)
Transfers due to annual administrative and contingent deferred sales charges	(15,220)	(7,160)	(886)	(57,978)	(52,756)	(17,059)	(1,991)
Transfers due to net charge (credit) to annuitant mortality fluctuation	(47,588)	(42,648)	357	(65,269)	(31,421)	(6,660)	(5,732)
Transfer between divisions and to/from Guaranteed Principal Account	(1,750,856)	(1,840,996)	(134,095)	(1,218,744)	(2,057,103)	(377,716)	620,472
Net increase (decrease) in net assets resulting from capital transactions	(3,939,977)	(4,094,643)	(420,481)	(4,863,244)	(2,703,427)	(790,444)	494,474
Total increase (decrease)	8,744,061	5,365,891	(356,026)	1,787,595	(1,948,666)	(334,951)	467,718
NET ASSETS, at beginning of the year	36,211,320	41,637,693	4,464,228	62,382,930	59,970,999	7,907,113	1,872,371
NET ASSETS, at end of the year	\$ 44,955,381	\$ 47,003,584	\$ 4,108,202	\$ 64,170,525	\$ 58,022,333	\$ 7,572,162	\$ 2,340,089

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 2

STATEMENTS OF OPERATIONS AND CHANGES IN NET ASSETS

For The Year Ended December 31, 2019

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division	Invesco Oppenheimer V.I. Global Division	Invesco Oppenheimer V.I. Strategic Income Division	MML Blend Division	MML Equity Division	MML Managed Bond Division	MML U.S. Government Money Market Division
Investment Income							
Dividends	\$ -	\$ 357,339	\$ 178,374	\$ 1,461,458	\$ 1,170,957	\$ 301,842	\$ 32,938
Expenses							
Mortality and expense risk fees and administrative charges	442,127	516,004	61,602	778,714	743,588	107,598	25,089
Net investment income (loss)	(442,127)	(158,665)	116,772	682,744	427,369	194,244	7,849
Net realized and unrealized gain (loss) on investments							
Realized gain (loss) on sale of fund shares	1,411,940	980,838	(36,045)	1,707,190	73,460	49,161	416
Realized gain distribution	4,317,758	5,644,410	-	2,959,797	3,033,351	-	-
Realized gain (loss)	5,729,698	6,625,248	(36,045)	4,666,987	3,106,811	49,161	416
Change in net unrealized appreciation/depreciation of investments	5,104,967	3,747,433	345,542	5,448,404	8,749,151	429,423	(416)
Net gain (loss) on investments	10,834,665	10,372,681	309,497	10,115,391	11,855,962	478,584	-
Net increase (decrease) in net assets resulting from operations	10,392,538	10,214,016	426,269	10,798,135	12,283,331	672,828	7,849
Capital transactions:							
Transfer of net premiums	413,328	217,695	10,128	397,940	914,759	6,937	9,950
Transfers due to death benefits	(421,723)	(513,821)	(215,659)	(1,562,928)	(1,061,308)	(308,306)	(67,385)
Transfers due to annuity benefit payments	(33,764)	(29,971)	(6,108)	(166,404)	(145,799)	(21,776)	(35,902)
Transfers due to withdrawal of funds	(1,884,092)	(3,370,497)	(487,471)	(2,851,288)	(3,588,498)	(727,491)	(59,994)
Transfers due to annual administrative and contingent deferred sales charges	(16,084)	(7,362)	(833)	(62,139)	(56,752)	(18,627)	(1,941)
Transfers due to net charge (credit) to annuitant mortality fluctuation	(13,546)	(6,702)	363	(99,104)	(116,847)	(143)	(15,280)
Transfer between divisions and to/from Guaranteed Principal Account	(582,354)	(376,531)	(52,977)	(459,316)	(657,848)	98,708	72,972
Net increase (decrease) in net assets resulting from capital transactions	(2,538,235)	(4,087,189)	(752,557)	(4,803,239)	(4,712,293)	(970,698)	(97,580)
Total increase (decrease)	7,854,303	6,126,827	(326,288)	5,994,896	7,571,038	(297,870)	(89,731)
NET ASSETS, at beginning of the year	28,357,017	35,510,866	4,790,516	56,388,034	52,399,961	8,204,983	1,962,102
NET ASSETS, at end of the year	\$ 36,211,320	\$ 41,637,693	\$ 4,464,228	\$ 62,382,930	\$ 59,970,999	\$ 7,907,113	\$ 1,872,371

See Notes to Financial Statements.

Massachusetts Mutual Variable Annuity Separate Account 2

Notes To Financial Statements

1. ORGANIZATION

Massachusetts Mutual Variable Annuity Separate Account 2 (“the Separate Account”) is a separate investment account of Massachusetts Mutual Life Insurance Company (“MassMutual”) established on October 14, 1981. The Separate Account is registered as a unit investment trust under the Investment Company Act of 1940 (“the 1940 Act”).

MassMutual maintains two segments within the Separate Account, they are: Flex-Annuity IV (Non-Qualified) and Flex-Extra (Non-Qualified).

The assets and liabilities of the Separate Account are clearly identified and distinguished from MassMutual’s other assets and liabilities. The Separate Account assets are not chargeable with liabilities arising from any other MassMutual business.

2. INVESTMENT OF THE SEPARATE ACCOUNT’S ASSETS

As of December 31, 2020, the Separate Account consists of seven divisions which invest in the following mutual funds. All of the funds may not be available to both segments of the Separate Account:

Divisions	The division listed in the first column invests in the fund in this column
Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Fund ^{1,2}
Invesco Oppenheimer V.I. Global Division	Invesco Oppenheimer V.I. Global Fund ^{1,2}
Invesco Oppenheimer V.I. Global Strategic Income Division	Invesco Oppenheimer V.I. Global Strategic Income Fund ^{1,2}
MML Blend Division	MML Blend Fund ³
MML Equity Division	MML Equity Fund ³
MML Managed Bond Division	MML Managed Bond Fund ³
MML U.S. Government Money Market Division	MML U.S. Government Money Market Fund ³

In addition to the seven divisions, some contract owners may also allocate funds to the Fixed Interest Account (“FIA”), which is part of MassMutual’s general investment account (“General Account”). Because of exemptive and exclusionary provisions in the securities law, interests in the FIA are not registered under the Securities Act of 1933, and the General Account and the FIA are not registered as an investment company under the 1940 Act.

¹Effective after the close of the New York Stock Exchange on May 24, 2019, Invesco Ltd. completed its acquisition of OppenheimerFunds, Inc. The Acquiring Funds/Divisions assume the accounting and performance history of the corresponding Merging Funds/Divisions. In connection with that transaction the following Funds/Divisions merged:

MERGING FUND/DIVISION	ACQUIRING FUND/DIVISION
Fund: Oppenheimer Discovery Mid Cap Growth Fund/VA Division: Oppenheimer Discovery Mid Cap Growth Division	Fund: Invesco Oppenheimer V.I. Discovery Mid Cap Growth Fund Division: Invesco Oppenheimer V.I. Discovery Mid Cap Growth
Fund: Oppenheimer Global Fund/VA Division: Oppenheimer Global Division	Fund: Invesco Oppenheimer V.I. Global Fund Division: Invesco Oppenheimer V.I. Global Division
Fund: Oppenheimer Global Strategic Income Fund/VA Division: Oppenheimer Global Strategic Income Division	Fund: Invesco Oppenheimer V.I. Global Strategic Income Fund Division: Invesco Oppenheimer V.I. Global Strategic Income Division

² Invesco Advisers, Inc. is the investment adviser to this Fund.

³BlackRock Investment Management, LLC is the investment adviser to this Fund.

Notes To Financial Statements (Continued)

3. SIGNIFICANT ACCOUNTING POLICIES

The following is a summary of significant accounting policies followed by the Separate Account in preparation of the financial statements in conformity with generally accepted accounting principles. Separate Account Massachusetts Mutual Variable Annuity Separate Account 2 follows the accounting and reporting guidance in FASB Accounting Standards Codification 946.

A. Investment Valuation

Investments in the investment divisions are valued at the closing net asset value of each of the respective underlying funds, which value their investment securities at fair value.

B. Accounting for Investments

Investment transactions are accounted for on a trade-date basis and identified cost is the basis followed in determining the cost of investments sold for financial statement purposes. Dividend income and gains from realized gain distributions are recorded on the ex-distribution date, and they are generally reinvested in the underlying investment divisions.

C. Federal Income Taxes

MassMutual is taxed under federal law as a life insurance company under the provisions of the 1986 Internal Revenue Code, as amended. Under existing federal law, no taxes are payable on net investment income and net realized capital gains attributable to contracts which depend on the Separate Account's investment performance. Accordingly, no provision for federal income tax has been made. MassMutual may, however, make such a charge in the future if an unanticipated change of current law results in a company tax liability attributable to the Separate Account.

D. Contract Charges

See Note 8B for charges associated with the contracts

E. Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

F. Loans

If the certificate is a tax-sheltered annuity ("TSA"), the contract owners may be able to take a loan under their certificate. All such loans must conform to the requirements of the Internal Revenue Code. There are limitations on the amount of the loan the participants can take, and there is a required loan repayment schedule. When a loan is made, the Separate Account transfers the amount of the loan to MassMutual, thereby decreasing both the investments and net assets of the Separate Account. The contract owner is charged interest on the outstanding loan amount based on the interest rate then in effect.

G. Annuitant Mortality Fluctuation

The Separate Account maintains a reserve as required by regulatory authorities to provide for mortality losses incurred. The reserve is adjusted quarterly for mortality losses and gains and its proportionate share of changes in value. Transfers to or from MassMutual are then made quarterly to adjust the Separate Account. Net transfers from MassMutual to the Separate Account totaled \$198,961 for the year ended December 31, 2020. Net transfers from the Separate Account to MassMutual totaled \$251,259 for the year ended December 31, 2019. The reserve is subject to a maximum of 3% of the Separate Account's annuity reserves. Any mortality losses in excess of this reserve will be borne by

Notes To Financial Statements (Continued)

MassMutual. The reserve is not available to owners of the contracts except to the extent necessary to cover mortality losses under the contracts.

H. Annuity Reserves

Annuity reserves are developed by using accepted actuarial methods and are computed using the 83 IAM, Annuity 2000, or 1994 MGDB table.

4. FAIR VALUE OF FINANCIAL INSTRUMENTS

The Separate Account defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. In determining fair value, the Separate Account generally uses the market approach as the valuation technique due to the nature of the mutual fund investments offered in the Separate Account. This technique maximizes the use of observable inputs and minimizes the use of unobservable inputs. Investments in mutual funds are valued at the mutual fund's closing net asset value per share on the day of valuation.

Valuation Inputs: Various inputs are used to determine the value of the Separate Account's investments. These inputs are summarized in the three broad levels listed below:

- **Level 1** – quoted prices in active markets for identical securities
- **Level 2** – observable inputs other than Level 1 quoted prices (including, but not limited to, quoted prices for similar securities, interest rates, prepayment speeds and credit risk)
- **Level 3** – unobservable inputs

The investments of the Separate Account are measured at fair value. All the investments are categorized as Level 1 as of December 31, 2020. There have been no transfers between levels for the year ended December 31, 2020.

5. RELATED PARTY TRANSACTIONS

A. Sales Agreements

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

Both MMLIS and MSD are registered with the Securities and Exchange Commission (the "SEC") as broker-dealers under the Securities Exchange Act of 1934 and are members of the Financial Industry Regulatory Authority ("FINRA"). Commissions for sales of contracts by MMLIS registered representatives are paid on behalf of MMLIS to its registered representatives. Commissions for sales of contracts by registered representatives of other broker-dealers are paid on behalf of MSD to those broker-dealers. MMLIS and MSD also receive compensation for their actions as principal underwriters of the contracts.

The contracts are no longer offered for sale to the public. Contract owners may continue, however, to make purchase payments under existing contracts.

B. Receivable from/Payable to MassMutual

Certain fees such as cost of insurance fees and mortality and expense risk fees are charges paid between the General Account and the Separate Account.

Notes To Financial Statements (Continued)

6. PURCHASES AND SALES OF INVESTMENTS

The cost of purchases and proceeds from sales investments for the year ended December 31, 2020 were as follows:

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division		Invesco Oppenheimer V.I. Global Division		Invesco Oppenheimer V.I. Global Strategic Income Division		MML Blend Division		MML Equity Division
Cost of purchases.....\$	3,604,074	\$	2,139,897	\$	263,804	\$	3,515,591	\$	9,386,484
Proceeds from sales	(5,002,070)		(5,043,771)		(505,133)		(6,540,667)		(5,690,362)

	MML Managed Bond Division		MML U.S. Government Money Market Division
Cost of purchases.....\$	312,267	\$	1,589,156
Proceeds from sales	(1,193,044)		(1,123,002)

7. NET INCREASE (DECREASE) IN OUTSTANDING UNITS

The changes in outstanding units for the two years ended December 31, 2020 were as follows:

	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division	Invesco Oppenheimer V.I. Global Division	Invesco Oppenheimer V.I. Global Strategic Income Division	MML Blend Division	MML Equity Division
2020					
Units purchased	77,441	33,728	6,042	90,448	259,421
Units withdrawn.....	(408,886)	(348,752)	(102,371)	(496,456)	(321,588)
Units transferred between divisions and to/from GPA	(326,507)	(308,316)	(47,335)	(153,994)	(278,964)
Net increase (decrease)	<u>(657,953)</u>	<u>(623,340)</u>	<u>(143,664)</u>	<u>(560,003)</u>	<u>(341,130)</u>
	MML Managed Bond Division	MML U.S. Government Money Market Division			
2020 (continued)					
Units purchased	22,098	140,987			
Units withdrawn.....	(107,853)	(212,781)			
Units transferred between divisions and to/from GPA	(80,233)	352,260			
Net increase (decrease)	<u>(165,988)</u>	<u>280,466</u>			

Notes To Financial Statements (Continued)

7. NET INCREASE (DECREASE) IN OUTSTANDING UNITS (Continued)

2019	Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division	Invesco Oppenheimer V.I. Global Division	Invesco Oppenheimer V.I. Global Strategic Income Division	MML Blend Division	MML Equity Division
	Units purchased	97,507	42,293	6,163	116,628
Units withdrawn	(470,574)	(636,985)	(241,874)	(676,477)	(718,664)
Units transferred between divisions and to/from GPA	(106,320)	(61,270)	(17,917)	(62,329)	(82,757)
Net increase (decrease)	<u>(479,386)</u>	<u>(655,962)</u>	<u>(253,627)</u>	<u>(622,178)</u>	<u>(597,640)</u>

2019 (continued)	MML Managed Bond Division	MML U.S. Government Money Market Division
Units purchased	3,562	42,741
Units withdrawn	(224,770)	(135,615)
Units transferred between divisions and to/from GPA	26,085	41,559
Net increase (decrease)	<u>(195,122)</u>	<u>(51,315)</u>

8. FINANCIAL HIGHLIGHTS

A. A summary of units outstanding, unit values, net assets, investment income ratios, expense ratios (excluding expenses of the underlying funds) and total return ratios for each of the five years in the period ended December 31, 2020 follows:

	At December 31,			For the Years Ended December 31,				
	Units	Unit Value ³ (Lowest to Highest)	Net Assets	Investment Income Ratio ¹	Expense Ratio ² (Lowest to Highest)		Total Return ³ (Lowest to Highest)	
Invesco Oppenheimer V.I. Discovery Mid Cap Growth Division⁴								
2020	5,547,282	\$ - \$ 8.10	\$ 44,955,381	0.04 %	- %	1.30 %	- %	38.87 %
2019	6,205,235	5.84	36,211,320	-		1.30		37.56
2018	6,684,621	4.24	28,357,017	-		1.30		(7.30)
2017	7,154,920	4.58	32,743,222	0.03		1.30		27.13
2016	7,589,178	3.60	27,318,211	-		1.30		1.02
Invesco Oppenheimer V.I. Global Division⁴								
2020	5,370,524	8.75	47,003,584	0.69		1.30		25.99
2019	5,993,864	6.95	41,637,693	0.90		1.30		30.09
2018	6,649,826	5.34	35,510,866	0.98		1.30		(14.31)
2017	7,133,854	6.23	44,456,471	0.93		1.30		34.91
2016	7,708,261	4.62	35,607,185	1.06		1.30		(1.21)
Invesco Oppenheimer V.I. Global Strategic Income Division⁴								
2020	1,316,772	3.12	4,108,202	5.82		1.30		2.07
2019	1,460,437	3.06	4,464,228	3.77		1.30		9.37
2018	1,714,064	2.79	4,790,516	4.97		1.30		(5.64)
2017	1,940,412	2.96	5,747,213	2.29		1.30		4.90
2016	2,048,628	2.82	5,784,105	4.94		1.30		5.16
MML Blend Division								
2020	6,728,951	9.15 to 15.66	64,170,525	-	1.25 to 1.30	1.30	11.41 to 11.46	
2019	7,288,954	8.21 to 14.05	62,382,930	2.43	1.25 to 1.30	1.30	19.81 to 19.87	
2018	7,911,132	6.85 to 11.72	56,388,034	2.12	1.25 to 1.30	1.30	(5.58) to (5.53)	
2017	8,633,522	7.26 to 12.41	65,044,190	2.12	1.25 to 1.30	1.30	13.77 to 13.83	
2016	9,336,278	6.38 to 10.90	61,694,244	2.14	1.25 to 1.30	1.30	8.01 to 8.06	

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

	At December 31,				For the Years Ended December 31,				
	Units	Unit Value ³ (Lowest to Highest)		Net Assets	Investment Income Ratio ¹	Expense Ratio ² (Lowest to Highest)		Total Return ³ (Lowest to Highest)	
MML Equity Division									
2020	6,541,553	8.65	to 22.96	58,022,333	2.33	1.25	to 1.30	1.69	to 1.75
2019	6,882,684	8.50	to 22.57	59,970,999	2.04	1.25	to 1.30	24.30	to 24.36
2018	7,480,324	6.84	to 18.15	52,399,961	1.77	1.25	to 1.30	(11.16)	to (11.12)
2017	8,104,482	7.70	to 20.42	63,876,061	1.81	1.25	to 1.30	14.30	to 14.36
2016	8,673,628	6.74	to 17.85	59,902,339	1.72	1.25	to 1.30	11.14	to 11.20
MML Managed Bond Division									
2020	1,481,684	5.04	to 9.17	7,572,162	0.09	1.25	to 1.30	6.32	to 6.37
2019	1,647,672	4.74	to 8.62	7,907,113	3.64	1.25	to 1.30	8.39	to 8.45
2018	1,842,795	4.37	to 7.95	8,204,983	3.45	1.25	to 1.30	(1.73)	to (1.68)
2017	2,060,335	4.45	to 8.08	9,323,746	3.15	1.25	to 1.30	3.35	to 3.40
2016	2,221,196	4.30	to 7.82	9,709,429	2.80	1.25	to 1.30	1.43	to 1.48
MML U.S. Government Money Market Division									
2020	1,305,035	1.74	to 2.47	2,340,089	0.19	1.25	to 1.30	(1.06)	to (1.01)
2019	1,024,568	1.76	to 2.49	1,872,371	1.70	1.25	to 1.30	0.40	to 0.45
2018	1,075,883	1.75	to 2.48	1,962,102	1.31	1.25	to 1.30	0.02	to 0.07
2017	1,314,945	1.75	to 2.48	2,382,948	0.36	1.25	to 1.30	(0.93)	to (0.89)
2016	1,374,067	1.77	to 2.50	2,541,906	-	1.25	to 1.30	(1.18)	to (1.13)

¹ The investment income ratios represent the dividends, excluding distributions of capital gains, received by the division from the underlying mutual fund, net of management fees assessed by the fund manager, divided by the average net assets. These ratios exclude those expenses, such as mortality and expense charges, that are assessed against contract owner accounts either through reductions in the unit values or the redemption of units. The recognition of investment income by the division is affected by the timing of the declaration of dividends by the underlying fund in which the division invests.

² The expense ratios represent the annualized contract expenses of the Separate Account, consisting primarily of mortality and expense charges, for each period indicated. The ratios include only those expenses that result in a direct reduction of unit values. Charges made directly to contract owner accounts through the redemption of units and expenses of the underlying fund have been excluded.

³ The total returns are for the periods indicated, including changes in the value of the underlying fund, and the expenses assessed through the reduction of unit values. These ratios do not include any expenses assessed through the redemption of units. Investment options with a date notation indicate the effective date of that investment option in the variable account. The total return is calculated for each period indicated or from the effective date through the end of the reporting period. As the total return is presented as a range of minimum to maximum values, based on the product grouping representing the minimum and maximum expense ratio amounts.

⁴ Effective after the close of the New York Stock Exchange on May 24, 2019, Invesco Ltd. completed its acquisition of OppenheimerFunds, Inc. See Note 2 to the financial statements for information regarding the merger of this division.

Notes To Financial Statements (Continued)

8. FINANCIAL HIGHLIGHTS (Continued)

- B. The Separate Account assesses charges associated with the contract. These charges are either assessed as a direct reduction in unit values or through a redemption of units for all contracts contained within the Separate Account.

Mortality and Expense Risk Charge This charge is assessed through reduction in unit values.	This charge is equal, on an annual basis, to 1.15% - 1.25% of the daily value of the assets invested in each fund.
Administrative Charge This charge is assessed through reduction in unit values.	This charge is equal, on an annual basis, to 0.00% - 0.15% of the daily value of the assets invested in each fund.
Annual Administrative Charge This charge is assessed through the redemption of units.	\$30 - \$35 per contract year.
Contingent Deferred Sales Charge This charge is assessed through the redemption of units.	0.00% - 11.00%

9. SUBSEQUENT EVENTS

The Separate Account's management has reviewed events occurring through March 10, 2021, the date the financial statements were issued, and no subsequent events occurred requiring accrual or disclosure.