

Performance Update

As of March 31, 2025

Panorama Premier Variable Annuity

- **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**



Panorama Premier

A deferred variable annuity is a long-term investment designed to help you accumulate assets for retirement. It also offers a broad array of investment choices and asset classes, fixed accounts, death benefit choices and multiple methods to turn those assets into a stream of guaranteed income at some point in the future. (Guarantees are based on the claims-paying ability of the issuing company and do not apply to the investment performance or the safety of amounts held in the variable investment choices.) Variable annuities are not appropriate for everyone. There are fees and charges associated with owning an annuity. **Variable annuities are subject to market risk, including the potential loss of principal.** Also, withdrawals of earnings will be subject to income tax and may be subject to a 10 percent federal income tax penalty if taken prior to age 59 ½.

Panorama Premier first became available (in most states) on January 23, 1996, but many of the underlying funds were established before this date. For these funds, the total returns are computed using hypothetical variable annuity unit values which are based on the underlying fund's performance less separate account expenses for the periods shown, including periods before the product was available. For periods of one year or less, the total return is not annualized and is the percentage change in an Accumulation Unit. 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) 272-2216, Monday – Friday, 8 a.m. to 8 p.m. Eastern Time.

Investing involves risk, including the loss of principal. Each investment choice underlying the variable annuity contract 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 variable annuity contract to greater risk and volatility than the general market.

Investors should carefully consider the investment objectives, risks, charges and expenses of the variable annuity contract before making additional purchase payments. For this and other information, obtain the [Panorama Premier prospectus](#) from your registered representative. The prospectus should be read carefully before investing or sending money. You may also obtain the [prospectuses \(or summary prospectuses, if available\)](#) for its underlying investment choices from your registered representative.

Market Indices as of March 31, 2025

| | YTD | 1 Year | 3 Years | 5 Years | 10 Years |
|-------------------------------------|--------|--------|---------|---------|----------|
| S&P 500 Index | -4.27% | 8.25% | 9.06% | 18.59% | 12.50% |
| MSCI ACWI Ex USA NR USD | 5.23% | 6.24% | 4.48% | 10.92% | 4.98% |
| Russell 2000 Total Return Index | -9.48% | -4.01% | 0.52% | 13.27% | 6.30% |
| Bloomberg U.S. Aggregate Bond Index | 2.78% | 4.88% | 0.52% | -0.40% | 1.46% |

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 Returns

For the Period Ending: March 31, 2025

Total Returns reflect annualized separate account expenses of 1.40% and all fund level expenses. These returns do not reflect contingent deferred sales charges, the annual maintenance charge

| Separate Account Sub-account | Fund Inception Date | Endnotes | Cumulative | Average Annual | | | | |
|---|---------------------|----------|------------|----------------|---------|---------|----------|-----------------|
| | | | YTD | 1 Year | 3 Years | 5 Years | 10 Years | Since Inception |
| Money Market | | | | | | | | |
| Invesco V.I. U.S. Government Money 7-day yield 2.34% | 4/3/1985 | 1, 2 | 0.59% | 2.94% | 2.35% | 0.84% | 0.08% | * |
| MML U.S. Government Money Market 7-day yeild 2.38% | 12/15/1981 | 1 | 0.61% | 3.11% | 2.42% | 0.88% | 0.11% | * |
| Fixed Income | | | | | | | | |
| Invesco V.I. Global Strategic Income Fund - SERIES I | 5/3/1993 | | 2.91% | 5.28% | 1.18% | 2.75% | 0.24% | * |
| MML II High Yield Fund - Service 1 | 5/3/2010 | 4, 3 | 0.34% | 6.22% | 2.71% | 5.76% | 3.38% | * |
| MML II Inflation-Protected and Income Fund - Initial | 8/30/2002 | | 3.73% | 5.31% | -1.02% | 1.79% | 1.23% | * |
| MML II Managed Bond Fund - Service | 8/15/2008 | 4 | 2.34% | 4.72% | -0.60% | 0.17% | 0.23% | * |
| MML Short-Duration Bond Fund - Service 1 | 5/3/2010 | 3, 4 | 1.19% | 5.17% | 2.30% | 1.80% | 0.42% | * |
| MML Total Return Bond Fund - Service 1 | 5/1/2012 | 4 | 2.55% | 3.00% | -1.83% | -1.96% | -0.36% | * |
| Asset Allocation | | | | | | | | |
| MML Aggressive Allocation Fund - Initial | 8/31/2007 | 6 | -1.11% | 2.90% | 4.13% | 11.86% | 6.13% | * |
| MML Balanced Allocation Fund - Initial | 8/31/2007 | 6 | 0.58% | 3.40% | 1.89% | 6.55% | 3.58% | * |
| MML Conservative Allocation Fund - Initial | 8/31/2007 | 6 | 0.97% | 3.41% | 1.42% | 5.44% | 2.99% | * |
| MML Growth Allocation Fund - Initial | 8/31/2007 | | -0.47% | 3.09% | 3.34% | 9.95% | 5.23% | * |
| MML Moderate Allocation Fund - Initial | 8/31/2007 | 6 | 0.21% | 3.19% | 2.45% | 8.02% | 4.16% | * |
| Balanced | | | | | | | | |
| MML II Blend Fund - Initial | 2/2/1984 | | -2.25% | 4.75% | 3.81% | 9.35% | 6.10% | * |
| Large Cap Value | | | | | | | | |
| MML Equity Income Fund - Initial | 5/1/2006 | 8 | 3.60% | 5.22% | 4.68% | 15.26% | 7.30% | * |
| MML Fundamental Value Fund - Service 1 | 5/1/2012 | 4, 3 | -0.43% | 1.46% | 5.76% | 16.59% | 6.90% | * |
| MML II Equity Fund - Initial | 12/31/1973 | 9 | 3.26% | 8.92% | 7.53% | 17.06% | 7.96% | * |
| MML Income & Growth Fund - Initial | 5/1/2006 | | 1.38% | 6.47% | 6.37% | 17.29% | 8.11% | * |
| Large Cap Blend | | | | | | | | |
| Fidelity VIP Contrafund Portfolio - Initial | 1/3/1995 | | -5.83% | 6.64% | 9.69% | 17.29% | 11.14% | * |
| Invesco V.I. Diversified Dividend Fund Series I | 3/1/1990 | 10 | 1.50% | 5.44% | 4.91% | 12.63% | 6.30% | * |
| Invesco V.I. Main Street Fund - SERIES I | 7/5/1995 | | -4.74% | 3.73% | 5.89% | 14.64% | 9.02% | * |
| MML Equity Index Fund - I | 5/1/1997 | | -4.72% | 6.22% | 7.06% | 16.46% | 10.47% | * |
| MML Focused Equity Fund - Service 1 | 5/1/2012 | 3, 4 | -1.33% | 2.07% | 3.66% | 11.61% | 8.90% | * |
| MML Fundamental Equity Fund - Service 1 | 5/1/2012 | 3, 4 | -4.77% | 3.49% | 5.57% | 14.31% | 10.85% | * |
| MML Sustainable Equity Fund - Initial | 5/1/2006 | 8 | -7.53% | -1.14% | 5.61% | 14.42% | 9.29% | * |
| Large Cap Growth | | | | | | | | |
| Invesco V.I. Capital Appreciation Fund - SERIES I | 4/3/1985 | | -12.45% | 0.52% | 5.50% | 15.47% | 9.86% | * |
| MML Blue Chip Growth Fund - Initial | 5/1/2006 | 8 | -9.59% | 6.37% | 7.09% | 13.34% | 11.19% | * |
| MML Large Cap Growth Fund - Initial | 5/1/2006 | 8 | -9.62% | 6.71% | 11.63% | 17.04% | 12.10% | * |
| Small/Mid Cap Value | | | | | | | | |
| MML Mid Cap Value Fund - Initial | 5/1/2006 | 8 | 1.74% | 4.24% | 2.73% | 13.34% | 6.61% | * |
| MML Small/Mid Cap Value Fund - Initial | 5/1/2006 | 8 | -5.98% | -4.23% | 1.33% | 16.35% | 5.39% | * |
| Small/Mid Cap Growth | | | | | | | | |
| Invesco V.I. Discovery Mid Cap Growth Fund - SERIES I | 8/15/1986 | | -12.90% | -7.74% | -0.70% | 9.73% | 7.70% | * |
| MML Mid Cap Growth Fund - Initial | 5/1/2006 | 8 | -7.91% | -6.99% | 0.92% | 10.16% | 7.13% | * |
| MML Small Cap Growth Equity Fund - Initial | 5/3/1999 | | -9.09% | -5.99% | -1.85% | 11.44% | 6.07% | * |
| Small/Mid Cap Blend | | | | | | | | |
| MML II Small Cap Equity Fund - Initial | 6/1/1998 | | -6.30% | -2.12% | 2.32% | 15.91% | 6.65% | * |
| International/Global | | | | | | | | |
| Invesco Oppenheimer V.I. International Growth Fund - SERIES I | 5/13/1992 | | 0.20% | -6.68% | 0.30% | 6.36% | 2.58% | * |
| Invesco V.I. Global Fund - SERIES I | 11/12/1990 | | -5.90% | -2.74% | 4.80% | 12.13% | 6.94% | * |
| MML Foreign Fund - Initial | 5/1/2006 | 8 | 8.92% | 7.33% | 4.85% | 11.40% | 2.24% | * |
| MML Global Fund - II | 5/1/2006 | 8 | 1.18% | 0.26% | 1.44% | 10.03% | 5.90% | * |
| Specialty | | | | | | | | |
| Invesco V.I. Health Care Fund Series I (4452) | 5/1/1997 | | 3.24% | -3.57% | 0.23% | 6.72% | 3.47% | * |
| Invesco V.I. Technology Fund Series I (4455) | 5/20/1997 | | -16.13% | -2.40% | 3.25% | 12.15% | 10.42% | * |
| MML Managed Volatility Fund - Initial | 5/1/2000 | 11, 12 | -2.72% | 5.26% | 3.39% | 6.47% | 3.49% | * |
| PIMCO Commodity Real Return Strategy Portfolio | 2/28/2006 | 4 | 10.25% | 10.94% | -3.95% | 14.67% | 1.69% | * |
| VY CBRE Global Real Estate Porfolio - S | 1/3/2006 | | 0.16% | -0.10% | -4.64% | 6.60% | 1.18% | * |

Standardized Total Returns - With Full Surrender

For the Period Ending: March 31, 2025

These standardized returns assume a single \$1,000 purchase payment made at the beginning of the periods shown, and full surrender on the last business day of the most recent calendar quarter. Standardized Total Returns reflect total separate account expenses of 1.40%, annual maintenance charge (contract level charges) of \$30.00 allocated proportionately for each Sub-account, all fund level expenses, and Contingent Deferred Sales Charges (CDSC) – Contract Year:

1 2 3 4 5 6 7 8+

7% 6% 5% 4% 3% 2% 1% 0%

These returns do not reflect the charges for any premium taxes, if any. Their inclusion would reduce the returns shown.

| Separate Account Sub-account | Date Added Separate Account | Endnotes | Cumulative YTD | Average Annual | | | | |
|---|-----------------------------------|----------|-----------------------|----------------|---------|---------|----------|-----------------------------|
| | | | | 1 Year | 3 Years | 5 Years | 10 Years | Since Date to Account |
| Money Market | | | | | | | | |
| Invesco V.I. U.S. Government Money 7-day yield 2.34% | 1/31/1996 | 1, 2 | -6.47% | -4.12% | 0.67% | 0.19% | 0.02% | 0.73% |
| MML U.S. Government Money Market 7-day yield 2.38% | 5/1/2006 | 1 | -6.46% | -3.96% | 0.74% | 0.23% | 0.04% | -0.09% |
| Fixed Income | | | | | | | | |
| Invesco V.I. Global Strategic Income Fund - SERIES I | 8/31/1999 | | -4.16% | -1.78% | -0.54% | 2.14% | 0.17% | 2.99% |
| MML II High Yield Fund - Service 1 | 5/3/2010 | 4, 3 | -6.72% | -0.85% | 1.03% | 5.22% | 3.32% | 4.61% |
| MML II Inflation-Protected and Income Fund - Initial | 4/30/2003 | | -3.34% | -1.76% | -2.82% | 1.16% | 1.17% | 1.96% |
| MML II Managed Bond Fund - Service | 9/30/1999 | 4 | -4.73% | -2.34% | -2.39% | -0.50% | 0.16% | 2.95% |
| MML Short-Duration Bond Fund - Service 1 | 5/3/2010 | 3, 4 | -5.87% | -1.90% | 0.62% | 1.17% | 0.36% | 0.56% |
| MML Total Return Bond Fund - Service 1 | 5/1/2012 | 4 | -4.52% | -4.07% | -3.66% | -2.69% | -0.42% | 0.01% |
| Asset Allocation | | | | | | | | |
| MML Aggressive Allocation Fund - Initial | 1/22/2008 | 6 | -8.18% | -4.17% | 2.51% | 11.43% | 6.08% | 6.03% |
| MML Balanced Allocation Fund - Initial | 1/22/2008 | 6 | -6.49% | -3.67% | 0.19% | 6.02% | 3.52% | 4.04% |
| MML Conservative Allocation Fund - Initial | 1/22/2008 | 6 | -6.09% | -3.65% | -0.30% | 4.89% | 2.93% | 3.65% |
| MML Growth Allocation Fund - Initial | 1/22/2008 | | -7.54% | -3.97% | 1.69% | 9.49% | 5.18% | 5.33% |
| MML Moderate Allocation Fund - Initial | 1/22/2008 | 6 | -6.86% | -3.87% | 0.76% | 7.53% | 4.10% | 4.56% |
| Balanced | | | | | | | | |
| MML II Blend Fund - Initial | 4/30/1999 | | -9.32% | -2.31% | 2.17% | 8.87% | 6.05% | 4.30% |
| Large Cap Value | | | | | | | | |
| MML Equity Income Fund - Initial | 5/31/2002 | 8 | -3.46% | -1.85% | 3.07% | 14.87% | 7.24% | 5.04% |
| MML Fundamental Value Fund - Service 1 | 5/1/2012 | 4, 3 | -7.49% | -5.60% | 4.18% | 16.22% | 6.85% | 8.33% |
| MML II Equity Fund - Initial | 4/30/1999 | 9 | -3.81% | 1.85% | 6.00% | 16.70% | 7.90% | 4.19% |
| MML Income & Growth Fund - Initial | 8/31/1998 | | -5.69% | -0.60% | 4.81% | 16.93% | 8.06% | 4.09% |
| Large Cap Blend | | | | | | | | |
| Fidelity VIP Contrafund Portfolio - Initial | 8/31/1998 | | -12.89% | -0.43% | 8.22% | 16.92% | 11.09% | 8.79% |
| Invesco V.I. Diversified Dividend Fund Series I | 4/30/2000 | 10 | -5.56% | -1.63% | 3.30% | 12.21% | 6.25% | 12.12% |
| Invesco V.I. Main Street Fund - SERIES I | 8/31/1999 | | -11.81% | -3.34% | 4.31% | 14.24% | 8.97% | 5.35% |
| MML Equity Index Fund - I | 4/30/1999 | | -11.79% | -0.85% | 5.51% | 16.09% | 10.42% | 5.61% |
| MML Focused Equity Fund - Service 1 | 5/1/2012 | 3, 4 | -8.40% | -5.00% | 2.02% | 11.17% | 8.85% | 10.25% |
| MML Fundamental Equity Fund - Service 1 | 5/1/2012 | 3, 4 | -11.83% | -3.58% | 3.98% | 13.91% | 10.80% | 11.09% |
| MML Sustainable Equity Fund - Initial | 4/30/2003 | 8 | -14.59% | -8.21% | 4.03% | 14.02% | 9.24% | 5.60% |
| Large Cap Growth | | | | | | | | |
| Invesco V.I. Capital Appreciation Fund - SERIES I | 8/31/1999 | | -19.52% | -6.55% | 3.91% | 15.09% | 9.81% | 6.05% |
| MML Blue Chip Growth Fund - Initial | 5/31/2002 | 8 | -16.66% | -0.70% | 5.55% | 12.92% | 11.14% | 8.06% |
| MML Large Cap Growth Fund - Initial | 8/31/1999 | 8 | -16.68% | -0.36% | 10.21% | 16.68% | 12.06% | 6.72% |
| Small/Mid Cap Value | | | | | | | | |
| MML Mid Cap Value Fund - Initial | 8/31/1999 | 8 | -5.32% | -2.83% | 1.06% | 12.93% | 6.56% | 5.39% |
| MML Small/Mid Cap Value Fund - Initial | 4/30/2003 | 8 | -13.04% | -11.30% | -0.39% | 15.98% | 5.33% | 4.14% |
| Small/Mid Cap Growth | | | | | | | | |
| Invesco V.I. Discovery Mid Cap Growth Fund - SERIES I | 8/31/1999 | | -19.97% | -14.81% | -2.50% | 9.27% | 7.65% | 4.53% |
| MML Mid Cap Growth Fund - Initial | 8/31/1998 | 8 | -14.98% | -14.06% | -0.81% | 9.71% | 7.08% | 5.85% |
| MML Small Cap Growth Equity Fund - Initial | 5/3/1999 | | -16.16% | -13.06% | -3.69% | 11.00% | 6.02% | 6.83% |
| Small/Mid Cap Blend | | | | | | | | |
| MML II Small Cap Equity Fund - Initial | 8/31/1998 | | -13.37% | -9.19% | 0.64% | 15.54% | 6.59% | 6.71% |
| International/Global | | | | | | | | |
| Invesco Oppenheimer V.I. International Growth Fund - SERIES I | 1/31/1996 | | -6.87% | -13.74% | -1.45% | 5.84% | 2.52% | 4.82% |

| Separate Account Sub-account | Date Added Separate Account | Endnotes | Cumulative | Average Annual | | | | |
|--|-----------------------------------|----------|------------|----------------|---------|---------|----------|-----------------------------|
| | | | YTD | 1 Year | 3 Years | 5 Years | 10 Years | Since Date to Account |
| Invesco V.I. Global Fund - SERIES I | 8/31/1999 | | -12.97% | -9.81% | 3.19% | 11.70% | 6.89% | 6.98% |
| MML Foreign Fund - Initial | 8/31/1999 | 8 | 1.86% | 0.27% | 3.24% | 10.96% | 2.17% | 1.33% |
| MML Global Fund - II | 8/31/1999 | 8 | -5.89% | -6.81% | -0.27% | 9.57% | 5.85% | 3.60% |
| Specialty | | | | | | | | |
| Invesco V.I. Health Care Fund Series I (4452) | 4/30/2000 | | -3.83% | -10.64% | -1.52% | 6.20% | 3.41% | 5.07% |
| Invesco V.I. Technology Fund Series I (4455) | 4/30/2000 | | -23.20% | -9.47% | 1.59% | 11.72% | 10.38% | 3.79% |
| MML Managed Volatility Fund - Initial | 5/1/2000 | 11, 12 | -9.78% | -1.80% | 1.74% | 5.94% | 3.43% | 2.61% |
| PIMCO Commodity Real Return Strategy Portfolio | 5/1/2006 | 4 | 3.18% | 3.88% | -5.87% | 14.27% | 1.62% | -1.45% |
| VY CBRE Global Real Estate Portfolio - S | 5/1/2006 | | -6.91% | -7.17% | -6.59% | 6.08% | 1.11% | 2.54% |

MML Asset Allocation Funds
For the Period Ending: March 31, 2025

The Panorama Premier variable annuity contract contains five 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 Panorama Premier variable annuity contract. The percentages below represent the 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%.

| | MML Aggressive Allocation Fund | MML American Funds Core Allocation Fund | MML Balanced Allocation Fund | MML Conservative Allocation Fund | MML Growth Allocation Fund | MML Moderate Allocation Fund |
|-----------------------------------|--------------------------------------|---|---------------------------------|--|-------------------------------|---------------------------------|
| Fixed Income | | | | | | |
| AMER FDS INS BOND FD | | 36.41 | | | | |
| INVESCO VI GLOBAL STRATEGIC IN | 0.34 | | 1.71 | 2.06 | 0.85 | 1.36 |
| MML DYNAMIC BOND FUND | 1.95 | | 10.15 | 12.03 | 5.08 | 8.16 |
| MML HIGH YIELD FUND | 0.05 | | 0.25 | 0.30 | 0.12 | 0.20 |
| MML INFLATION PROTECTED BD FD | 0.38 | | 1.96 | 2.35 | 0.97 | 1.55 |
| MML MANAGED BOND FUND | 3.24 | | 16.63 | 19.85 | 8.35 | 13.35 |
| MML SHORT DURATION BOND FUND | 0.87 | | 4.55 | 5.47 | 2.30 | 3.62 |
| MML TOTAL RETURN BOND FUND | 2.83 | | 14.62 | 17.47 | 7.34 | 11.66 |
| PIMCO VARIABLE INSURANCE TRUST | 0.66 | | 1.29 | 1.50 | 0.89 | 1.17 |
| Total Fixed Income | 10.32 | 36.41 | 51.16 | 61.03 | 25.90 | 41.07 |
| International/Global | | | | | | |
| AMER FD INS INTERNATIONAL FD | | 9.48 | | | | |
| MML FOREIGN FD | 4.36 | | 2.32 | 1.87 | 3.40 | 2.75 |
| MML GLOBAL FD | 4.49 | | 2.55 | 2.05 | 3.77 | 3.04 |
| MML INTERNATIONAL EQUITY FUND | 12.65 | | 6.82 | 5.33 | 10.32 | 8.20 |
| MML STRG EMERGING MARKETS FUND | 1.82 | | 0.93 | 0.75 | 1.49 | 1.11 |
| Total International/Global | 23.32 | 9.48 | 12.62 | 10.00 | 18.98 | 15.10 |
| Large Cap Equity | | | | | | |
| AMER FDS INS BLUE CHIP INC GRT | | 27.25 | | | | |
| AMER FDS INS GRWTH INC FD | | 26.86 | | | | |
| MML BLUE CHIP GROWTH FD | 8.73 | | 4.65 | 3.74 | 7.17 | 5.66 |
| MML EQUITY INCOME FD | 7.64 | | 4.20 | 3.38 | 6.42 | 5.14 |
| MML FOCUSED EQUITY FUND | 12.62 | | 7.16 | 5.67 | 10.68 | 8.58 |
| MML FUNDAMENTAL GROWTH FUND | 6.00 | | 3.17 | 2.54 | 4.81 | 3.85 |
| MML FUNDAMENTAL VALUE FUND | 7.48 | | 4.04 | 3.22 | 6.14 | 4.93 |
| MML INCOME AND GROWTH FD | 3.29 | | 1.75 | 1.45 | 2.80 | 2.18 |
| MML LARGE CAP GROWTH FD | 6.89 | | 3.53 | 2.78 | 5.51 | 4.28 |
| Total Large Cap Equity | 52.65 | 54.11 | 28.50 | 22.78 | 43.53 | 34.62 |
| Mid Cap Equity | | | | | | |
| MML MID CAP GROWTH FD | 5.11 | | 2.83 | 2.28 | 4.27 | 3.40 |
| MML MID CAP VALUE FD | 4.15 | | 2.37 | 1.90 | 3.49 | 2.80 |
| Total Mid Cap Equity | 9.26 | | 5.20 | 4.18 | 7.76 | 6.20 |
| Small Cap Equity | | | | | | |
| MML SMALL CAP GROWTH EQUITY FD | 1.08 | | 0.61 | 0.50 | 0.91 | 0.73 |
| MML SMALL COMPANY VALUE FUND | 2.10 | | 1.19 | 0.96 | 1.86 | 1.42 |
| MML SMALL/MID CAP VALUE | 1.27 | | 0.71 | 0.58 | 1.06 | 0.85 |
| Total Small Cap Equity | 4.45 | | 2.51 | 2.04 | 3.83 | 3.00 |
| Total Allocation | 100 | 100 | 100 | 100 | 100 | 100 |

Credited Fixed Account Interest Rates Effective**For the Period Ending: March 31, 2025**

Current interest rates and guaranteed minimum interest rates vary by issue state and issue date. Credited rates will not be less than the minimum guaranteed interest rate as of a contract's issue date. Guarantees are based on the claims-paying ability of the issuing company.

| | Previous | New | Change |
|---|----------|-------|--------|
| The Fixed Account | | | |
| New Money Rate | 3.00% | 3.00% | 0.00% |
| Portfolio Rate | 3.00% | 3.00% | 0.00% |
| Exchange Dollars from Flex Extra | 3.00% | 3.00% | 0.00% |
| DCA Fixed Accounts | | | |
| Rates for all states, were available, except New York | | | |
| 6 Month DCA | 3.00% | 3.00% | 0.00% |
| 6 Month DCA Effective Yield | 0.66% | 0.66% | 0.00% |
| 12 Month DCA | 3.00% | 3.00% | 0.00% |
| 12 Month DCA Effective Yield | 1.40% | 1.40% | 0.00% |
| DCA Fixed Accounts | | | |
| Rates for New York | | | |
| 6 Month DCA - NY | 3.00% | 3.00% | 0.00% |
| 6 Month DCA Effective Yield - NY | 0.66% | 0.66% | 0.00% |
| 12 Month DCA - NY | 3.00% | 3.00% | 0.00% |
| 12 Month DCA Effective Yield - NY | 1.40% | 1.40% | 0.00% |

Rates listed are applicable for new sales and subsequent payments. If a contract offered a guaranteed minimum interest rate different than the current applicable base interest rate listed, the contract holder will receive the higher of the two rates. The product, certain features and/or investment choices may not be available in all states or with all firms contracted with MassMutual.

¹ Current rates on DCA Fixed Accounts are subject to change monthly. The 6-Month DCA Fixed Account rate is guaranteed for 6 months. The 12-Month DCA Fixed Account rate is guaranteed for 12 months. These rates are credited to the respective DCA Fixed Accounts and do not reflect the performance of any investment choices. Certain restrictions apply. The stated interest rate is not earned on the entire purchase payment amount due to regular transfers to the variable investment choices that will affect the daily accrual, lowering the effective yield. Additionally, any subsequent purchase payments applied to an existing DCA Fixed Account term will participate in only the remaining portion of that DCA term, lowering the effective yield further on the subsequent purchase payments. The effective yield is based on your initial deposit after the completion of your DCA Fixed Account transfers. Dollar Cost Averaging does not assure a profit or protect against loss in a declining market, and involves continuous investment in securities regardless of fluctuating prices. An investor should consider his/her ability to continue investing through periods of low price levels. See the appropriate product prospectus for complete details.

Endnotes

- 1 You could lose money by investing in the Fund. Although the seeks to preserve the value of your investment at \$1.00 per share, it cannot guarantee it will do so. An investment in the is not a bank account and is not insured or guaranteed by the Federal Deposit Insurance Corporation or any other government agency. The Fund's sponsor is not required to reimburse the Fund for losses, and you should not expect that the sponsor will provide financial support to the at any time, including during periods of market stress. The yield quotation for this more closely reflects the current earnings of the than the total return quotation. It is an annualized rate based on results over the last seven days of the period, and is net of all recurring contract fees and charges.
- 2 Although the Oppenheimer Government Money Fund/VA commenced operations on April 3, 1985, the information necessary to calculate the returns is available only for the year 1987 and subsequent periods. Oppenheimer Government Money is not available as an investment choice for contracts issued after January 18, 2008.
- 3 Performance reflects share classes with 12(b)-1 fees from inception which reduces the fund's performance. Please see the fund prospectus for more information about this fee.
- 4 The fund established a new class of shares, which is available with this contract, after it began its initial investment operations. The performance for the period prior to offering the new class shows the historical returns for the original class of shares, which were not subject to a 12b-1 fee. The performance shown from the inception date of the class available with this contract includes the fees and expenses of that share class, including a 12b-1 fee. A 12b-1 fee reduces a fund's performance.
- 5 Unavailable in contracts issued on or after May 1, 2009. For contracts issued prior to May 1, 2009, you may not allocate any new money to this fund via purchase payments or transfers.
- 6 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.

- 7 Unavailable in contracts issued on or after April 30, 2012. Due to ongoing market volatility, rates of return may be subject to substantial short-term fluctuations. Current rates of return may be lower than the rates of return shown. You will find updated rates of return published on a monthly basis at <http://www.massmutual.com/productssolutions/productperformance>.
- 8 The historical performance shown reflects a combination of the current underlying fund's performance, as well as the performance of a prior fund. The current fund's performance is reflected beginning on 5/1/06. The prior fund's performance covers the period between the date listed in the performance table and 4/30/06. This Allocation Fund does not make an investment in the underlying fund. The Fund's allocation is below 0.5%. When the fund has 10 years of performance history the Since Inception return is no longer shown.
- 9 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.
- 10 Effective April 29, 2011, Invesco V.I. Financial Services Fund merged into Invesco V.I. Dividend Growth Fund. Performance prior to that day reflects performance of the Invesco V.I. Financial Services Fund and performance on and after that date reflects performance of the Invesco V.I. Dividend Growth Fund.
- 11 The portfolio is classified as "non-diversified", meaning it has the ability to take larger positions in a smaller number of issuers than a "diversified" fund. Non-diversified portfolios may experience greater price volatility.
- 12 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.
- 13 Effective after the close of the New York Stock Exchange on April 26, 2024, the Invesco V.I. Conservative Balanced merged into the Invesco V.I. Equity and Income.
- * When the fund has 10 years of performance history the Since Inception return is no longer shown.

Panorama Premier (Contract Form #: MUVA94) variable annuity contract was issued by Massachusetts Mutual Life Insurance Company in New York and New Jersey, and by C.M. Life Insurance Company in all other states. C.M. Life Insurance Company, 100 Bright Meadow Boulevard, Enfield, CT 06082, is a subsidiary of Massachusetts Mutual Life Insurance Company, 1295 State Street, Springfield, MA 01111-0001.

We no longer offer this contract for sale to the public.

Contract owners may continue, however, to make purchase payments to their contracts.

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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