

Performance Update

As of October 31, 2021

Apex VULSM

variable life insurance

- Not a bank or credit union deposit or obligation
- Not insured by any federal government agency
- Not FDIC or NCUA-insured
- Not guaranteed by any bank or credit union
- May go down in value

Apex VULSM

Apex VUL is a flexible premium adjustable variable life insurance policy. This report gives information only about the performance of the investment options available through the policy. It does not give, and should not be understood to give, information about the overall performance of any policy. **Before purchasing a Apex VUL policy, you should request a personalized illustration from your financial representative to see examples of how policy charges can impact the performance of your policy.** The illustration will reflect the deduction of asset charges, (commonly referred to as a mortality and expense charge), premium charges and the monthly administrative, face amount, and insurance charges, as well as any applicable rider charges specific to the policy. Additionally, if you currently own a policy, you can obtain current illustrations of policy values by contacting your personal financial representative, or by clicking on “contact us” on our web site, or by calling us at (800) 272-2216, Monday – Friday, 8 a.m. to 8 p.m. Eastern Time.

The investment performance figures in this report are based on actual historical performance of the investment options for the periods shown, including for those time periods that begin prior to this policy’s availability date. In most states, the policy first became available on November 21, 2020. For periods less than one year, the total return is not annualized. For periods greater than one year, the average annual total return for the time periods is shown.

Past performance is no indication of future results. This update contains the most recent month-end performance. Since performance changes daily, the current performance may be lower or higher than the performance reflected in this update. The investment return and principal value of an investment will fluctuate so that an investor’s shares, when redeemed, may be worth more or less than their original cost. For the most recent month-end performance information, visit our website at www.massmutual.com or call the MassMutual Customer Service Center at (800) 548-0073, Monday – Friday, 8 a.m. to 5 p.m. Eastern Time.

Investing involves risk, including the loss of principal. Each investment choice underlying the policy has broad risks that apply to all investment choices, such as market risk, as well as specific risks inherent in particular types of investment choices that may subject your policy to greater risk and volatility than the general market.

This material must be preceded or accompanied by the [current prospectus for the Apex VUL insurance policy and the prospectuses or \(summary prospectuses, if available\) for its underlying investment choices.](#) Before purchasing a policy, investors should carefully consider the investment objectives, risks, charges and expenses of the policy and its underlying investment choices. Please read the prospectuses carefully before investing or sending money.

Interest Rates — Guaranteed Principal Account

The following are effective annual rates used to credit interest on amounts in the Guaranteed Principal Account. These rates do not apply to any policy loan amounts.

Current Interest Rate as of: 12/1/20 1.00%; 1/1/21 1.00%; 2/1/21 1.00%; 3/1/21 1.00%; 4/1/21 1.00%; 5/1/21 1.00%; 6/1/21 1.00%; 7/1/21 1.00%; 8/1/21 1.00%; 9/1/21 1.00%; 10/1/21 1.00%; 11/1/21 1.00%.

Market Indices as of October 31, 2021

	YTD	1 Year	3 Years	5 Years	10 Years
S&P 500 Index	24.04%	42.91%	21.48%	18.93%	16.21%
MSCI ACWI Ex USA NR USD	8.43%	29.66%	12.00%	9.77%	6.66%
Russell 2000 Total Return Index	17.19%	50.80%	16.47%	15.52%	13.50%
Bloomberg U.S. Aggregate Bond Index	-1.58%	-0.48%	5.63%	3.10%	3.00%

Market indices have been provided for informational purposes only; they are unmanaged and reflect no fees or expenses. Individuals cannot invest directly in an index.

The Standard & Poor’s 500 Index is an unmanaged measure of common stock total return performance in the U.S.

The Russell 2000 Total Return Index is a broad based, unmanaged index comprised of 2000 of the smallest U.S. domiciled company common stocks (on the basis of capitalization) that are traded in the United States on the New York Stock Exchange, the American Stock Exchange, and NASDAQ.

The Bloomberg U.S. Aggregate Bond Index is an unmanaged index of U.S. corporate bond issues, U.S. Government Securities and mortgage-backed securities.

Total Return Rates — Investment Funds

For the Period Ending: October 31, 2021

Total Returns for each fund are the actual historical rates and are net of all fund management fees and other operating expenses. Those returns do not reflect policy charges. Policy charges include: premium charges and the monthly administrative, asset charge (commonly referred to as a mortality and expense charge), face amount, and insurance charges and any applicable rider charges. If these charges were deducted, the returns would be significantly lower.

Asset Category	Investment Fund	Fund Inception Date	Endnotes	Cumulative YTD	Average Annual				
					1 Year	3 Years	5 Years	10 Years +	Since Inception
Asset Allocation	MML Aggressive Allocation (Initial Class)	8/31/2007	1	15.25%	35.03%	15.33%	12.89%	11.37%	—
	MML American Funds Core Allocation (Service Class I)	8/15/2008	1	11.32%	24.53%	12.45%	10.33%	9.40%	—
	MML Balanced Allocation (Initial Class)	8/31/2007	1	9.17%	20.37%	11.31%	8.80%	7.96%	—
	MML Conservative Allocation (Initial Class)	8/31/2007	1	7.89%	17.68%	10.33%	7.83%	7.09%	—
	MML Growth Allocation (Initial Class)	8/31/2007	1	13.09%	29.52%	13.96%	11.42%	10.14%	—
	MML Moderate Allocation (Initial Class)	8/31/2007	1	10.93%	24.48%	12.11%	9.67%	8.74%	—
Money Market	MML U.S. Government Money Market (Initial Class) <i>7-day yield: 0.00%</i>	12/16/1981	2	0.00%	0.00%	0.74%	0.72%	0.37%	—
Fixed Income	Fidelity® VIP Bond Index (Initial Class)	4/19/2018		-1.85%	-0.77%	5.42%	—	—	4.50%
	Invesco V.I. Global Strategic Income (Series I)	5/3/1993	**	-4.50%	1.59%	2.75%	2.06%	2.97%	—
	MML Dynamic Bond (Class II)	5/15/2015		-0.01%	2.04%	4.50%	3.02%	—	3.32%
	MML High Yield (Class II)	5/3/2010		7.15%	15.74%	6.90%	6.28%	7.27%	—
	MML Inflation-Protected and Income (Initial Class)	8/30/2002		5.16%	7.80%	8.48%	4.77%	3.12%	—
	MML Managed Bond (Initial Class)	12/16/1981		0.90%	3.55%	6.61%	4.03%	3.56%	—
	MML Short-Duration Bond (Class II)	5/3/2010		2.22%	3.59%	2.79%	2.43%	2.18%	—
	MML Total Return Bond (Class II) Vanguard VIF Global Bond Index	8/9/2010 9/8/2017		-1.29% -1.89%	0.31% -1.07%	6.17% 4.06%	3.37% —	3.37% —	— 2.79%
Balanced	MML Blend (Initial Class)	2/3/1984		12.97%	24.48%	13.69%	12.24%	11.00%	—
Large Cap Value	MML Equity (Initial Class)	5/13/1994	3	27.91%	49.68%	15.08%	13.34%	12.43%	—
	MML Equity Income (Initial Class)	5/1/2006		22.23%	48.53%	13.31%	12.31%	11.73%	—
	MML Fundamental Value (Class II)	8/10/2010		24.59%	48.80%	13.44%	11.91%	11.83%	—
	MML Income & Growth (Initial Class)	5/1/2006		24.03%	50.71%	13.68%	12.53%	11.56%	—
Large Cap Blend	Fidelity® VIP Contrafund® (Initial Class)	1/3/1995		24.96%	39.22%	25.88%	20.73%	16.24%	—
	Fidelity® VIP Total Market Index (Initial Class)	4/17/2018		22.70%	43.64%	18.73%	—	—	18.23%
	Invesco V.I. Main Street (Series I)	7/5/1995	**	24.12%	40.35%	19.88%	16.36%	14.89%	—
	MML Equity Index (Class III)	5/1/2000	4	23.94%	42.81%	21.36%	18.78%	16.08%	—
	MML Focused Equity (Class II) MML Fundamental Equity (Class II)	12/8/2011 12/8/2011		15.92% 24.11%	32.14% 40.47%	17.92% 23.13%	18.50% 21.25%	— —	15.46% 16.53%
Large Cap Growth	MML American Funds Growth (Service Class I)	2/8/1984		23.06%	50.55%	31.47%	26.16%	19.13%	—
	MML Blue Chip Growth (Initial Class)	5/1/2006		18.98%	31.69%	25.16%	23.77%	19.13%	—
	MML Growth & Income (Initial Class)	5/1/2006		24.92%	43.43%	21.07%	18.34%	15.46%	—
	MML Large Cap Growth (Initial Class)	8/31/1999		17.71%	31.22%	25.40%	21.81%	16.46%	—
Small \ Mid Cap Value	MML Mid Cap Value (Initial Class)	5/1/2006		19.39%	38.94%	13.12%	10.64%	12.86%	—
	MML Small Company Value (Class II)	2/27/2009		22.52%	51.91%	14.61%	13.78%	12.16%	—
	MML Small/Mid Cap Value (Initial Class)	5/1/2006		31.05%	62.55%	14.08%	12.42%	12.98%	—

Asset Category	Investment Fund	Fund Inception Date	Endnotes	Cumulative YTD	Average Annual				
					1 Year	3 Years	5 Years	10 Years +	Since Inception
Small \ Mid Cap Blend	Blackrock Small Cap Index (Class I)	1/29/1998		16.94%	16.94%	16.94%	16.94%	16.94%	16.94%
	Fidelity® VIP Extended Market Index (Initial Class)	4/17/2018		21.96%	51.37%	51.37%	51.37%	51.37%	51.37%
	MML Small Cap Equity (Initial Class)	6/1/1998		24.02%	55.03%	18.97%	16.97%	15.00%	—
	Vanguard VIF Mid Cap Index	2/9/1999		22.79%	45.02%	20.53%	16.64%	14.72%	—
Small \ Mid Cap Growth	Invesco V.I. Discovery Mid Cap Growth (Series I)	8/15/1986	**	22.14%	44.88%	30.16%	24.06%	17.75%	—
	MML Mid Cap Growth (Initial Class)	5/1/2006		14.86%	34.82%	21.11%	19.25%	16.36%	—
	MML Small Cap Growth Equity (Initial Class)	5/3/1999		8.53%	38.00%	21.36%	20.37%	15.72%	—
International \ Global	Fidelity® VIP International Index (Initial Class)	4/17/2018		8.59%	29.75%	7.09%	—	—	8.10%
	Invesco V.I. Global (Series I)	11/12/1990	**	16.96%	40.69%	22.31%	18.85%	13.85%	—
	Invesco Oppenheimer V.I. International Growth (Series I)	5/13/1992		11.35%	32.26%	17.99%	11.89%	9.35%	—
	MML American Funds International (Service Class)	5/1/1990		2.46%	24.28%	11.31%	9.61%	7.65%	—
	MML Foreign (Initial Class)	5/1/2006		11.92%	37.60%	8.12%	6.78%	5.48%	—
	MML Global (Class II)	1/0/1900		15.50%	38.19%	17.69%	14.53%	12.63%	—
	MML International Equity (Class II)	1/7/2014		11.39%	50.76%	10.48%	8.40%	—	4.16%
Specialty	MML Strategic Emerging Markets (Class II)	8/27/2008		-0.70%	17.74%	14.22%	10.19%	4.05%	—
	Delaware Ivy VIP Asset Strategy (Class I)	4/20/1995	***	9.81%	25.51%	13.64%	11.57%	7.33%	—
	MML Managed Volatility (Initial Class)	5/1/2000	5	10.14%	18.52%	8.22%	6.91%	7.38%	—
	Vanguard VIF Real Estate Index	2/9/1999		30.72%	47.32%	15.56%	10.33%	10.73%	—

The Apex VUL policy contains six MML Asset Allocation Funds ("funds of funds") that are designed to help investors meet their financial goals. These funds consist of certain, but not all, underlying funds available within the Apex VUL policy. The percentages below represent the approximation of assets as of the report date. The percentages may vary from the target allocation, which can be found in the corresponding fund prospectus. The percentages below are rounded so they may not total 100%.

Asset Class Underlying Funds	MML Conservative Allocation Fund	MML Balanced Allocation Fund	MML Moderate Allocation Fund	MML American Funds® Core Allocation Fund	MML Growth Allocation Fund	MML Aggressive Allocation Fund
Fixed Income						
Invesco V.I. Global Strategic Income Fund	2%	2%	1%		1%	1%
MML Dynamic Bond Fund (DoubleLine)	11%	10%	8%		5%	2%
MML High Yield Fund (Barings)	1%	1%	1%		1%	1%
MML Inflation-Protected and Income Fund (Barings)	4%	3%	2%		2%	1%
MML Managed Bond Fund (Barings)	21%	18%	14%		9%	4%
MML Total Return Bond Fund (MetWest)	14%	12%	9%		6%	2%
American Funds Insurance Series® – Bond				34%		
Total Fixed Income	58%	50%	39%	34%	26%	13%
Large Cap Equity						
Invesco V.I. Main Street Fund	1%	1%				1%
MML Blue Chip Growth Fund (T. Rowe Price)	4%	5%	6%		8%	9%
MML Equity Income Fund (T. Rowe Price)	3%	3%	4%		5%	6%
MML Equity Index (Northern Trust)	1%	1%	1%		1%	1%
MML Focused Equity Fund (Wellington)	5%	6%	8%		8%	11%
MML Fundamental Growth Fund (Wellington)	3%	4%	5%		6%	7%
MML Fundamental Value Fund (Wellington)	2%	3%	4%		5%	6%
MML Income & Growth Fund (Barrow Hanley)	3%	3%	4%		5%	6%
MML Large Cap Growth Fund (Loomis Sayles)	2%	3%	3%		4%	5%
American Funds Insurance Series® – Blue Chip Income & Growth				27%		
American Funds Insurance Series® – Growth-Income				27%		
	24%	29%	35%	54%	42%	52%
Mid Cap Equity						
Invesco V.I. Discovery Mid Cap Growth Fund	1%	1%	1%		1%	1%
MML Mid Cap Growth Fund (T. Rowe Price)	2%	2%	3%		4%	5%
MML Mid Cap Value Fund (American Century)	1%	2%	3%		3%	4%
	4%	5%	7%	0%	8%	10%
Small Cap Equity						
MML Small Cap Growth Equity Fund (Wellington)	1%	1%	1%		1%	1%
MML Small Company Value Fund (T. Rowe Price)	1%	1%	1%		2%	2%
MML Small/Mid Cap Value Fund (AllianceBernstein)	1%	1%	1%		1%	1%
	3%	3%	3%	0%	4%	4%
International/Global						
Invesco V.I. Global Fund	1%	1%	1%		1%	1%
Invesco Oppenheimer V.I. International Growth Fund	1%	1%	1%		1%	1%
MML Foreign Fund (Templeton)	2%	2%	2%		3%	3%
MML Global Fund (MFS®)	4%	5%	7%		8%	8%
MML International Equity Fund (Harris)	2%	3%	4%		6%	6%
MML Strategic Emerging Markets Fund (Oppenheimer)	1%	1%	1%		1%	2%
American Funds Insurance Series® – International				12%		
	11%	13%	16%	12%	20%	21%
Total Equity	42%	50%	61%	66%	74%	87%
Total Allocation	100%	100%	100%	100%	100%	100%

Endnotes

- 1 Funds offered in a fund-of-funds structure may have higher expenses than a direct investment in the 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 **An investment in the Fund is neither insured nor guaranteed by the Federal Deposit Insurance Corporation or by any other government agency. Although the Fund seeks to maintain a stable net asset value per share, it is possible to lose money by investing in the Fund.**
The yield quotation more closely reflects the current earnings of the Fund than the total return quotation. It is an annualized rate based on results over the last seven days of the period.
 - 3 Although the MML Equity Fund commenced operations on 9/15/1971, the information necessary to calculate returns is available only for 1974 and later years.
 - 4 The fund established a new class of shares, which is available with this policy, after it began its initial investment operations. The performance for the period prior to May 1, 2000 shows the historical returns for Class I shares. Performance for periods after May 1, 2000 shows the historical returns for the share class available with this policy and reflects the fees and expenses of that share class.
 - 5 Formerly known as MML Large Cap Value Fund. The Fund's name, investment objective, and investment strategy changed on April 29, 2013. The performance results prior to April 29, 2013 would not necessarily have been achieved had the Fund's current strategy been in effect during that period.
- + When the fund has 10 years of performance history the Since Inception return is no longer shown.
 - ** Formerly known as Invesco Oppenheimer V.I. Global Strategic Income Fund.
 - ** Formerly known as Invesco Oppenheimer V.I. Main Street Fund.
 - ** Formerly known as Invesco Oppenheimer V.I. Discovery Mid Cap Growth Fund.
 - ** Formerly known as Invesco Oppenheimer V.I. Global Fund.
 - *** Formerly known as IVY VIP Asset Strategy Fund.

Apex VULSM (Policy Form MMVUL-2020 and ICC20-MMVUL in certain states, including North Carolina)
is non-participating flexible premium adjustable variable life insurance issued by
Massachusetts Mutual Life Insurance Company, Springfield, MA 01111-0001.

Principal Underwriters:

MML Investors Services, LLC
MML Strategic Distributors, LLC

Subsidiaries of Massachusetts Mutual Life Insurance Company, 1295 State Street, Springfield, MA 01111-0001

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