1. The Symbol, Number, or Score in the Rating Scale used to Denote the Credit Rating Categories and Notches as required by Paragraph (a)(1)(ii)(A) of Rule 17g-7

Massachusetts Mutual Life Insurance Co

AM Best #: 006695 **NAIC #:** 65935 **FEIN #:** 04-1590850

Financial Strength Rating	View Definition
Rating:	A++ (Superior)
Financial Size Category:	XV (Greater than or Equal to USD 2.00 Billion)
Outlook:	Stable
Action:	Affirmed
Effective Date:	September 20, 2024
Initial Rating Date:	June 30, 1928

Long-Term Issuer Credit Rating	View Definition
Long-Term:	aa+ (Superior)
Outlook:	Stable
Action:	Affirmed
Effective Date:	September 20, 2024
Initial Rating Date:	June 10, 2004

Short-Term Issuer Credit Rating	View Definition
Short-Term:	AMB-1+ (Strongest)
Action:	Affirmed
Effective Date:	September 20, 2024
Initial Rating Date:	February 4, 2005

Issue Credit Ratings

Date Issued	Amount	Coupon	Issue Type	Issue Description	Best's Issue Rating	Rating Effective Date	Maturity Date	Outlook/ Implication	Action
Massachusetts Mutual Life Insurance Co - 6695									
01/17/2012	400,000,000 USD	5.375%	Surplus Notes		aa-	09/20/2024	12/01/2041	Stable	Affirm
03/01/2021	800,000,000 USD	5.077%	Surplus Notes		aa-	09/20/2024	02/15/2069	Stable	Affirm
03/20/2017	475,000,000 USD	4.9%	Surplus Notes		aa-	09/20/2024	04/01/2077	Stable	Affirm
04/16/2020	700,000,000 USD	3.375%	Surplus Notes		aa-	09/20/2024	04/15/2050	Stable	Affirm
05/07/2003	250,000,000 USD	5.625%	Surplus Notes		aa-	09/20/2024	05/15/2033	Stable	Affirm
06/01/2009	750,000,000 USD	8.875%	Surplus Notes		aa-	09/20/2024	06/01/2039	Stable	Affirm
10/11/2019	838,475,000 USD	3.729%	Surplus Notes		aa-	09/20/2024	10/15/2070	Stable	Affirm
11/18/2021	675,000,000 USD	3.2%	Surplus Notes		aa-	09/20/2024	12/01/2061	Stable	Affirm

Issue Credit Ratings									
Date Issued	**Amount**	**Coupon**	**Issue Type**	**Issue Description**	**Best's Issue Rating**	**Rating Effective Date**	**Maturity Date**	**Outlook/ Implication**	**Action**
12/02/2022	500,000,000 USD	5.672%	Surplus Notes		aa-	09/20/2024	12/01/2052	Stable	Affirm
N/A	N/A	N/A	Short Term	Commercial Paper	AMB-1+	09/20/2024	N/A		Affirm
N/A	500,000,000 USD	4.5%	Surplus Notes		aa-	09/20/2024	04/15/2065	Stable	Affirm
MassMutual Global Funding II - 59237									
10/17/2024	500,000,000 USD	4.3%	Senior Secured	Medium Term Notes (MTNs)	aa+	11/01/2024	10/24/2027	Stable	Assigned
09/17/2024	500,000,000 USD	4.35%	Senior Secured	Medium Term Notes (MTNs)	aa+	10/04/2024	09/17/2031	Stable	Assigned
01/14/2020	550,000,000 USD	2.35%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	01/14/2027	Stable	Affirm
01/17/2024	650,000,000 USD	4.85%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	01/17/2029	Stable	Assigned
01/19/2023	500,000,000 EUR	3.75%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	01/19/2030	Stable	Affirm
01/29/2024	300,000,000 USD	.77%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	01/29/2027	Stable	Assigned
02/03/2023	1,000,000,000 NOK	4.01%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	02/03/2031	Stable	Affirm
03/08/2019	650,000,000 USD	3.4%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	03/08/2026	Stable	Affirm
03/09/2021	500,000,000 USD	2.15%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	03/09/2031	Stable	Affirm
03/28/2003	101,400,000 USD	0%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	12/15/2032	Stable	Affirm
04/09/2024	350,000,000 USD	.74%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	04/09/2027	Stable	Assigned
04/09/2024	850,000,000 USD	5.1%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	04/09/2027	Stable	Assigned
04/12/2023	750,000,000 USD	4.5%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	04/10/2026	Stable	Affirm
05/03/2023	215,000,000 CHF	2.65%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	05/03/2028	Stable	Affirm

(i) Denotes Indicative Rating

u Denotes Under Review Rating

pca Best's Preliminary Credit Assessment is an independent opinion on the relative general credit strengths and weaknesses of an issuer, obligor, security, or a proposed transaction or financing structure primarily based on business plans, term sheets, and AM Best's expectations relative to the execution of such business plans. AM Best does not define a PCA as a Credit Rating; however, the assessment is expressed using the existing Best's Credit Rating scales.

See Appendix for additional Issue Credit Ratings

Best's Credit Rating Analyst	
Rating Issued by:	A.M. Best Rating Services, Inc. Ambest Road, Oldwick, NJ 08858 United States +1 908 439 2200
Senior Financial Analyst :	Louis Silvers +1 908 439 2200 Ext. 908-882-2316
Director :	Jacqalene Lentz, CPA

2. The Version of the Procedure or Methodology used to Determine the Credit Rating as required by Paragraph (a)(1)(ii)(B) of Rule 17g-7

Rating Methodology and Criteria Report:	Version
The following Methodologies and Criteria Procedures were used at the time of and the basis for the proposed rating	
AM Best's Stress Liquidity Ratio for US Life Insurers	05/09/2024
Best's Credit Rating Methodology	08/29/2024
Available Capital and Insurance Holding Company Analysis	08/15/2024
Evaluating US Surplus Notes	06/13/2024
Evaluating Country Risk	06/06/2024
Rating Funding Agreement-Backed Securities Programs	03/08/2024
Scoring and Assessing Innovation	02/20/2025
Understanding BCAR for US and Canadian Life/Health Insurers	06/27/2024

3. The Main Assumptions and Principles used to Construct the Procedures and Methodology used to Determine the Credit Rating as required by Paragraph (a)(1)(ii)(C) of Rule 17g-7

Assumptions

Based on historical experience and AM Best's transition studies, ratings typically move no more than one or two notches when Rating Actions occur. However, certain factors could cause larger scale movement in the ratings. AM Best identifies the following primary factors as having the potential to significantly affect ratings:

- Data accuracy and reliability
- Interest rates
- Investment impairments
- Liquidity

- Equity markets
- Catastrophe model risk
- Reinsurance market capacity and credit risk
- Mortality risk
- Morbidity risk
- Holding company/affiliates
- Country risk
- Regulatory risk

Elements of Country Risk

AM Best defines country risk as the risk that country-specific factors could adversely affect an insurer's ability to meet its financial obligations. Country risk is evaluated and incorporated into all of AM Best's credit ratings. As part of evaluating country risk, AM Best identifies the various risks within a country that may directly or indirectly affect an insurance company.

AM Best separates these risks into three main categories: economic risk, political risk and financial system risk. Given AM Best's particular focus on the insurance industry, financial system risk is further divided into two sections: insurance risk and non-insurance financial system risk.

Economic risk is the likelihood that fundamental weaknesses in a country's economy will cause adverse developments for an insurer. AM Best's determination of economic risk evaluates the state of the domestic economy, government finances, and international transactions, as well as prospects for growth and stability.

Political risk is the likelihood that governmental or bureaucratic inefficiencies, societal tensions, an inadequate legal system or international tensions will cause adverse developments for an insurer. Political risk comprises the stability of a government and society, the effectiveness of international diplomatic relationships, the reliability and integrity of the legal system and business infrastructure, the efficiency of the government bureaucracy, and the appropriateness and effectiveness of the government's economic policies.

Financial system risk (non-insurance) is the risk that financial volatility may erupt due to inadequate reporting standards, weak banking systems or asset markets, or poor regulatory structure. Non-insurance financial system risk considers a country's banking system, accounting standards, financial market development, and government finances, and assesses how vulnerable the financial system is to external or internal volatility. Basel II & III, World Bank Insolvency Principles and international accounting standards are referenced in the analysis, as are the performances of banks, equity indices and fixed-income securities.

Insurance risk is the risk that the insurance industry's levels of development and public awareness, transparency and effectiveness of regulation, reporting standards, and regulatory sophistication will contribute to a volatile financial system and compromise an insurer's ability to pay claims. Insurance risk, which AM Best considers as a distinct subsection of financial system risk, is addressed separately because of the importance of, and AM Best's specific focus on, the industry. The determination is based heavily on the Insurance Core Principles (ICP) of the International Association of Insurance Supervisors (IAIS). AM Best employs a sizable subset of the 28 ICPs by organizing them into three categories: 1) government commitment to an open and well-regulated insurance industry; 2) adequacy of supervisory authority and its supporting infrastructure; and 3) insurer accountability.

Country Risk Tiers

The assignment of CRTs to score ranges is based on AM Best's assertion that the risk in countries can be categorized loosely to provide a basis of comparison, provided that country-by-country differences are acknowledged. Therefore, CRTs can be classified, in a typical scenario, by the following:

- CRT-1: A country receiving a CRT-1 assignment is characterized by a predictable and transparent political environment, legal system and business infrastructure, a sophisticated financial system regulation with deep capital markets, and a mature insurance industry framework.

- CRT-2: A country receiving a CRT-2 assignment is characterized by a predictable and transparent political environment, legal system and business infrastructure, sufficient financial system regulation, and a mature insurance industry framework.

• CRT-3: A country receiving a CRT-3 assignment is characterized by a developing political environment, legal system, business infrastructure, capital market, and insurance regulatory structure.

• CRT-4: A country receiving a CRT-4 assignment is characterized by a relatively unpredictable and nontransparent political, legal and business environment with an underdeveloped capital market, and a partially to fully inadequate insurance regulatory structure.

• CRT-5: A country receiving a CRT-5 assignment is characterized by an unpredictable and opaque political, legal and business environment with weak rule of law, lower human development and social instability, a limited, illiquid or nonexistent capital market, and a nascent insurance industry.

In short, as country risk increases (as measured by a higher Country Risk Tier), the distribution of ratings generally migrates down the rating scale. This same relationship effectively applies to any significant category of risk an insurer faces, i.e., higher risk exposure places pressures upon financial stability.

4. The Potential Limitations of the Credit Rating as required by Paragraph (a)(1)(ii)(D) of Rule 17g-7

Please refer to the **Guide to Best's Credit Ratings** for the following:

- 1(a). Usage of Ratings and Limitations
- 8. Best's Rating Scales: Categories and Symbols

5. Information on the Uncertainty of the Credit Rating as required by Paragraph (a)(1)(ii)(E) of Rule 17g-7

Please refer to the **Guide to Best's Credit Ratings** for the following:

- 2(b)ii. Quality of Information

6. Use of Third Party Due Diligence in Taking the Credit Rating Action as required by Paragraph (a)(1)(ii)(F) of Rule 17g-7

AM Best Company did not use due diligence services of a third party in taking the Rating Action. This disclosure only applies to Rating Actions associated with asset-backed securities as defined by section 3(a)(79) of the Securities Exchange Act of 1934, as amended.

7. How Servicer or Remittance Reports were used, and with what Frequency, to Conduct Surveillance of the Credit Rating as required by Paragraph (a)(1)(ii)(G) of Rule 17g-7

How Servicer / Remittance reports were used:

Not Applicable

Frequency of surveillance:

Not Applicable

8. A Description of the Types of Data about the Obligor, Issuer, Security, or Money Market Instrument that were Relied Upon for the Purpose of Determining the Credit Rating as required by Paragraph (a)(1)(ii)(H)(i) of Rule 17g-7

Please refer to the **Guide to Best's Credit Ratings** for the following:

- 2(b). Compile Information
- 2(b)i. Material Sources of Information

9. An Overall Assessment of the Quality of Information Available and Considered in Determining the Credit Rating as required by Paragraph (a)(1)(ii)(I) of Rule 17g-7

Please refer to the **Guide to Best's Credit Ratings** for the following:

- 2(b)i. Material Sources of Information
- 2(b)ii. Quality of Information

10. Information Relating to Conflicts of Interest as required by Paragraph (a)(1)(ii)(J) of Rule 17g-7

1) AM Best Company has been paid to determine the Credit Rating by the obligor being rated or the issue, underwriter, depositor, or sponsor of the security or money market instrument being rated.

Rating Opinion Characteristics	
Solicited	Participating

2) AM Best Company was also paid for services by the company other than determining Credit Ratings during the most recently ended fiscal year.

Please refer to the **Guide to Best's Credit Ratings** for the following:

- 1(d). Not an Investment Advisor or Consultant

11. An Explanation or Measure of the Potential Volatility of the Credit Rating as required by Paragraph (a)(1)(ii)(K) of Rule 17g-7

Factors and Magnitude - Change Rating:

Negative rating action may occur if the group's capitalization declines, the quality of capital declines, or financial leverage increases. Potential rating impact:Minor

Negative rating action may occur due to a trend of declining operating performance. Potential rating impact:Minor

While thought to be unlikely, positive rating action could occur if there is sustained outperformance of peers in operating performance metrics. Potential rating impact:Minor

NOTE: Only a rating committee can make a rating decision and the above referenced factors would be taken into consideration, along with all available relevant information in determining a Rating Action. However, the magnitude of a potential change in the rating that could reasonably occur as a result of the impact of the factors listed above are characterized by the following summary chart:

Rating Change Characterization	Number of ICR Notches (Up or Down)
Minor	0 - 1
Moderate	2 - 3
Severe	> 3

12. The Information on the Content of the Information of the Credit Rating as required by Paragraph (a)(1)(ii)(L) of Rule 17g-7

(1) Rating History and Performance

- Financial Strength / Issuer Credit Rating History

(2) Expected Probability of Default and Expected Loss

The Commission states that it does not expect NRSROs to alter the meanings of their Credit Ratings or rating procedures and methodologies to conform to this disclosure requirement. Rather, the Commission expects NRSROs to provide "information" to the extent it is consistent with their procedures and methodologies for determining Credit Ratings, on the expected probability of default and expected loss in the event of default. According to the Commission, this information could consist of, for example, historical default and loss statistics, respectively, for the class or subclass of the Credit Rating.

AM Best's Credit Ratings generally are intended to indicate the relative degree of credit risk of an obligor or debt instrument rather than reflect a measure of a specific default probability or loss expectation. AM Best is providing the historical default statistics or derivatives of such default statistics to comply with Rule 17g-7(a)(ii)(L)(2). AM Best does not produce any loss statistics related to any classes of Credit Ratings so it has no information about expected loss given default. Furthermore, expected losses given default is not consistent with AM Best's procedures and methodologies for determining Credit Ratings.

INSURANCE COMPANY DEFAULT RATES (FSR)

FSR	1 - Year	3 - Year	10 - Year
A++	0.00%	0.00%	0.00%
A+	0.04%	0.17%	0.51%
A	0.04%	0.27%	1.80%
A-	0.15%	0.73%	2.80%
B++	0.34%	1.45%	4.29%
B+	0.75%	2.16%	6.31%
B	1.51%	4.39%	8.81%
B-	3.45%	6.90%	12.07%
C++	3.97%	6.96%	11.20%
C+	3.51%	7.28%	11.64%
C	3.37%	7.37%	15.50%
C-	11.94%	13.95%	17.39%

FSR	1 - Year	3 - Year	10 - Year
D	17.35%	22.16%	29.41%

Note: Data from 1992 to 2018

1. Impairments as a Proxy for Defaults. Upon the public placement of a company, via public court order or other international equivalent, into conservation, rehabilitation and/or insolvent liquidation it is designated by AM Best as a Financially Impaired Company (FIC). Supervisory actions undertaken by Insurance Department regulators without court order are not considered impairments for purposes of compiling Securities and Exchange Commission (SEC) Exhibit 1 statistics unless clear direction is given by the regulator to delay or limit policy or contract payments.

There are a number of regulatory oversight actions that may be taken with respect to troubled insurers in which court orders are not sought, such as required company action plans, various forms and levels of supervision, and licensure actions. Companies may be subject to these insurance department orders and actions on multiple occasions, particularly in certain jurisdictions, and while these regulatory actions suggest concern and impose constraints, they are not necessarily indicative of an insurer's inability to meet its ongoing policy and contract obligations.

Additionally, companies that enter voluntary dissolution and are not under financial duress at that time are not counted as financially impaired.

2. Construction of Default Rates of Insurance Carriers (FSR). This table was constructed by directly observing the default rates of insurance operating companies rated on the traditional Financial Strength Rating (FSR) scale.

3. Rating a Measure of Relative Credit Risk. AM Best's Credit Ratings generally are intended to indicate the relative degree of credit risk of an obligor or debt instrument rather than reflect a measure of specific default probability.

4. Data Consistent With Submission to the Securities and Exchange Commission. The data used to calculate default rates in this table is consistent with the data used to calculate the 1-year, 3-year and 10-year default rates for insurers as required by the SEC in Exhibit 1 of Form NRSRO. Unlike the single cohort method of analysis used in the submission to the Commission, however, the calculations in this table reflect the use of the average cohort approach in order to capture the effect of the various economic cycles experienced by insurance carriers since 1992 when the current 13-point FSR scale (A++ to D) was adopted by AM Best.

5. Data Does Not Necessarily Reflect Default Expectations. The data in this table does not necessarily reflect our default rate expectations. For example, the fact that we show no default rate for the 1-year "A++" category does not mean that we expect no defaults for this rating. It only means that we have not yet observed any historical defaults over a 1-year period for companies rated "A++".

6. Data Changes Periodically. AM Best may periodically change the data in the table if warranted. The reasons for the revisions may be as follows: If AM Best 1) adds more rating cohorts which significantly changes the calculated default rates, 2) changes its criteria for recognizing insurance company defaults, or 3) incorporates new defaults or adjusts existing default data.

INSURANCE COMPANY DEFAULT RATES (ICR)

ICRs	1 - Year	3 - Year	10 - Year
aaa	0.00%	0.00%	0.00%
aa+	0.00%	0.00%	0.00%
aa	0.04%	0.17%	0.51%
aa-	0.04%	0.17%	0.51%
a+	0.04%	0.27%	1.80%
a	0.04%	0.27%	1.80%
a-	0.15%	0.73%	2.80%

ICRs	1 - Year	3 - Year	10 - Year
bbb+	0.34%	1.45%	4.29%
bbb	0.34%	1.45%	4.29%
bbb-	0.75%	2.16%	6.31%
bb+	1.51%	4.39%	8.81%
bb	1.51%	4.39%	8.81%
bb-	3.45%	6.90%	12.07%
b+	3.97%	6.96%	11.20%
b	3.97%	6.96%	11.20%
b-	3.51%	7.28%	11.64%
ccc+	3.37%	7.37%	15.50%
ccc	3.37%	7.37%	15.50%
ccc-	11.94%	13.95%	17.39%
cc	11.94%	13.95%	17.39%
c	17.35%	22.16%	29.41%

Note: Default rates based on FSR to ICR Translation.

See Best's Credit Rating Methodology, *ICR/FSR Rating Translation Table* (Exhibit D.1)

1. Impairments as a Proxy for Defaults. Upon the public placement of a company, via public court order or other international equivalent, into conservation, rehabilitation and/or insolvent liquidation it is designated by AM Best as a Financially Impaired Company (FIC). Supervisory actions undertaken by Insurance Department regulators without court order are not considered impairments for purposes of compiling Securities and Exchange Commission (SEC) Exhibit 1 statistics unless clear direction is given by the regulator to delay or limit policy or contract payments.

There are a number of regulatory oversight actions that may be taken with respect to troubled insurers in which court orders are not sought, such as required company action plans, various forms and levels of supervision, and licensure actions. Companies may be subject to these insurance department orders and actions on multiple occasions, particularly in certain jurisdictions, and while these regulatory actions suggest concern and impose constraints, they are not necessarily indicative of an insurer's inability to meet its ongoing policy and contract obligations.

Additionally, companies that enter voluntary dissolution and are not under financial duress at that time are not counted as financially impaired.

2. Construction of Default Rates of Insurance Carriers(ICR). This table was not constructed by directly observing the default rates of insurance operating companies rated on the 21-point Issuer Credit Rating (ICR) scale because default data associated with ICRs is sparse. It was constructed by converting each operating company Financial Strength Rating (FSR) to an equivalent ICR based on AM Best's FSR/ICR translation table.

3. Rating a Measure of Relative Credit Risk. AM Best's Credit Ratings generally are intended to indicate the relative degree of credit risk of an obligor or debt instrument rather than reflect a measure of specific default probability.

4. Data Does Not Necessarily Reflect Default Expectations. The data in this table does not necessarily reflect our default rate expectations. For example, the fact that we show no default rate for the 1-year "aaa" category does not mean that we expect no defaults for this rating. It only means that we have not yet observed any historical defaults over a 1-year period for companies with an equivalent "aaa" rating.

5. Data Changes Periodically. AM Best may periodically change the data in the table if warranted. The reasons for the revisions may be as follows: If AM Best 1) adds more rating cohorts which significantly changes the calculated default rates, 2) changes its criteria for recognizing insurance company defaults, or 3) incorporates new defaults or adjusts existing default data.

CORPORATE DEFAULT RATES

ICRs	1 - Year	3 - Year	10 - Year
aaa	0.00%	0.00%	0.00%
aa+	0.00%	0.00%	0.00%
aa	0.00%	0.00%	0.00%
aa-	0.00%	0.00%	0.00%
a+	0.02%	0.08%	0.26%
a	0.04%	0.17%	0.51%
a-	0.04%	0.17%	0.51%
bbb+	0.04%	0.27%	1.80%
bbb	0.04%	0.27%	1.80%
bbb-	0.15%	0.73%	2.80%
bb+	0.34%	1.45%	4.29%
bb	0.34%	1.45%	4.29%
bb-	0.75%	2.16%	6.31%
b+	1.13%	3.27%	7.56%
b	1.51%	4.39%	8.81%
b-	1.51%	4.39%	8.81%
ccc+	3.45%	6.90%	12.07%
ccc	3.71%	6.93%	11.64%
ccc-	3.97%	6.96%	11.20%
cc	3.97%	6.96%	11.20%
c	3.51%	7.28%	11.64%

Note: Default rates based on notching applied to insurance ICRs.

See Best's Credit Rating Methodology, *Typical Notching Difference Between Operating Company ICR and Holding Company ICR* (Part IV, Exhibit B.1)

1. Impairments as a Proxy for Defaults. Upon the public placement of a company, via public court order or other international equivalent, into conservation, rehabilitation and/or insolvent liquidation it is designated by AM Best as a Financially Impaired Company (FIC). Supervisory actions undertaken by Insurance Department regulators without court order are not considered impairments for purposes of compiling Securities and Exchange Commission (SEC) Exhibit 1 statistics unless clear direction is given by the regulator to delay or limit policy or contract payments.

There are a number of regulatory oversight actions that may be taken with respect to troubled insurers in which court orders are not sought, such as required company action plans, various forms and levels of supervision, and licensure actions. Companies may be subject to these insurance department orders and actions on multiple occasions, particularly in certain jurisdictions, and while these regulatory actions suggest concern and impose constraints, they are not necessarily indicative of an insurer's inability to meet its ongoing policy and contract obligations.

Additionally, companies that enter voluntary dissolution and are not under financial duress at that time are not counted as financially impaired.

<u>2. Construction of Default Rates of Corporates.</u> This table was not constructed by directly observing the default rates of corporate ratings on the 21-point Issuer Credit Rating (ICR) scale because default data associated with corporate ICRs is sparse. Rather, this table was constructed by a) converting each default rate associated with each Financial Strength Rating (FSR) to its equivalent operating company ICR based on AM Best's FSR/ICR translation table, and then, b) converting the operating company ICR to an equivalent corporate rating based on a notching algorithm set forth in the criteria, Insurance Holding Company and Debt Ratings, to reflect the legal separation of insurance holding companies from operating insurers as well as the normal subordination of insurance holding company creditors to operating company policyholders.

<u>3. Ratings a Measure of Relative Credit Risk.</u> AM Best's Credit Ratings generally are intended to indicate the relative degree of credit risk of an obligor or debt instrument rather than reflect a measure of specific default probability.

<u>4. Data Does Not Necessarily Reflect Default Expectations.</u> The data in this table does not necessarily reflect our default rate expectations. For example, the fact that we show no default rate for the 1-year "aaa" category does not mean that we expect no defaults for this rating. It only means that we have not yet observed any historical defaults over a 1-year period for corporate obligations with an equivalent "aaa" rating.

<u>5. Data Changes Periodically.</u> AM Best may periodically change the data in the table if warranted. The reasons for the revisions may be as follows: If AM Best 1) adds more rating cohorts which significantly changes the calculated default rates, 2) changes its criteria for recognizing insurance company defaults, or 3) incorporates new defaults or adjusts existing default data.

ASSET-BACKED SECURITIES DEFAULT RATES (All Subclasses)

ICRs	1 - Year	3 - Year	10 - Year
aaa	0.03%	0.11%	0.42%
aa+	0.08%	0.14%	0.58%
aa	0.11%	0.17%	0.69%
aa-	0.14%	0.28%	0.88%
a+	0.16%	0.33%	1.09%
a	0.20%	0.41%	1.31%
a-	0.22%	0.62%	2.24%
bbb+	0.28%	0.96%	3.45%
bbb	0.35%	1.26%	4.50%
bbb-	0.45%	1.56%	5.48%
bb+	0.84%	2.90%	10.00%
bb	1.23%	4.68%	15.65%
bb-	1.56%	6.02%	19.50%
b+	3.28%	9.73%	31.11%
b	3.73%	10.80%	33.58%
b-	4.77%	13.08%	38.23%
ccc+	6.74%	17.66%	47.84%
ccc	10.33%	20.41%	49.46%
ccc-	13.85%	23.11%	51.07%
cc	19.53%	28.87%	57.44%
c	23.30%	31.74%	59.04%

Source: Best's Insurance-Linked Securities & Structures Methodology

Best's Idealized Issue Default Matrix (Exhibit E.2)

1. Asset-Backed Securities Default. AM Best designates an asset-backed security as being in default if the issuer of the security failed to timely pay principal or interest due according to the terms of the security.

2. Construction of Default Rates of Asset-Backed Securities. This table was not constructed by directly observing the default rates of asset-backed securities. The default rates of the ratings in this category are equivalent to the default rates in Best's Idealized Issue Default Matrix. This matrix reflects AM Best's long-term view of defaults of asset-backed securities and structured finance transactions. This view was formed by considering the defaults associated with operating insurance companies rated by AM Best, the notching process employed to derive the ratings associated with holding company debt obligations, and the need to make distinctions between rating categories.

3. Ratings a Measure of Relative Credit Risk. AM Best's Credit Ratings generally are intended to indicate the relative degree of credit risk of and obligor or debt instrument rather than reflect a measure of specific default probability.

4. Data Changes Periodically. The data in the table will change if AM Best modifies Best's Idealized Issue Default Matrix. This matrix is published in Best's Insurance-Linked Securities & Structures Methodology and may be revised based on more recent insurance company default data.

For ratings issued in or endorsed into the European Union, historic default rates published by ESMA are available at:
https://registers.esma.europa.eu/cerep-publication/

For ratings issued or endorsed into the United Kingdom, historic default rates published by the FCA are available at: https://data.fca.org.uk/#/ceres/craStats

13. Information on the Sensitivity of the Credit Rating to Assumptions as required by Paragraph (a)(1)(ii)(M) of Rule 17g-7

Topic	(1) Key Assumption Detail	(2) Potential Impact on the Rating
Data Accuracy and Reliability	While public information is considered as part of the rating process, AMB relies primarily on audited financial statements, third party actuarial reports, documents and assertions provided by management. The assumption is that the financial information provided is reliable and credible, although AMB does not undertake to verify the accuracy of this information.	A material misstatement of financial performance or capital position, whether through negligence or fraud, could negatively affect a company's rating. For example, inflated asset valuations or a faulty actuarial opinion of reserve adequacy could result in an incorrect assessment of the financial strength of a company.
Interest rates	Assumption is for normalized yield curve with no +/- changes of 300 basis points in a 12 month period.	Deviation could result in rating changes especially for companies with large interest sensitive blocks of business. Spike in interest rates may cause significant disintermediation and large unrealized losses on fixed income portfolio. However, surrender charges on liabilities and intent to hold assets to maturity are mitigating factors. Prolonged low interest rates impact spreads and hedging costs and potentially impact Credit Ratings.
Liquidity	Capital markets are open and operating normally without disruption.	Any sudden changes in liquidity, due to reinsurance disputes / insolvencies, uncollectible agents balances, parental needs, etc, which could force an involuntary sale of investments and realized capital losses, with a potential impact on the rating.
Holding Company / Affiliates	Assumes no sudden change in holding company leverage, coverage and/or liquidity. Additional assumptions include no change in credit facilities to obtain letters of credit from a commercial bank, through the placement of assets in trust. If rating includes a level of rating enhancement based on a degree of implicit and explicit support provided by the parent company and/or affiliate, the assumption is that the level of support will remain prospectively.	Any sudden change in holding company leverage, coverage, and or liquidity could result in a rating change for both the holding company and its operating insurance subsidiaries. Any alteration in a parent (holding) company's ability to provide implicit and/or explicit parental support could alter Best's view of rating enhancement which could suddenly cause a rating downgrade. In addition, changes in enhancement provided to group-rated members, may have an impact on the rating(s). Best evaluates impact on capital via forecasted BCAR including planned dividends to Parent and by evaluating BCAR for the entire Enterprise based on tangible equity. The starting point for every rating is the stand-alone evaluation of the legal entity's balance sheet strength, operating performance and business profile.

14. Information on the Representations, Warranties, and Enforcement Mechanisms as required by Paragraph (a)(1)(ii)(N) of Rule 17g-7

The representations, warranties, and enforcement mechanisms available to investors which were disclosed in the prospectus, private placement memorandum, or other offering documents for the asset-backed security and that relate to an asset pool underlying the asset-backed security. This disclosure only applies to Rating Actions associated with asset-backed securities as defined by section 3(a)(79) of the Securities Exchange Act of 1934, as amended. Furthermore, the disclosure applies to asset-backed securities that were initially rated on or after September 26, 2011.

15. Attestation as required by Paragraph (a)(1)(iii) of Rule 17g-7

Attestation

Attached is a signed statement by a person within AM Best that has responsibility for the Rating Action and, to the best knowledge of the person: (A) No part of the Credit Rating was influenced by any other business activities; (B) The Credit Rating was based solely upon the merits of the obligor, security, or money market instrument being rated; and (C) The Credit Rating was an independent evaluation of the credit risk of the obligor, security, or money market instrument.

As the person responsible for this Rating Action, which was determined through the rating committee process, to the best of my knowledge:

- No part of the Credit Rating was influenced by any other business activities;
- The Credit Rating was based solely upon the merits of the obligor, security, or money market instrument being rated; and
- The Credit Rating was an independent evaluation of the credit risk of the obligor, security, or money market instrument.

Note: Best's Credit Ratings are a product/service of AM Best Rating Services, Inc. and not of any particular individual group or committee within AM Best.

Name, Title: ***/s/*** **Jacqalene Lentz, CPA**, Director

16. Additional Regulatory Disclosures

Key Elements Underlying the Rating

The Rating Rationale is based on the consolidated financials of the Rating Unit 069702 Massachusetts Mutual Life Grp of which 006695 Massachusetts Mutual Life Ins is a member.

Rating Rationale

Balance Sheet Strength: Strongest

- Risk-adjusted capitalization, as defined by Best's Capital Adequacy Ratio (BCAR), is assessed as being at the strongest level, which supports the life group's insurance, investment and business risks.
- MassMutual possesses strong liquidity capability from robust cash flows along with frequent monitoring of short- and long-term liquidity needs.
- Invested asset portfolio is well diversified and generally of good credit quality, though it is partially impacted by elevated holdings of high-risk assets, as measured by Schedule BA assets and below-investment-grade bonds.
- Good diversity of reserves, with increased exposure to interest-sensitive reserves from its MassMutual Ascend business (formerly, the Great American Life Group). This exposure is partially mitigated by the group's very strong enterprise risk management (ERM) capabilities.

Operating Performance: Strong

- MassMutual's ordinary life premium growth continues to be robust, with strong compound annual growth rates that are favorable relative to the life industry average.
- Earnings also are well diversified from institutional product lines, life, asset management and partnerships along with dividend income.
- Generally favorable but fluctuating earnings trends due in part to derivatives used to hedge guaranteed benefits.
- MassMutual benefits from strong investment and asset management capabilities, particularly from its Barings subsidiary, which help generate good investment returns.

Business Profile: Very Favorable

- MassMutual is a market leader in ordinary life sales, further enhancing core business lines through the strategic acquisition of Great American Life Group (now MassMutual Ascend), which is mainly a fixed and fixed indexed annuity carrier.
- The group offers a broad portfolio of insurance products and asset management services to a diverse client base.
- MassMutual and its affiliates are one of the largest and most recognizable mutual life insurance organizations in the U.S.
- Has strong asset management capabilities through its wholly owned affiliate, Barings.

Enterprise Risk Management: Very Strong

- MassMutual has a robust risk management program that is embedded throughout the group as evidenced by key strategic and risk mitigation practices.
- A top-down and bottom-up approach is used to evaluate the risks that confront the group.
- The group performs stress tests on a regular basis, particularly in regard to its invested assets portfolio and liquidity needs.
- Strong liquidity risk management that evaluates liquidity needs through multiple time horizons and stress scenarios.

Outlook Rationale

The stable outlooks reflect the expectation that MassMutual will maintain a balance sheet strength assessment in the strongest range over the intermediate term with strong operating results contributing to surplus growth needed to support an expanding book of business.

Note: An outlook determination is assigned in tandem with a Best's Credit Rating and other opinion types to supplement the opinion by providing an indication of the potential future direction of the opinion over an intermediate period, generally defined as 36 months. For additional information refer to: Guide to Best's Credit Ratings

Additional Disclosures:

- For information on whether the credit rating is solicited or unsolicited, please see Section 10 above.
- For information on the lead rating analyst and name and address of the entity responsible for the rating, please see the "Best's Credit Rating Analyst" box at the beginning of this form.
- For information on the person primarily responsible for approving the credit rating, please see Section 15 above.
- For information on the substantially material sources of information for this rating action, please see Section 8 above.
- For more information on the methodology used to develop this rating action, please see Section 2 above.
- The below listed model was used to determine this rating. For a description of the model, see the link to the associated criteria in Section 2.
    - US and Canadian Life/Health Best's Capital Adequacy Ratio (BCAR) Model
- For information on actions or events that could lead to an upgrade or downgrade, please see Section 11 above.
- For information on the rating categories and symbols, please see the "View Definition" links in the rating boxes in Section 1 above.
- For information on the definition of default, please see Section 12 above.
- For information on the sensitivity of assumptions in the rating process, please see Section 13 above.
- The credit rating was disclosed to the rated entity prior to publication.

analysis, projections, and any other observation, position or conclusion constituting part of the information contained herein are, and shall be construed solely as, statements of opinion and not statements of fact or recommendations to purchase, sell or hold any securities, insurance policies, contracts or any other financial obligations, nor do they individually or collectively address the suitability of any particular financial obligation for a specific purpose or purchaser. Credit risk is the risk that an entity may not meet its contractual, financial obligations as they come due. Service performance risk is the risk that an entity may not meet its contractual service performance obligations on behalf of its insurance partners. Consequently, neither credit ratings nor performance assessments address any other risk, including but not limited to, liquidity risk, market value risk or price volatility of rated securities. NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH RATING OR ASSESSMENT OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY AM BEST IN ANY FORM OR MANNER WHATSOEVER. Each credit rating, performance assessment or other opinion must be weighed solely as one factor in any investment or purchasing decision made by or on behalf of any user of the information contained herein. Each such user will, with due care, make its own study and evaluation of each security or other financial obligation, and of each issuer and guarantor of, and each provider of credit support, and an independent view of service provider performance for, each security or other financial obligation that it may consider purchasing, holding, or selling or for each service contract that it may consider entering into. For additional detail on credit ratings or performance assessments, and their respective scales, usage, and limitations, refer to the Guide to Best's Credit Ratings (https://www.ambest.com/ratings/index.html) or the Guide to Best's Performance Assessments (https://www.ambest.com/ratings/assessmentMethodology.html).

Appendix - Issue Credit Ratings

Issue Credit Ratings									
Date Issued	Amount	Coupon	Issue Type	Issue Description	Best's Issue Rating	Rating Effective Date	Maturity Date	Outlook/ Implication	Action
MassMutual Global Funding II - 59237									
05/30/2024	500,000,000 USD	5.15%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	05/30/2029	Stable	Assigned
06/14/2022	50,000,000 USD	3.553%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	06/01/2025	Stable	Affirm
06/14/2023	500,000,000 USD	5.05%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	06/14/2028	Stable	Affirm
07/09/2019	150,000,000 USD	2.866%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	07/09/2029	Stable	Affirm
07/16/2021	600,000,000 USD	1.2%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	07/16/2026	Stable	Affirm
07/19/2023	500,000,000 USD	3.98%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	07/10/2026	Stable	Affirm
08/26/2022	600,000,000 USD	4.15%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	08/26/2025	Stable	Affirm
09/05/2024	400,000,000 GBP	4.625%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	10/05/2029	Stable	Assigned
09/27/2002	96,300,000 USD	0%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	12/15/2031	Stable	Affirm
10/06/2020	750,000,000 USD	1.55%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	10/09/2030	Stable	Affirm
10/17/2019	350,000,000 GBP	1.375%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	12/15/2026	Stable	Affirm
10/23/2019	178,000,000 USD	2.479%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	02/01/2030	Stable	Affirm
12/07/2022	750,000,000 USD	5.05%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	12/07/2027	Stable	Affirm
12/12/2023	400,000,000 BRL	5%	Senior Secured	Medium Term Notes (MTNs)	aa+	09/20/2024	12/12/2027	Stable	Assigned
05/07/2025	800,000,000 USD	4.55%	Senior Secured	Medium Term Notes (MTNs)	aa+	05/09/2025	04/30/2030	Stable	Assigned
01/10/2025	600,000,000 USD	4.95%	Senior Secured	Medium Term Notes (MTNs)	aa+	04/01/2025	01/10/2030	Stable	Assigned
03/27/2025	500,000,000 USD	4.45%	Senior Secured	Medium Term Notes (MTNs)	aa+	04/01/2025	03/27/2028	Stable	Assigned

(i) Denotes Indicative Rating

u Denotes Under Review Rating