



# NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

Date: 6/1/21

## LIFE RISK-BASED CAPITAL (E) WORKING GROUP

Thursday, June 3, 2021, and Friday, June 4, 2021

12:00 – 1:30 p.m. ET / 11:00 a.m. – 12:30 p.m. CT / 10:00 – 11:30 a.m. MT / 9:00 – 10:30 a.m. PT

### ROLL CALL

Philip Barlow, Chair	District of Columbia	William Leung	Missouri
Jennifer Li	Alabama	Rhonda Ahrens	Nebraska
Thomas Reedy	California	Seong-min Eom	New Jersey
Wanchin Chou	Connecticut	Bill Carmello	New York
Sean Collins	Florida	Andrew Schallhorn	Oklahoma
Vincent Tsang	Illinois	Mike Boerner/Rachel Hemphill	Texas
Mike Yanacheak/Carrie Mears	Iowa	Tomasz Serbinowski	Utah
John Robinson	Minnesota		

NAIC Support Staff: Dave Fleming

### AGENDA

1. Consider Adoption of the Life Reinsurance Proposal—*Philip Barlow (DC)*
  - American Council of Life Insurer’s (ACLI) Comment Letter Attachment 1
  - 2021-12-L Life Reinsurance Attachment 2
  
2. Consider Adoption of the Longevity Risk Proposal—*Philip Barlow (DC)*
  - ACLI’s Comment Letter Attachment 3
  - American Academy of Actuaries’ (Academy) Comment Letter Attachment 4
  - Principal Financial Group’s Comment Letter Attachment 5
  - 2021-13-L-Longevity Factors and Instructions Attachment 6
  - Longevity Risk Memorandum Attachment 7
  
3. Discuss the Bond Proposals—*Philip Barlow (DC)*

Comment Letters

  - ACLI Attachment 8
  - National Alliance of Life Companies Attachment 9
  - North American CRO Council Attachment 10
  - Columbia Financial Group Attachment 11
  - Gleaner Life Insurance Society Attachment 12
  - Government Personnel Mutual Life Attachment 13
  - Oxford Life Insurance Company Attachment 14
  - Homesteaders Life Company Attachment 15
  - American Fraternal Alliance Attachment 16
  - Catholic Financial Life Attachment 17
  - Catholic Association of Foresters Attachment 18
  - Ladies Pennsylvania Slovak Catholic Union Attachment 19



## NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

- Slovak Catholic Sokol Attachment 20
- Sons of Norway Attachment 21
- Royal Neighbors of America Attachment 22
- Academy Attachment 23

### Proposals

- 2021-10-L Life Bond Factors (Academy) Attachment 24
- 2021-11-L Life Bond Factors (ACLI) Attachment 25

Update from Moody's Analytics on Risk Premium Attachment 26

4. Discuss Any Other Matters Brought Before the Working Group—*Philip Barlow (DC)*
5. Adjournment

w:\qa\rbc\lrbc\2021\calls and meetings\6\_3\_21 call\agenda lrbc 6-3-21.docx

**Steven Clayburn**  
Senior Actuary, Health Insurance & Reinsurance  
steveclayburn@acli.com

May 27, 2021  
Mr. Philip Barlow  
Chair  
NAIC Life Risk-Based Capital Working Group

Sent via email: [dfleming@naic.org](mailto:dfleming@naic.org)

**RE: 2021-12-L Life Reinsurance**

Dear Philip:

The American Council of Life Insurers (“ACLI”) appreciates the opportunity to provide comments on 2021-12-L Reinsurance, which updates and clarifies the LR016 (Reinsurance) Exhibit and instructions. ACLI supports the exposure and encourages adoption of the exposure.

Briefly, when the U.S.-EU Covered Agreement was signed, seven charges were developed and referred to appropriate NAIC task forces and working groups. The charge sent to Life RBC Working Group was to review LR016 and update accordingly to take into consideration reciprocal jurisdictions. The Statutory Accounting Principles Working Group also received a charge to update the Annual Statement blanks to accommodate the new terminology. They updated page 3 instructions of the Annual Statement to add line items for reciprocal jurisdictions. Reciprocal jurisdiction language had been added to Schedule S – Reinsurance as well.

The additional language to LR016 exhibit and the instructions provides clarification of the information that should either feed from Schedule S or to be included in the exhibit. Also, the changes add the new reciprocal jurisdiction terminology to the exhibit and the instructions.

We appreciate the opportunity to comment on this exposure and support its adoption by the Life RBC Working Group.

Sincerely,

Steven Clayburn

cc: Dave Fleming, NAIC Senior Insurance Reporting Analyst

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## Capital Adequacy (E) Task Force RBC Proposal Form

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Capital Adequacy (E) Task Force  | <input type="checkbox"/> Health RBC (E) Working Group     | <input checked="" type="checkbox"/> Life RBC (E) Working Group |
| <input type="checkbox"/> Catastrophe Risk (E) Subgroup    | <input type="checkbox"/> Investment RBC (E) Working Group | <input type="checkbox"/> Operational Risk (E) Subgroup         |
| <input type="checkbox"/> C3 Phase II/ AG43 (E/A) Subgroup | <input type="checkbox"/> P/C RBC (E) Working Group        | <input type="checkbox"/> Longevity Risk (A/E) Subgroup         |

DATE: <u>4/29/21</u>	<b><u>FOR NAIC USE ONLY</u></b>
CONTACT PERSON: <u>Dave Fleming</u> TELEPHONE: <u>816-783-8121</u> EMAIL ADDRESS: <u>d Fleming@naic.org</u> ON BEHALF OF: <u>Life Risk-Based Capital (E) Working Group</u> NAME: <u>Philip Barlow, Chair</u> TITLE: <u>Associate Commissioner of Insurance</u> AFFILIATION: <u>District of Columbia</u> ADDRESS: <u>1050 First Street, NE Suite 801</u> <u>Washington, DC 20002</u>	Agenda Item # <u>2021-12-L</u> Year <u>2021</u>  <b style="text-align: center;"><u>DISPOSITION</u></b> <input type="checkbox"/> ADOPTED <u>_____</u> <input type="checkbox"/> REJECTED <u>_____</u> <input type="checkbox"/> DEFERRED TO <u>_____</u> <input type="checkbox"/> REFERRED TO OTHER NAIC GROUP <u>_____</u> <input checked="" type="checkbox"/> EXPOSED <u>4/29/21</u> <input type="checkbox"/> OTHER (SPECIFY) <u>_____</u>

### IDENTIFICATION OF SOURCE AND FORM(S)/INSTRUCTIONS TO BE CHANGED

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Health RBC Blanks       | <input type="checkbox"/> Property/Casualty RBC Blanks       | <input checked="" type="checkbox"/> Life and Fraternal RBC Instructions |
| <input type="checkbox"/> Health RBC Instructions | <input type="checkbox"/> Property/Casualty RBC Instructions | <input checked="" type="checkbox"/> Life and Fraternal RBC Blanks       |
| <input type="checkbox"/> OTHER _____             |   |   |

### DESCRIPTION OF CHANGE(S)

This proposal changes the description on line 15 on LR016 to allow for inclusion of amounts held for reciprocal jurisdiction reinsurance.

### REASON OR JUSTIFICATION FOR CHANGE \*\*

The purpose of the credit in the life RBC formula is to avoid having both the total adjusted capital decreased by amounts re-established as liabilities and the authorized control level increased for the charge on reserve credit and recoverable amounts.

### Additional Staff Comments:

- 4-29-21: Proposal was exposed for comments (DBF)

\*\* This section must be completed on all forms.

Revised 2-2019

**REINSURANCE**

	Annual Statement Source	(1) Statement Value	(2) 100% Owned Affiliates	(3) RBC Subtotal	Factor	(4) RBC Requirement
<u>Reinsurance Ceded†</u>						
(1) Recoverable on Paid Losses (Life)	Schedule S Part 2 Column 6 Line 1199999				X 0.0078	=
(2) Recoverable on Paid Losses (A&H)	Schedule S Part 2 Column 6 Line 2299999				X 0.0078	=
(3) Recoverable on Unpaid Losses (Life)	Schedule S Part 2 Column 7 Line 1199999				X 0.0078	=
(4) Recoverable on Unpaid Losses (A&H)	Schedule S Part 2 Column 7 Line 2299999				X 0.0078	=
(5) Unearned Premiums (A&H)	Schedule S Part 3 Section 2 Column 9 Line 4599999				X 0.0078	=
(6) Other Reserve Credits (A&H)	Schedule S Part 3 Section 2 Column 10 Line 4599999				X 0.0078	=
(7) Reserve Credit (Life)	Schedule S Part 3 Section 1 Column 9 Line 4599999				X 0.0078	=
		(1) Statement Value	(2) Other than 100% Owned Affiliates	(3) RBC Subtotal	Factor	(4) RBC Requirement
<u>Reinsurance Assumed Credit</u>						
(8) Affiliate Reserve Credit (Life)	Schedule S Part 1 Section 1 Column 9 Line 0799999				X -0.0078	=
(9) Affiliate Reinsurance Payable (Life)	Schedule S Part 1 Section 1 Column 11 Line 0799999				X -0.0078	=
(10) Reinsurance Assumed on Unearned Premiums (A&H)	Schedule S Part 1 Section 2 Column 9 Line 0799999				X -0.0078	=
(11) Reinsurance Assumed Other Reserved Credits (A&H)	Schedule S Part 1 Section 2 Column 10 Line 0799999				X -0.0078	=
(12) Reinsurance Assumed - Losses (A&H)	Schedule S Part 1 Section 2 Column 11 Line 0799999				X -0.0078	=
<u>Reinsurance Payable Credit</u>						
(13) Reinsurance in Unauthorized and Certified Companies	Page 3 Column 1 Line 24.02				X -0.0078	=
(14) Funds Held in Unauthorized and Certified Reinsurers	Page 3 Column 1 Line 24.03				X -0.0078	=
(15) Funds Held in Authorized Reinsurers <b>and Funds Held in Reciprocal Jurisdiction Reinsurers</b> and Trusteed Collateral Supporting Authorized Reinsurance	Page 3 Column 1 <b>Line 24.07 Line-25</b> in part and Company Records				X -0.0078	=
(16) Other Reinsurance Recoverable or Reserves "Reestablished" on Page 3	Page 3 Column 1 Line 25				X -0.0078	=
(17) Total Reinsurance	Sum of Lines (1) through (16)					

† Statement values should be net of policy loans if policy loans are part of the reinsurance transaction.

Denotes items that must be manually entered on the filing software.

**REINSURANCE**

LR016

*Basis of Factors*

There is a risk associated with recoverability of amounts from reinsurers. The risk is deemed comparable to that represented by bonds between risk classes 1 and 2 and is assigned a pre-tax factor of 0.78 percent. To avoid an overstatement of risk-based capital, the formula gives a 0.78 percent pre-tax credit for reinsurance with non-authorized and certified companies, for reinsurance among affiliated companies, for reinsurance with funds withheld or reinsurance with authorized reinsurers that is supported by equivalent trusted collateral that meets the requirements stipulated in Appendix A-785 (Credit for Reinsurance), where there have been regular bona fide withdrawals from such trusted collateral to pay claims or recover payments of claims during the calendar year covered by the RBC report, and for reinsurance involving policy loans. Withdrawals from trusted collateral that are less than the amounts due the ceding company shall be deemed to not be bona fide withdrawals.

*Specific Instructions for Application of the Formula*Lines (1) through (7)

The first seven components of the reinsurance formula are charged against all reinsurance recoverables and ceded reserve credits as reported in Schedule S.

Lines (8) through (12)

A negative 0.78 percent pre-tax factor is applied to these five components. These adjustments should only be applied to business assumed from subsidiaries of the company. The adjustment should be multiplied by the proportion of the ceding company owned by the parent. The subsidiary's RBC is part of the individual company's RBC, and sister affiliate reinsurers should NOT be included. In addition, no adjustment should be made where an adjustment has already been taken in the re-established liability components above. This would be the case if the subsidiary reinsurer was unauthorized or the treaty with the company involved funds held.

Lines (13) through (16)

The last four components are primarily Page 3 liabilities (including Line 24.02 – Reinsurance in Unauthorized and Certified Companies ~~and~~ Line 24.03 – Funds Held under Reinsurance Treaties with Unauthorized and Certified Reinsurers, Line 24.07 – Funds Held under Coinsurance and Line 25 – Aggregate Write-ins for Liabilities). Line (15) is also to include amounts in support of Lines (1) through (7) and subject to the provisions of Credit for Reinsurance Model Regulation (#786). A pre-tax factor of negative 0.78 percent is applied. This considers that these liabilities reported on Page 3 have been reestablished in the balance sheet offsetting the reinsurance ceded reserve credits taken elsewhere.

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**Brian Bayerle**

Senior Actuary

May 27, 2021

Mr. Philip Barlow

Chair, NAIC Life Risk-Based Capital (E) Working Group (Life RBC)

Re: ACLI Comments on Longevity Risk Exposure

Dear Mr. Barlow:

The American Council of Life Insurers (ACLI) appreciates the opportunity to provide comments regarding the current longevity risk exposure. We applaud the hard work of Life RBC, the NAIC Longevity Risk (E/A) Subgroup, and the American Academy of Actuaries Longevity Risk Task Force (Academy) to develop, discuss, and decide on the proposed factors.

Consistent with our prior comments, we are supportive of the Academy recommendation in its entirety. Regarding the current exposure, ACLI supports the correlation factor of -30% with a guardrail factor of 0%.

**Negative correlation is appropriate for diversification between mortality and longevity**

ACLI supports appropriate incentivization to diversify risks within the RBC framework. Inherently, there are offsets between mortality and longevity risks. The Academy provided analysis supporting their recommendation, and the proposed -30% is consistent with correlation estimates in other jurisdictions<sup>1</sup>. A negative correlation appropriately encourages diversification of risks, providing a real risk reduction benefit. The current pandemic provides evidence of unexpected losses in mortality products being offset by unexpected gains in longevity products.

**The guardrail is unnecessary and adds undue complexity**

ACLI appreciates the concerns of regulators that the correlation would lower the current C-2 level for certain companies; however, we believe the guardrail factors adds unnecessary complexity to the calculation, making capital forecasting and dividend planning more difficult. Had a longevity charge been proposed along with the original mortality charge, regulators would likely have thought diversification of the risks to be a benefit. Further, the inclusion of the guardrail undermines the desired incentive to diversify risks. Additionally, there is a very narrow

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<sup>1</sup> Bermuda BSCR applies a -50% correlation between longevity and mortality risks. Canada's LICAT and Europe's Solvency II apply a correlation factor of -25%.

corridor in which the guardrail would apply. If Life RBC decides on a guardrail value other than 0, we would encourage active monitoring of its effectiveness and consideration of reducing the factor as you gain comfort that the lower charge is appropriate given the real offset of risks provided by diversification.

We appreciate the consideration of our comments and look forward to discussing on a future call.

Sincerely,

A handwritten signature in cursive script, appearing to read "B. Banerji".

cc: Dave Fleming, NAIC



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AMERICAN ACADEMY of ACTUARIES

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*Objective. Independent. Effective.™*

May 27, 2021

Mr. Philip Barlow  
Chair, Life Risk-Based Capital (E) Working Group  
National Association of Insurance Commissioners (NAIC)

Via email: Dave Fleming ([dfleming@naic.org](mailto:dfleming@naic.org))

Re: April 30, 2021, 2021-13-L Longevity Factors and Instructions exposure

Dear Philip,

On behalf of the C-2 Longevity Risk Work Group of the American Academy of Actuaries,<sup>1</sup> I am providing comments on the April 30, 2021, exposure of longevity risk-based capital (RBC) factors.

#### 1. **Correlation Factors**

The exposed correlation factors of negative 0.30 and negative 0.25 are reasonable and generally consistent with the negative 0.33 factor we previously proposed. As discussed in prior comment letters on this topic<sup>2</sup> we do not believe a positive 100 percent correlation is a reasonable representation for how longevity and mortality risks are related.

#### 2. **Industry Level Impacts**

A draft version of the industry-level impact of the proposed factors was included in the materials for the April 29, 2021, Life Risk-Based Capital Working Group meeting with the expectation they will be updated with correlation factors matching the April 30 exposure. These impacts were calculated by using the total industry-level reserve exposure subject to longevity C-2 risk then applying the capital factors to statutory reserves up to each breakpoint and correlation calculation using this total. It is important to note that this calculation results in a smaller aggregate C-2 amount than would result from summing the total C-2 amounts calculated at an individual company level to arrive at a total. This difference is driven in two areas of the calculation:

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<sup>1</sup> The American Academy of Actuaries is a 19,500-member professional association whose mission is to serve the public and the U.S. actuarial profession. For more than 50 years, the Academy has assisted public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

<sup>2</sup> [https://www.actuary.org/sites/default/files/2020-01/LRTF Comment Letter for Feb 7 2020 LRBCWG Exposure.pdf](https://www.actuary.org/sites/default/files/2020-01/LRTF%20Comment%20Letter%20for%20Feb%207%202020%20LRBCWG%20Exposure.pdf)

- i. As acknowledged during the April 29 meeting, applying the capital factor breakpoints to the total industry amount of statutory reserves will result in a smaller total longevity C-2 amount than would applying the breakpoints at an individual company level then summing the resulting longevity C-2 directly.
- ii. In addition, applying the correlation adjustment to the total industry levels of mortality C-2 and longevity C-2 will result in a lower total C-2 amount than would result from applying correlation at an individual company level then summing the resulting total C-2 amounts directly.

It is not possible to accurately estimate the amount by which this simplified aggregate level calculation understates the impact at an industry level without additional insight into company level results. The impact could be material however, and the limitations of the aggregate level calculation should be understood by the Life Risk-Based Capital Working Group when interpreting this impact analysis.

### 3. Interest Rate Sensitivity

The capital factors included in the exposure, which we first shared with the Longevity Risk (A/E) Subgroup in February 2019, used a pre-tax discount rate of 5% as an assumption in the analysis. This assumption was set to be consistent with the rate that had been used elsewhere in the development of capital factors for other risks. Since that 2019 proposal, interest rate levels have remained low. Further work group discussion of discount rates used in capital analysis across areas of life risk-based capital has led us to conclude that consistency of methodology is preferable to consistency in a numerical discount rate.

The original 5% discount rate used in C-1 analysis had been calculated at the time as a 20-year historical average of a 10-year risk-free rate. We are using a 20-year Treasury rate tenor for longevity risk, which is measured over the future lifetime of policyholders. At the time of our original analysis in 2018, the average 20-year Treasury rate tenor was 4.3% based on the 1998-2017 period. The impact of recent low interest rates would further decrease this assumption to 3.75% if based on 2001–2020 data. This lower discount rate would increase the present value longevity capital factors by approximately 10% compared to the 2019 proposal. Rounding the result to the nearest 0.05% would result in the after-tax factors below:

	Original 5% Discount Rate	Revised 3.75% Discount Rate
First \$250 Million	1.35%	1.50%
Next \$250 Million	0.85%	0.95%
Next \$500 Million	0.75%	0.85%
Over \$1,000 Million	0.70%	0.80%

## Implementation Considerations

We have included the interest rate sensitivity above as additional information given known material changes since the time of the analysis underlying the proposed capital factors. As with other factors within RBC, we anticipate that periodic review of the longevity risk factors will be required to reflect changing market conditions or to incorporate additional information that may become available. We included in our May 21, 2019, letter to the Longevity Risk Subgroup<sup>3</sup> a list of circumstances under which a review of the factors should be considered, including a material change in the long-term assumption for interest rates.

This interest rate sensitivity does not represent a holistic review of the analysis and assumptions that underly the proposed capital factors and, as such, we are not prepared to update the recommendation. While we are not aware of other material information or assumptions that would impact the analysis, we have not done a complete refresh of the analysis and it is possible that other assumptions would also change as part of a holistic review. Long-term mortality implications of the pandemic and potential insights from Society of Actuaries' research on mortality across socioeconomic groups are examples of developments that could also be considered in a review of the analysis. Of course it is up to the Life Risk-Based Capital Working Group to consider whether to incorporate this interest rate sensitivity into the implementation of a longevity risk charge in the near term or to defer consideration to a future review.

\*\*\*\*\*

Should you have any questions or comments regarding this letter, please contact Khloe Greenwood, life policy analyst at the Academy ([greenwood@actuary.org](mailto:greenwood@actuary.org)).

Sincerely,

Paul Navratil, MAAA, FSA  
Chairperson, C-2 Longevity Risk Work Group  
American Academy of Actuaries

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<sup>3</sup> [https://www.actuary.org/sites/default/files/2019-05/Academy Longevity Risk Task Force Exposure Comments 052219.pdf](https://www.actuary.org/sites/default/files/2019-05/Academy%20Longevity%20Risk%20Task%20Force%20Exposure%20Comments%20052219.pdf)

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 T 800.986.3343  
 www.principal.com



May 27, 2021

VIA EMAIL ([philip.barlow@dc.gov](mailto:philip.barlow@dc.gov))

Philip Barlow  
 Chair, NAIC Life Risk-Based Capital (E) Working Group  
 Associate Commissioner for Insurance  
 Department of Insurance, Securities and Banking  
 1050 First Street, NE, Suite 801  
 Washington, DC 20002

RE: Longevity Risk Exposure

Dear Mr. Barlow,

This letter is written on behalf of Principal Life Insurance Company (Principal) in response to the NAIC Life RBC Working Group's exposure of proposed changes to incorporate longevity risk into the Life RBC formula. Attached is Principal's letter from February 2020, which expressed our support for the American Academy of Actuaries (Academy) work on the longevity risk charge, including the Academy recommendations for factors and an appropriate correlation between longevity risk and mortality risk. We continue to support the Academy proposal.

Of the options presented in the current exposure, we view the -30% correlation with no guardrail as most consistent with the Academy's proposal and the most fit for adoption. We also note that Principal's life insurance and annuity blocks have endured an extreme mortality event during the COVID-19 pandemic, and our results were consistent with an offset between mortality and longevity. Across product lines with exposure to mortality and longevity, we experienced higher than expected mortality, and the impact of higher life insurance claims was offset in part by higher reserves released upon death within our annuity blocks.

We appreciate the opportunity to comment on this exposure and are available to discuss our comments with regulators should they find such discussion helpful.

Sincerely,

Sam Early, FSA, MAAA  
 Actuary  
 (515) 362-2882  
[early.sam@principal.com](mailto:early.sam@principal.com)

Michelle Rosel, FSA, MAAA  
 Senior Actuary  
 (515) 878-6454  
[rosel.michelle@principal.com](mailto:rosel.michelle@principal.com)

SE/MCA: bkl...s:\cgrda\staff\bkl\mca\l052721pb

Attachment

- cc: Via Email ([rhonda.ahrens@nebraska.gov](mailto:rhonda.ahrens@nebraska.gov))  
 Rhonda Ahrens  
 Chair, Longevity Risk (A/E) Subgroup
- cc: Via Email ([dfleming@naic.org](mailto:dfleming@naic.org))  
 Dave Fleming  
 National Association of Insurance Commissioners
- cc: Via Email ([mike.yanacheak@iid.iow.gov](mailto:mike.yanacheak@iid.iow.gov))  
 Mike Yanacheak  
 Iowa Insurance Division

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## Capital Adequacy (E) Task Force RBC Proposal Form

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Capital Adequacy (E) Task Force  | <input type="checkbox"/> Health RBC (E) Working Group     | <input type="checkbox"/> Life RBC (E) Working Group               |
| <input type="checkbox"/> Catastrophe Risk (E) Subgroup    | <input type="checkbox"/> Investment RBC (E) Working Group | <input type="checkbox"/> Operational Risk (E) Subgroup            |
| <input type="checkbox"/> C3 Phase II/ AG43 (E/A) Subgroup | <input type="checkbox"/> P/C RBC (E) Working Group        | <input checked="" type="checkbox"/> Longevity Risk (A/E) Subgroup |

<p style="text-align: right;">DATE: <u>4/29/2021</u></p> <p><b>CONTACT PERSON:</b> <u>Dave Fleming</u></p> <p><b>TELEPHONE:</b> <u>816-783-8121</u></p> <p><b>EMAIL ADDRESS:</b> <u>dfleming@naic.org</u></p> <p><b>ON BEHALF OF:</b> <u>Longevity Risk (A/E) Subgroup</u></p> <p><b>NAME:</b> <u>Rhonda Ahrens, Chair</u></p> <p><b>TITLE:</b> <u>Chief Actuary</u></p> <p><b>AFFILIATION:</b> <u>Nebraska Department of Insurance</u></p> <p><b>ADDRESS:</b> <u>1135 M Street, Suite 300</u> <u>Lincoln, NE 68501-2089</u></p>	<p style="text-align: center;"><b><u>FOR NAIC USE ONLY</u></b></p> <hr/> <p>Agenda Item # <u>2021-13-L</u></p> <p>Year <u>2021</u></p> <hr/> <p style="text-align: center;"><b><u>DISPOSITION</u></b></p> <p><input type="checkbox"/> ADOPTED _____</p> <p><input type="checkbox"/> REJECTED _____</p> <p><input type="checkbox"/> DEFERRED TO _____</p> <p><input type="checkbox"/> REFERRED TO OTHER NAIC GROUP _____</p> <p><input checked="" type="checkbox"/> EXPOSED <u>4/29/2021</u></p> <p><input type="checkbox"/> OTHER (SPECIFY) _____</p>
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### IDENTIFICATION OF SOURCE AND FORM(S)/INSTRUCTIONS TO BE CHANGED

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Health RBC Blanks       | <input type="checkbox"/> Property/Casualty RBC Blanks       | <input checked="" type="checkbox"/> Life and Fraternal RBC Instructions |
| <input type="checkbox"/> Health RBC Instructions | <input type="checkbox"/> Property/Casualty RBC Instructions | <input checked="" type="checkbox"/> Life and Fraternal RBC Blanks       |
| <input type="checkbox"/> OTHER _____             |   |   |

### DESCRIPTION OF CHANGE(S)

This proposal presents base factors and correlation and guardrail factors for the longevity risk charge.

### REASON OR JUSTIFICATION FOR CHANGE \*\*

The Longevity Risk (A/E) Subgroup was charged with providing recommendations for recognizing longevity risk in statutory reserves and/or RBC, as appropriate. The Subgroup's recommendation for the structure necessary was adopted by the Life Risk-Based Capital (E) Working Group on 2-14-20 in proposal 2019-13-L and factors of zero were adopted in proposal 2020-06-L for year end 2020.

### Additional Staff Comments:

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\*\* This section must be completed on all forms.

Revised 2-2019

# LONGEVITY RISK

LR025-A

*Basis of Factors*

The factors chosen represent surplus needed to provide for claims in excess of reserves resulting from increased policyholder longevity calibrated to a 95<sup>th</sup> percentile level. For the purpose of this calibration aggregate reserves were assumed to provide for an 85<sup>th</sup> percentile outcome.

Longevity risk was considered over the entire lifetime of the policies since these annuity policies are generally not subject to repricing. Calibration of longevity risk considered both trend risk based on uncertainty in future population mortality improvements, as well as level or volatility risk which derives from misestimation of current population mortality rates or random fluctuations. Trend risk applies equally to all populations whereas level and volatility risk factors decrease with larger portfolios consistent with the law of large numbers.

Statutory reserve was chosen as the exposure base as a consistent measure of the economic exposure to increased longevity. Factors were also scaled by reserve level since number of insured policyholders is a less accessible measure of company specific volatility risk. Factors provided are pre-tax and were developed assuming a 21% tax adjustment would be subsequently applied.

*Specific Instructions for Application of the Formula*

Annual statement reference is for the total ~~life contingent~~ reserve for the products in scope. The scope includes annuity products with life contingent payments where benefits are to be distributed in the form of an annuity. The entire reserve amount for contracts in scope that include any life contingent payments are in scope. For example, under a certain-and-life style annuity, the entire reserve for both the certain payments and life contingent payments are in scope. Variable immediate annuity reserves under VM-21 are also in scope where there are life contingent payments. #Scope does not include annuity products that are not life contingent, or deferred annuity products where the policyholder has a right but not an obligation to annuitize. A certain-and-life style annuity, where only certain payments remain (such as following the death of the annuitant), is out of scope. Variable deferred annuity contract reserves under VM-21 are out of scope, including reserves valued under VM-21 for any contracts where policyholder account value has reached zero, but a lifetime benefit may still be payable by the insurer. Line (3) for General Account Life Contingent Miscellaneous reserves is included in the event there are any reserves for products in scope reported on Exhibit 5 line 0799999; it is not meant to include cash flow testing reserves reported on this line. Included in scope are:

- Single Premium Immediate Annuities (SPIA) and other payout annuities in pay status
- Deferred ~~Payout-Income~~ Annuities which will enter annuity pay status in the future ~~upon annuitization~~
- Structured Settlements for annuitants with any life contingent benefits
- Group Annuities, such as those associated with pension liabilities with both immediate and deferred benefits

The total reserve exposure is then further broken down by size as in a tax table. This breakdown will not appear on the RBC filing software or on the printed copy, as the application of factors to reserves is completed automatically. The calculation is as follows:

Line (5)	Life Contingent Annuity Reserves	(1) Statement Value	Factor	(2) RBC Requirement
	First 250 Million	_____	X <b>0.0135</b> =	_____
	Next 250 Million	_____	X <b>0.0085</b> =	_____
	Next 500 Million	_____	X <b>0.0075</b> =	_____
	Over 1,000 Million	_____	X <b>0.0070</b> =	_____
	Total Life Contingent Annuity Reserves	=====		=====

The amount ultimately included in the authorized control level will be subject to a guardrail factor of \_\_\_\_\_ and a correlation factor of \_\_\_\_\_.

Longevity Risk

Life Contingent Annuity Reserves

- (1) General Account Life Contingent Annuity Reserves
- (2) General Account Life Contingent Supplemental Contract Reserves
- (3) General Account Life Contingent Miscellaneous Reserves
- (4) Separate Account (SA) Life Contingent Annuity Reserves
- (5) Total Life Contingent Annuity Reserves

	(1) Annual Statement Source	(1) Statement Value	Factor	(2) RBC Requirement
	Exhibit 5 Column 2 Line 0299999, in part‡	\$0		
	Exhibit 5 Column 2 Line 0399999, in part‡	\$0		
	Exhibit 5 Column 2 Line 0799999, in part‡	\$0		
	S/A Exhibit 3 Column 2 Line 0299999, in part‡	\$0		
	Lines (1) + (2) + (3) + (4)	\$0 X	†	\$0

Base Factors are From Longevity Risk Task Force's Spring 2019 report

†	The tiered calculation is illustrated in the Longevity Risk section of the risk-based capital instructions.	up to \$250M 1.35%	0.0135
‡	Include only the portion of reserves for products in scope per the instructions	next \$250M 0.85%	0.0085
		next \$500M 0.75%	0.0075
		over \$1B 0.70%	0.007

**=MAX(ROUND(IF(D10<250000000,D10\*0.0135,IF(D10<500000000,250000000\*0.0135+(D10-500000000)\*0.0085,IF(D10<1000000000,250000000\*0.0135+250000000\*0.0085+(D10-500000000)\*0.0075,250000000\*0.0135+250000000\*0.0085+500000000\*0.0075+(D10-1000000000)\*0.007))),0),0)**

][CALCULATION OF TAX EFFECT FOR LIFE AND FRATERNAL RISK-BASED CAPITAL

		(1)		(2)
<u>Insurance Risk</u>				
(133)	Disability Income Premium	LR019 Health Premiums Column (2) Lines (21) through (27)	\$0 X	0.2100 = \$0
(134)	Long-Term Care	LR019 Health Premiums Column (2) Line (28) + LR023 Long-Term Care Column (4) Line (7)	\$0 X	0.2100 = \$0
(135)	Life Insurance C-2 Risk	LR025 Life Insurance Column (2) Line (8)	\$0 X	0.2100 = \$0
(136)	Group Insurance C-2 Risk	LR025 Life Insurance Column (2) Lines (20) and (21)	\$0 X	0.2100 = \$0
(136b)	Longevity C-2 Risk	LR025-A Longevity Risk Column (2) Line (5)	\$0 X	0.2100 = \$0
(137)	Disability and Long-Term Care Health Claim Reserves	LR024 Health Claim Reserves Column (4) Line (9) + Line (15)	\$0 X	0.2100 = \$0
(138)	Premium Stabilization Credit	LR026 Premium Stabilization Reserves Column (2) Line (10)	\$0 X	0.0000 = \$0
(139)	Total C-2 Risk	L(133) + L(134) + L(137) + L(138) + Greatest of [Guardrail Factor * (L(135)+L(136)), Guardrail Factor * L(136b), Square Root of [ (L(135) + L(136)) <sup>2</sup> + L(136b) <sup>2</sup> + 2 * (TBD Correlation Factor) * (L(135) + L(136)) * L(136b) ] ]	\$0	\$0

Guardrail Factor: 0.0  
Correlation Factor: 0.00

**=D5+D6+D11+D13+MAX(SL13\*(D8+D9),SL13\*D10,SQRT((D8+D9)^2+D10^2+2\*SL14\*(D8+D9)\*D10))**

**CALCULATION OF AUTHORIZED CONTROL LEVEL RISK-BASED CAPITAL**

(1)

<u>Insurance Risk (C-2)</u>		
(43)	Individual and Industrial Life Insurance	LR025 Life Insurance Column (2) Line (8)
(44)	Group and Credit Life Insurance and FEGLI/SGLI	LR025 Life Insurance Column (2) Lines (20) and (21)
(44b)	Longevity Risk	LR025-A Longevity Risk Column (2) Line (5)
(45)	Total Health Insurance	LR024 Health Claim Reserves Column (4) Line (18)
(46)	Premium Stabilization Reserve Credit	LR026 Premium Stabilization Reserves Column (2) Line (10)
(47)	Total (C-2) - Pre-Tax	L(45) + L(46) + Greatest of [ Guardrail Factor * (L(43)+L(44)), Guardrail Factor * L(44b), Square Root of [ (L(43) + L(44)) <sup>2</sup> + L(44b) <sup>2</sup> + 2 * (TBD Correlation Factor) * (L(43) + L(44)) * L(44b) ] ]
(48)	(C-2) Tax Effect	LR030 Calculation of Tax Effect for Life and Fraternal Risk-Based Capital Column (2) Line (139)
(49)	Net (C-2) - Post-Tax	Line (47) - Line (48)

0
0
\$0
\$0
\$0
\$0
\$0
\$0
\$0

Guardrail F 0.0  
Correlation 0.00

=D7+D8+MAX(H9\*(D4+D5),H9\*D6,SQRT((D4+D5)^2+D6^2+2\*H10\*(D4+D5)\*D6))

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## NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

### MEMORANDUM

**TO:** Life Risk-Based Capital Members, Interested Regulators, and Interested Parties

**FROM:** Philip Barlow (DC), Chair, Life Risk-Based Capital (E) Working Group  
Rhonda Ahrens (NE), Chair Longevity Risk (E/A) Subgroup

**DATE:** April 30, 2021

**RE:** Request for Comment on Longevity Risk Factors and Instructions

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As requested by Life Risk-Based Capital (E) Working Group chair, the following is a history of the current proposals and options being considered by the Working Group and originally presented by the Longevity Risk (E/A) Subgroup in order to implement structure changes to life risk-based capital (RBC) for eventual implementation of C-2 longevity risk factors.

The factors presented by the Subgroup were proposed by the American Academy of Actuaries' (Academy) C2 Longevity Risk Work Group and are tiered to represent that companies with a larger pool of longevity risk are likely more diversified and also in a better position to test their longevity assumptions while setting reserves (including any necessary AAT reserves) related to their longevity risk. The factors are:

- First \$250m at 1.35%
- Next \$250m at 0.85%
- Next \$500m at 0.75%
- Over \$1b at 0.70%

The Academy recommendation were based on the assumption that reserve adequacy is not an issue and that if reserve requirements are maintained over time by regulators and continue to be subject to AAT, the capital factors should not carry a punitive charge related to a reserve level that is viewed as troubling. Their premise was that if reserve levels are troubling, that is a different issue. Therefore, they made the assumption that reserves are consistent with a commonly held understanding that regulators will work to require reserves to be at that level.

The Subgroup did receive input from the Academy as to the factors that would be recommended if the reserves were assumed to be lower. The resulting factors would have been increased to 1.71%, 1.08%, 0.95% and 0.89% accordingly. Although it was not unanimous, the Subgroup included the lower factors as part of its recommendation.

The Subgroup was charged with consideration of longevity and suggested it was the Working Group's role to consider whether to allow covariance as it also impacts mortality and total C-2 and is not limited to longevity.

The Academy-proposed framework included a suggestion to delay implementation of C-2 longevity until the Academy has completed a review of C-2 mortality factors so that C-2 longevity and C-2 mortality are calibrated/consistent upon introduction of the longevity factor.

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## NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

The Academy proposal also suggested that companies with both mortality and longevity risk exposure have diversification against systemic adverse development in mortality and mortality improvement assumptions. They proposed a covariance factor of negative 0.33 and provided justification for the factor. Ultimately, the Subgroup rounded down to negative 0.30 and also suggested a covariance of negative 0.25 is conservative, reasonably consistent with the Academy proposal and also consistent with the covariance between mortality and longevity in other jurisdictions. If there are concerns about the reasonableness of this, the Subgroup asked that the Working Group provide direction to further consider other alternatives. However, as noted, the Subgroup is not charged with mortality risk, so the covariance consideration is actually outside of the scope of its current charge. Additionally, the Subgroup chair does not feel that the justification and materials shared in the past need to be reconsidered by the Subgroup as there was nothing materially flawed in the way the Academy justified the relationship. The Subgroup decided to present a structure/formula that allows the Working Group to consider covariance but also allows them to reject it by setting the covariance to positive 1.0.

Members of the Subgroup agreed that introducing a new C-2 factor on exposures that were previously not measured by required capital should generally increase required capital. There was a concern that a large number of companies would actually introduce the C-2 longevity factor and see their required capital go down if the negative covariance factor is allowed. Therefore, the Subgroup proposed structure later adopted by Working Group that included a guardrail factor that can be set between 0 and 1. If set at zero, the guardrail is essentially not being used and the pure covariance formula always wins. If set to one, the guardrail ensures that no company will have a reduction in required capital at the initial implementation of the C-2 longevity factor. The guardrail of 1 compares C-2 mortality, C-2 longevity and the combined C-2 mortality/longevity including covariance impact and uses the largest of the three, so companies can benefit from the covariance but only if the combined calculation is higher than either C-2 mortality alone or C-2 longevity alone. This prevents companies with material longevity exposure from major decreases in required capital earned from the diversification discount. It also causes companies with significant longevity exposure but material mortality exposure to have potentially detrimental increases in required capital upon implementation.

The Working Group is asking for comments on the factors, the covariance level and the guardrail, so the exposure includes a grouping of potential finalists for the factors that would be inserted into the 2021 year-end RBC instructions and make C-2 longevity effective for year-end. Comments received will hopefully allow the Working Group to narrow down the choices for consideration and have another short exposure before the final vote. The requested exposure is:

- Consider the tiered Academy-proposed factors of 1.35% for the first \$250m of exposure, 0.85 for the next \$250m, 0.8 for the next \$500m and 0.7 for anything over \$1B.
- Consider Covariance of negative 0.25 with a Guardrail of 1.
- Consider Covariance of negative 0.30 with a Guardrail of 1.
- Consider Covariance of positive 1(making C-2 mortality and C-2 longevity purely additive) with a Guardrail of 1(the Guardrail will not alter the result since the calculation is additive).
- Consider Covariance of negative 0.25 with no Guardrail (Guardrail = 0).
- Consider Covariance of negative 0.30 with no Guardrail (Guardrail =0).



**Steven Clayburn**  
Senior Actuary, Health Insurance & Reinsurance  
steveclayburn@acli.com

May 27, 2021  
Mr. Philip Barlow, Chair  
NAIC Life Risk-Based Capital Working Group

Sent via email: [dfleming@naic.org](mailto:dfleming@naic.org)

**RE: C-1 Bond and Portfolio Adjustment Factors Proposals – 2021-11-L Life Bond Factors (ACLI) and 2021-10-L RBC Proposal (Academy)**

Greetings:

The American Council of Life Insurers (“ACLI”) appreciates the opportunity to provide comments on the two C-1 bond factor proposals exposed on April 27, 2021:

1. 2021-11-L Life Bond Factors (ACLI) developed by Moody’s Analytics (hereinafter referenced as the 2021-11 proposal), and
2. 2021-10-L RBC Proposal (Academy), the American Academy of Actuaries (“Academy”) October 10, 2017 report updated in 2021 with the 21% rate from the Tax Cuts and Jobs Act of 2017 (hereinafter referenced as the 2021-10 proposal)

**Executive Summary**

Corporate bonds are the largest life industry asset class (over \$3 trillion), and it is important for the regulatory capital requirements for this asset class to appropriately reflect the associated credit risk. The existing RBC C-1 bond framework has provided excellent protection during tumultuous times over the last 30 years. This experience shows that the existing framework and calibration is quite robust and does not support a material increase in capital requirements, even with the project to expand from six rating categories to twenty rating categories.

- ACLI supports and urges the adoption of the C-1 bond factors and portfolio adjustment factors (2021-11 proposal) as developed and presented on April 22, 2021 (with the original 4.32% discount rate), by Moody’s Analytics, one of the world’s premiere portfolio global credit modeling firms. The proposal developed by Moody’s Analytics would materially increase aggregate C-1 RBC, reaching a 96<sup>th</sup> percentile safety level. Furthermore, it better differentiates risk across rating grades and diversification than the 2021-10 proposal.
- As stated in several previous comment letters<sup>1</sup>, ACLI has identified areas of concern with the Academy’s underlying credit risk model and is not supportive of the adoption and

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<sup>1</sup>[https://content.naic.org/sites/default/files/inline-files/Academy%27s%20August%202015%20Report\\_Comment%20Letters.pdf](https://content.naic.org/sites/default/files/inline-files/Academy%27s%20August%202015%20Report_Comment%20Letters.pdf) (p 1-7);  
[https://content.naic.org/sites/default/files/inline-files/Academy%27s%20June%202017%20Report\\_Comment%20Letters.pdf](https://content.naic.org/sites/default/files/inline-files/Academy%27s%20June%202017%20Report_Comment%20Letters.pdf) (p 5-12);  
[https://content.naic.org/sites/default/files/inline-files/Academy%27s%20October%202017%20Report\\_Comment%20Letters.pdf](https://content.naic.org/sites/default/files/inline-files/Academy%27s%20October%202017%20Report_Comment%20Letters.pdf)

implementation of the C-1 bond factors and portfolio adjustment in the 2021-10 proposal. These concerns were confirmed by Moody's Analytics' work.

### **Background**

We appreciate the willingness of the Financial Condition (E) Committee and the Life RBC Working Group to allow for an independent third-party review by Moody's Analytics of the underlying model and data issues. Moody's Analytics' review, as presented to the Life RBC Working Group and interested parties in February 2021, noted several concerns related to the modeling and use of the data<sup>2</sup> including: 1) default correlations and the resulting portfolio adjustment; 2) the actual modeling approach and the resulting slope of the proposed factors; 3) loss given default approach and the resulting factors; 4) the risk premium assumption; and 5) omission of most recent experience.

The Life RBC Working Group asked Moody's Analytics to model a set of C-1 bond factors and portfolio adjustment factors, resulting in the 2021-11 proposal.

The Moody's Analytics work in the 2021-11 proposal has three distinctions: (1) the model is well-documented, (2) the historical data is seriatim and not summarized, and (3) data is updated through 2020. Industry is supportive of the proposed factors resulting from this model. Significantly, the 2021-11 proposal achieves an increased capital requirement using updated data, resulting in intuitive outcomes though the industry is presumed well-capitalized under existing reserving and capital requirements.

By using current experience (data through 2020 year-end) in developing assumptions and working through the limitations of the underlying model used to calculate the Academy's proposed factors, Moody's Analytics developed a set of factors addressing the concerns noted above. Further, Moody's has made explicit provision in their modeling to calibrate the resulting factors to the 96<sup>th</sup> percentile. In taking this approach, their work makes transparent the level of conservatism layered upon the underlying best estimate factors. Such transparency is lost when conservatism is added at each interim step to assumptions in the bond factor determination process.

In addition to producing more intuitive factors, the Moody's Analytics proposed bond factors also eliminate the Academy's disincentives for insurers to hold higher quality portfolios. The ACLI believes elimination of these disincentives is both appropriate and desirable in a regulatory capital regime. Furthermore, the resulting increase in capital is allocated across industry based on portfolio adjustment factors to reflect the actual diversification of individual insurer portfolios. Note that, unlike the 2021-10 proposal, there is no need for an arbitrary adjustment to portfolio adjustment factors under the 2021-11 proposal.

### **Detailed Review**

Moody's Analytics' integrated model addresses the interconnectivity of the underlying components of the credit risk model; this interconnectivity is not addressed by the Academy's compartmentalized approach. See Appendix A – Summary of MA's Targeted Modifications to the C1 Factors.

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<sup>2</sup> [2021 MA Updates to RBC C1 Bond Factors](#)

Review of the empirical data indicates the relative riskiness across rating grades more closely aligns with 2021-11 proposal. The 2021-11 proposal also incentivizes higher quality bond portfolios. As evidenced by history, the existing bond RBC framework has provided excellent protection during tumultuous times, specifically the following most recent 30-year crises:

- The dot-com bubble;
- The aftermath of September 11<sup>th</sup>;
- The accounting frauds of the early 2000's;
- The Great Financial Crisis;
- The Energy/Commodity Crisis of 2015/2016; and
- The worst pandemic in 100 years.

This track record shows that the RBC C-1 framework and calibration is quite robust. This experience does not support a material increase in capital requirements. Moody's Analytics estimates the following overall capital increases under the various proposals:

Total Industry Post Portfolio Adjustment Factor C-1 RBC (Pre-Tax)

	<i>\$ Billions</i>	<i>Increase to Current</i>
<i>Current Framework</i>	<i>37.82</i>	<i>n/a</i>
<i>Moody's Analytics (Original with Moody's 4.32% Discount Rate supported by ACLI)*</i>	<i>40.46</i>	<i>+7%</i>
<i>Moody's Analytics (Lower Discount Rate of 3.47%)</i>	<i>41.83</i>	<i>+11%</i>
<i>Academy' Proposal (with 5% Discount Rate)</i>	<i>43.19</i>	<i>+14%</i>

\* ACLI believes the initial rate of 4.32% used by Moody's Analytics in its modeling produces a more supportable increase in RBC capital. This rate was calculated using information from 1993-2020.

### ***Default Correlations and the Resulting Portfolio Adjustment***

Moody's Analytics used a parameterized correlation model. The correlation model more accurately reflects empirically observed default correlations and issuer diversification benefits. The correlation model generated C-1 base factors that are more conservative and more differentiated across NAIC designation categories than those using the economic state model.

The Academy's economic state model implies very low default correlations, leading to a portfolio adjustment factor that is overly punitive to portfolios with a small number of holdings and overly lenient to portfolios with a large number of holdings. A near-zero assumption of default correlations runs counter to historical observations and may tend to overstate diversification benefits. This leads to an overall flattening of high-yield C-1 base factors relative to investment grade. In addition, the portfolio adjustment factors and the number of issuers to have a factor of 1.0 have varied tremendously between the three formal re-runs of the underlying model raising concerns about the stability of the modeling approach:

- In the Academy's December 2016 proposal, this figure was approximately 750 issuers.
- In its June 2017 proposal, a portfolio needed 5,300 unique issuers to have a factor of 1.00.
- And in the exposed Academy's proposal the number of issuers dropped down to 810.

### ***Modeling Approach and the Resulting Slope of Factors***

Moody's Analytics' correlation model resulted in C-1 base factors that are more conservative and more differentiated across NAIC designation categories than those implied using the economic state model. Furthermore, the portfolio adjustment factors are less punitive to portfolios with a smaller number of issuers and less lenient to portfolios with a larger number of issuers, relative to those from the 2021-10 proposal.

The Academy's proposed factors are based on a projection of defaults for each rating category, leading to a misstated assessment of risk for bond portfolios as a whole. This modeling choice leads to an overestimation of projected losses on investment-grade bonds relative to below-investment-grade bonds.

### ***LGD Approach and Resulting Misestimated Factors***

Moody's Analytics used data covering the period 1987-2019 from their MA's Default & Recovery Database (DRD), reflecting the loss experience of life insurers' U.S. corporate holdings across sectors. This data also reflected *issuer*-level loss given default ("LGD") to avoid overweighting outliers and aligned ultimate recovery with default rate.

The Academy's approach to LGD uses *issue*-level data, which tends to overweight outlier data points. This approach gives undue influence to defaulted issuers that had many issues.

### ***Risk Premium Assumption***

In its modeling, Moody's Analytics acknowledged some conservatism already built into reserves, and provided a reasoned and thoughtful rationale for their model recommendation. They have proposed that the C-1 factors assume that reserves cover 0.5 standard deviation of credit risk beyond expected losses. Given the evolution of reserves, together with many interconnected model features, this assumption recognizes variation in industry reserving standards and closer aligns with PBR and other reserving standards generally aimed to cover adverse conditions.

While the Academy's proposal prioritizes consistency between risk premium and AVR, the allocation of surplus across AVR and unassigned surplus does not affect the RBC ratio. Thus, the alignment between AVR and risk premium is irrelevant to the RBC framework, whose purpose is to help regulators identify potentially weakly capitalized companies.

The Academy's risk premium, which is set equal to the expected loss, is inconsistent with the statutory reserving framework. The risk premium assumption should reflect the fact that reserves make provision for more than mean expected loss. This is explicit at a CTE 70 level in Principle-Based Reserves (PBR) and is implicitly evident in pre-PBR reserves. As the Academy stated in its 2015 report on its proposal, "The general consensus in the actuarial community is that statutory policy reserves (tabular plus additional reserves due to cash flow testing) at least cover credit losses up to one standard deviation (approximately 67th percentile)."<sup>3</sup> We note that one standard deviation above the mean is actually closer to the 83<sup>rd</sup> percentile in a Normal distribution, as all of the losses below the mean are covered (rather than just being within one standard deviation both below and above the mean).

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<sup>3</sup> Model Construction and Development of RBC Factors for Fixed Income Securities for the NAIC's Life Risk-Based Capital Formula, American Academy of Actuaries C1 Work Group, August 3, 2015

***Omission of recent historical data***

Moody's Analytics used the most recent experience available to model its factors, data through year-end 2020.

The Academy's proposal does not include historical default and recovery data more recent than 2012. As the Academy states in the exposed letter, "While we have not modeled any assumption changes, we are concerned that the factors in this letter may be lower than what an analysis of updated data would produce." It is important to include as much recent and relevant experience as possible. In addition, some of the Academy's assumptions have become outdated since their last update in 2017.

**Summary**

The ACLI supports and urges the adoption of the 2021-11-L Life Bond Factors (ACLI) proposal (with the original 4.32% discount rate). The modeling of these proposed C-1 bond factors and portfolio adjustment factors addresses the concerns and issues outlined by industry over the years. The factors, produced via a correlation model with up-to-date experience and assumptions, have a steeper slope (true delineation between rating categories) and provide superior estimates of diversification benefits. The Moody's Analytics model promotes a more equitable distribution of the industrywide RBC increase, reducing the onus on small to medium size carriers in the 2021-10 proposal. The 2021-11 proposal is built by one of the premier experts in credit portfolio modeling, it represents a material increase in capital, and the results are intuitive.

Since the Moody's Analytics model is fully integrated, its assumptions and parameters should be viewed holistically; Moody's Analytics cautions against piecemeal modifications to individual model parameters without consideration of the interconnected elements of the framework.

Finally, we also support the LR030 change that was added during the exposure period.

\*A technical note: There is a typo in the 2021-11-L Life Bond Factors (ACLI) exposure – on page 9 the portfolio adjustment factor for "Next 90" should be 1.53 and not 1.54 as shown.

We appreciate the opportunity to comment.

Sincerely,

Steven Clayburn

cc: Dave Fleming, NAIC Senior Insurance Reporting Analyst  
Paul Graham, Senior Vice President, Policy Development

Appendix A: Summary of MA's Targeted Modifications to the C1 Factors<sup>4</sup>

Targeted Modification	Current	Academy-Proposed	MA
Corrected possible errors in the engine code <sup>[1]</sup>	Limited documentation	Code that replicates Academy's results suggests two possible errors: First, the four-state model used different simulation seeds for default rates and LGD economic state. Second, when removing the mean simulated portfolio loss, the model used the product of expected default rate and expected LGD, neglecting LGD and default correlation.	Corrected possible simulation engine errors (1) Default rates and LGD are drawn from the same economic state for Baa-Caa MIS rated issuers; and (2) Removed mean adjustment from simulated portfolio loss (Section 6.2.6 demonstrates limited concern for simulation noise).
Discount Rate & Tax Rate	Tax rate: 35% Discount rate: 9.23% (6% after tax) Recovery of tax loss benefit: 75% Tax recovery on default: 26.25%	Tax rate: 21% (2021) Discount rate (1993-2013 window): 5% (3.95% after tax) Recovery of tax loss benefit: 80% Tax recovery on default: 16.8%	Tax rate: 21% Discount rate (2000-2020 window): 3.47% (2.74% after tax) under guidance from the Life Risk-Based Capital (E) Working Group on April 22, 2021 Recovery of tax loss benefit: 80% Tax recovery on default: 16.8% While an alternative window start date can be justified, the discount rate enters the C1 formula as a single static rate and not as impactful as some other targeted modifications, reinforced by updated tax rate offset. Potentially important term structure dynamics that interplay with credit risk are not captured within the current framework.

<sup>4</sup> Table 3, page 12 from "2021 MA Updates to C1 Bond Factors"

<sup>[1]</sup> MA did not have access to the Academy's model and stipulates these errors based on the following: we were not able to match the Academy's proposed C1 base factors [2017] closely when relying only on the Academy's documentation. Discussions with industry members lead us to find two errors, that when purposefully introduced, allowed for matching Academy's proposed factors within simulation noise. First, the four-state model under the matched model used different simulation seeds for default rates and LGD economic state. Second, when removing the mean simulated portfolio loss, the matched model used the product of expected default rate and expected LGD, neglecting LGD and default correlation.

<p>Loss Given Default (LGD)</p>	<p>Limited documentation Average LGD by NAIC designation 37.25% (NAIC 1), 52.17% (NAIC 2), 56.67% (NAIC 3-5)</p>	<p>Does not align with the date of default. This deviation can result in bias with recovery rate levels, as well as their relationships with default rates. Average value of LGD = 53%</p>	<p>Use MA's Default &amp; Recovery Database (DRD) over 1987–2019 window, reflect the loss experience of life insurers' U.S. corporate holdings across sectors, reflect issuer-level LGD to avoid overweighting outliers, align ultimate recovery with default date. Average value of LGD = 52%</p>
<p>Risk Premium</p>	<p>Set equal to expected loss</p>	<p>Set equal to expected loss</p>	<p>Set at expected loss plus 0.5 standard deviation, recognizing variation in industry reserving standards and to closer align with reserving standards generally aimed at covering moderately adverse conditions and PBR. In addition, MA outlines a potential future update to AVR allowing alignment with default rates and LGDs that parameterize the final C1 framework; although this update is not urgent given AVR does not impact the RBC ratio and solvency. A higher Risk Premium lowers the C1 base factors and mildly increases their differentiation across the NAIC designation categories.</p>
<p>Economic State Model</p>	<p>Limited documentation Five-state model; affects both default and LGD; MA did not analyze, possibly similar properties to recent Academy proposal</p>	<p>A combination of two and four-state model; affects both default and LGD; Model results in C1 base factors that are not sufficiently differentiated across NAIC designation categories and under certain parameterizations C1 base factors that are not monotonic, and PAFs that provide more diversification benefits than observed empirically.</p>	<p>Initially outside Scope, economic state model limitations are viewed to be sufficiently material to warrant replacement by a correlation model that reflects default correlations and diversification benefits observed empirically in MA C1 Factors. Resulting C1 base factors are more differentiated across NAIC designation categories, and PAFs are a more accurate reflection of diversification benefits.</p>

<p>Default Rates</p>	<p>Based on data from, Moody's 1991 Special Comment: Corporate Default and Recovery Rates, 1970-1990. Documentation on data treatment is limited</p>	<p>Smoothed corporate default rate term structures grouped by MIS alphanumeric rating using Academy's algorithm.</p>	<p>Smoothed corporate default rate term structures representing the historical experience of life insurers' U.S. corporate holdings using default data grouped by MIS alphanumeric rating using MA's DRD. MA default rates tend to have a steeper slope (more differentiated across MIS ratings) than those proposed by the Academy, with differentiation more closely aligning with benchmarks.</p>
<p>PAFs</p>	<p>Documentation is limited</p>	<p>Based on an economic state model that implies more benefits to diversification across issuers than observed empirically, resulting in a PAF that is overly punitive (lenient) to portfolios with a smaller (larger) number of issuers.</p>	<p>Initially outside Scope, economic state model limitations are viewed to be sufficiently material that the economic state model is replaced by a correlation model that reflects default correlations and diversification benefits observed empirically in MA C1 Factors. Resulting C1 base factors are more differentiated across NAIC designation categories, and PAFs are a more accurate reflection of diversification benefits.</p>





NATIONAL ALLIANCE OF LIFE COMPANIES

*An Association of Life and Health Insurance Companies*

May 24, 2021

Mr. Philip Barlow  
 Chair, Life Risk-Based Capital E Working Group  
 National Association of Insurance Commissioners  
 Kansas City, Missouri

Re: Bond Factors and Companion Portfolio Adjustment Factors

Dear Mr. Barlow:

I am the Executive Director of the National Alliance of Life Companies (the NALC), a trade group of more than fifty life insurance companies and associates that represents the interests of small and mid-sized insurers and their policyholders.

As noted in our prior letter of April 8, 2021, a copy of which is attached, we have very significant concerns about the American Academy of Actuaries' proposed changes in the bond factors and portfolio adjustment factors under consideration by the Working Group. This letter updates our earlier comments based upon our subsequent review of information provided in the Moody's Analytics report, and after further discussions with representatives of small and mid-sized life insurers from across the United States.

The NALC continues to believe that the proposed bond factors presented by the American Academy of Actuaries are more appropriate for larger life insurers with larger and more diverse bond holdings, and would do significant harm to small life insurance companies with more modest bond portfolios. The Academy's portfolio adjustment factors would push smaller insurers to purchase bonds that may not meet their long-term duration objectives to increase user count.

Our survey of small companies showed that the proposed changes would force an increase of company capital between 7% and 17%, and a negative impact on RBC between 6.6% and 11.14%. This materially adverse impact would occur without any change in the risk profile of their portfolios. The NALC strongly encourages the Working Group to make needed adjustments in its report to address these inequities to prevent disparate impact on smaller life insurance companies.

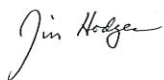
We note further that other observers share our concerns. In a Guggenheim Investments, perspective dated May 13, 2021, the commentary notes "no comprehensive study has been performed on the impact of the new RBC changes to insurers." We believe our survey supports this conclusion, as it shows smaller companies would see a significant erosion of their capital position the moment the ink dries on these regulatory changes. Guggenheim further notes, "the U.S. industry has nearly \$7 trillion in general account assets. Without a phase-in period, there is likely to be unintended repercussions on the insurance industry and the capital markets." Again, our survey results support this observation.

In reviewing the various options, we believe that Moody's proposal provides better building blocks for changes in RBC factors for fixed-income securities.

We would therefore urge the Working Group to extend the deadline for comment to allow additional time to work through the concerns raised in this letter, as well as other concerns raised by interested parties. With this additional time, we believe the parties can address these reasonable concerns, and create a stronger, equitable, and more complete report.

Thank you.

Sincerely,

A handwritten signature in cursive script that reads "Jim Hodges".

Jim Hodges  
Executive Director  
NALC



# Exhibit A

**NATIONAL ALLIANCE OF LIFE COMPANIES** *An Association of Life and Health Insurance Companies*

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April 8, 2021

Mr. Philip Barlow  
Chair, Life Risked Based Capital E Working Group  
National Association of Insurance Commissioners  
Kansas City, Missouri

Re: Bond Factors and Companion Portfolio Adjustment Formulas

Dear Mr. Barlow:

I am the Executive Director of the National Alliance of Life Companies (the NALC), a trade group of more than fifty (50) members and associates that represents the interests of small life insurance companies in the United States. We have closely followed the work of the American Academy of Actuaries regarding proposed changes in the bond factors and the portfolio adjustment factors (herein new bond factors) for investments held by life insurance companies. We have also read the preliminary report of Moody's Analytics commissioned by the American Council of Life Insurers (the ACLI) on the impact of such changes.

We felt it would be helpful for the Working Group to hear real-world examples of the impact of these proposed bond factor changes, so we surveyed a number of small life insurance companies around the country to better assess the impact. In our survey, we looked at the Required Change in Company Capital Level based on new bond factors, as well as the RBC Ratio Percentage Change using the new bond factors. The survey was done prior to the Academy update for the decrease in the corporate tax rate.

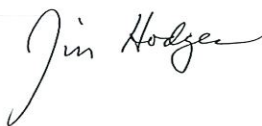
Of the twelve companies responding to the survey, all but one reported the new factors would require a change of company capital between 7% and 17%. Those same companies reported a negative impact on their RBC Ratio of between 6.6% and 11.14%. This clearly demonstrates that the proposed bond factor changes would have a significant adverse impact on the capital position of smaller life insurance companies without any change in portfolio or risk.

One other important point is worth making - it does not appear that the impact of these proposed changes on commercial transactions for life insurance companies has been adequately explored. Many commercial transactions, such as loan documents, reinsurance agreements and other agreements, contain RBC covenants which provide for defaults to be declared if RBC covenants are violated. Of course, those provisions were negotiated and agreed to under current bond factors and RBC calculations. We are very concerned that the proposed changes would force some companies into non-compliance with those covenants, triggering a material and adverse impact on these companies. We would note further that this is an issue for companies of all sizes with such covenants in place.

Based upon these and other considerations, the NALC urges the Task Force to closely examine the potential adverse business consequences of the proposed changes on small life insurance companies and their policyholders. We appreciate the positive comments that have been made about regulatory discretion as a means to mitigate the adverse effects of these changes. That approach could reduce the negative impact of the changes on a company by company basis. An additional approach would be to allow a generous phase in period that would allow companies sufficient time to make the necessary adjustments to their bond portfolios.

Thank you for allowing us to comment. We are happy to provide summary details regarding our surveys if helpful.

Sincerely,

A handwritten signature in cursive script that reads "Jim Hodges".

Jim Hodges  
Executive Director  
NALC



May 25, 2021

NAIC  
Life Risk-Based Capital Working Group  
444 North Capitol Street NW, Suite 700  
Washington, DC 20001

Dear Life Risk-Based Capital Working Group,

The North American CRO Council (CRO Council) is a professional association of Chief Risk Officers (CROs) of leading insurers based in the United States, Bermuda and Canada. Member CROs currently represent 32 of the largest Life and Property and Casualty insurers in North America. The CRO Council seeks to develop and promote leading practices in risk management throughout the insurance industry and provide thought leadership and direction on the advancement of risk-based solvency and liquidity assessments.

The CRO Council appreciates your continued efforts to maintain a robust and modern RBC framework. We also appreciate the opportunity to comment on the ongoing work to update RBC C1 Bond Factors.

We urge the members of the Life Risk Based Capital Working Group to adopt the proposal set forth by Moody's Analytics on April 22<sup>nd</sup>. This proposal is robust, well documented, and backed by one of the most respected names in credit analytics. This is also the only proposal to include updated experience through 2020 and updated assumptions aligning with the current credit markets and reserving standards. The Working Group is considering a top-side adjustment of the Academy's portfolio adjustment factors to make them more intuitive. Moody's Analytics proposal would require no such adjustment.

Moody's Analytics is one of the premier portfolio credit modeling firms in the world. For decades, their models and analytics have been used by many of the largest banks and insurers as well as many regulators. Their parent firm curates critical data sets, including the one used to derive the original C1 factors, the Academy of Actuaries proposal and the Moody's Analytics proposal. Moody's Analytics submitted a response to the request for proposal by the American Council of Life Insurers because they believe in the mission of protecting the insurance industry and ensuring that rational incentives drive capital markets. They also understand the importance and magnitude of a framework that will be applied to several Trillion dollars of debt.

In our experience, issues arise when regulatory requirements materially deviate from economic incentives. In capital frameworks, this typically happens with the overall level of capital and the allocation of capital across securities.

Level of Capital: The current RBC C1 framework has served the industry and policyholders well for almost 30 years. Overall capital levels have been more than sufficient to weather every credit event that has occurred. It is hard to justify a material increase in overall capital



requirements for the industry. Moody's Analytics proposal on April 22<sup>nd</sup> demonstrates this with a modest increase of 7% while the Academy's proposal would increase capital by 14%. The past 30 years simply does not justify such a large increase in required capital.

Allocation of Capital: The current allocation of C1 charges across bond ratings is generally intuitive and has worked well for the past 30 years. While we support expanding to additional rating granularity, it is critical that relative capital (e.g. investment grade vs high yield) is appropriate. The Academy's proposal would significantly increase investment grade charges relative to high yield. We believe this is unintuitive (confirmed by review of the February 2021 report from Moody's Analytics) and may incentivize increased risk taking within the investment portfolio that could potentially impact the balance sheet strength for the industry.

Thank you again for your continued efforts on this critical update. This is an opportunity for the Working Group to adopt a proposal that is backed up by transparent analytics, historical experience, intuition, and a market-leading credit analytics group. We urge you to thoughtfully consider and adopt the Moody's Analytics proposal.

Sincerely,

A handwritten signature in black ink, appearing to read "Jonathan Porter", with a stylized flourish at the end.

Jonathan Porter  
Chair of the North American CRO Council



MICHAEL C.S. FOSBURY  
PRESIDENT AND CHIEF EXECUTIVE OFFICER

Mr. Philip Barlow  
Chair  
NAIC Life Risk-Based Capital Working Group

May 25, 2021

Dear Mr. Barlow,

As a small mutual life insurer I am very concerned about the impact of the RBC bond factors being considered for implementation. While understanding the need for conservatism, I do not understand the necessity of such punitive additional capital requirements. As I am sure you are aware, mutual companies, and small mutual companies to boot, do not have ready access to capital. For that reason, small insurers like us are very conservative in our investment philosophy (we can't afford to lose principal). We anticipate the impact to Columbian to be on the order of 50% on a CAL basis. This, in addition to the impact of Covid-19 mortality we experienced over the past year, will have a significant negative impact on our organization, an organization which has less than 1% of our assets in below investment grade bonds and is not at significant risk to credit defaults.

I do not understand the problem the NAIC is trying to correct. Over the past 15 years the industry has experienced two potentially traumatic events with potentially devastating effect to the investment portfolios of life and P&C insurers. However, in the most recent Pandemic, I am aware of no insurers that were so negatively impacted by credit concerns that they were forced into regulatory review. From the financial crisis, I am aware of only one life insurer that was forced into receivership due to investments, and that was due to defaulted FNMA and FHLMC preferred stock positions. The insurer would not have been influenced by higher capital requirements in the purchase of these securities, due to the defaulted securities being US Government Agency obligations, which enjoyed essentially the lowest capital requirements. Indeed, more stringent capital requirements on lower rated bonds could conceivably have caused more organizations to have invested in those higher rated, but defaulted securities, purely to avoid higher capital requirements.

If you have to institute additional capital requirements I ask that the ACLI proposal, developed by Moody's analytics, be adopted. While the ACLI proposal is still quite punitive in my mind, it is less punitive and more sound than the Academy's proposal. Please consider adopting the ACLI proposal.

Thank you for taking into consideration the concerns of small life insurers, who typically have conservative investment portfolios and limited capital raising ability.

Sincerely,

Michael C. S. Fosbury  
President & CEO

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FROM THE OFFICE OF:  
**Kevin A. Marti**  
*President and CEO*

May 21, 2021

Mr. Philip Barlow  
Chair  
NAIC Life Risk-Based Capital Working Group  
(via email to Dave Fleming (NAIC Staff for the Working Group))

Dear Mr. Barlow,

On behalf of my company, Gleaner Life Insurance Society, I am writing to you concerning the two exposure drafts related to RBC factors for bonds.

As bonds are, by far, the largest asset class that we own, the choice of RBC factors is critical.

We have reviewed both the Academy proposal (2021-10-L) and the ACLI proposal (2021-11-L) and wholeheartedly support the adoption of the ACLI proposal.

The ACLI proposal was developed by Moody's Analytics, which is a premier credit analysis company. We believe that the methodology they used in developing the factors is state-of-the-art and superior to the older methods employed by the Academy.

As a result, companies investing in highly-rated bonds are not penalized for holding those assets. Furthermore, the portfolio adjustment factor proposed by Moody's is much less punitive than that contained in the Academy proposal for smaller companies such as ours.

As a result, we strongly urge the Working Group to adopt the ACLI proposal.

Thank you for taking our concerns about the proposed RBC factors for bonds into account as you deliberate this important matter.

Sincerely,

A handwritten signature in black ink that reads "Kevin".

Kevin A. Marti  
President and CEO

cc: Mr. Marco Bravo, AAM  
Mr. Tim Senachelle, AAM  
Mr. Todd Warner

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OFFICE OF  
PETER JOHN HENNESSEY III, CLU, FLMI  
Chairman of the Board  
President

May 21, 2021

Mr. Philip Barlow  
Chair  
NAIC Life Risk-Based Capital Working Group

Dear Mr. Barlow,

I am writing on behalf of my company, Government Personnel Mutual Life Insurance Company (GPM), concerning the two exposure drafts related to RBC factors for bonds. We have reviewed both the Academy proposal (2021-10-L) and the ACLI proposal (2021-11-L) and support the adoption of the ACLI proposal. The ACLI proposal was developed by Moody's Analytics, which is a premier credit analysis company. We believe that the methodology they used in developing the factors is state-of-the-art and superior to the older methods employed by the Academy. As a result, companies investing in highly-rated bonds are not penalized for holding those assets. The choice of RBC factors is important, since bonds are by far the largest asset class that my company owns. Furthermore, a critical item is the portfolio adjustment factor proposed by Moody's, which is much less punitive than the that in the Academy proposal for small companies such as ours. We continue to support the work sponsored by the ACLI and, as a result, we highly recommend that the Working Group adopt the ACLI proposal.

Thank you for taking our concerns into account as you deliberate this important matter.

Sincerely,



Peter Hennessey III, CLU, FLMI  
Chairman, President and CEO



Pamela A Hutchins, FSA, MAAA  
Senior Vice President and Chief Actuary

PHIII:msg  
Cc: Mike Boerner  
Rachel Hemphill

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2721 NORTH CENTRAL AVENUE • PHOENIX, ARIZONA 85004 • PHONE (602) 263-6666 • FAX (602) 277-5901 • oxfordlife.com

May 21, 2021

Mr. Philip Barlow  
Chair  
NAIC Life Risk-Based Capital Working Group

Dear Mr. Barlow,

I am writing on behalf of Oxford Life Insurance Company concerning the two exposure drafts related to RBC factors for bonds. As bonds are, by far, the largest asset class that we own, the choice of RBC factors is critical. We have reviewed both the Academy proposal (2021-10-L) and the ACLI proposal (2021-11-L) and support the adoption of the ACLI proposal. The ACLI proposal was developed by Moody's Analytics, which is a premier credit analysis company. We believe that the methodology they used in developing the factors is state-of-the-art and superior to the older methods employed by the Academy. As a result, companies investing in highly rated bonds are not penalized for holding those assets. Furthermore, the portfolio adjustment factor proposed by Moody's is much less punitive than the that in the Academy proposal for small companies such as ours. As a result, I highly urge the Working Group to adopt the ACLI proposal.

Thank you for taking our concerns into account as you deliberate this important matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark A. Haydukovich", with a long, sweeping horizontal line extending to the right.

Mark A. Haydukovich  
President and CEO

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**Stephen M. Shaffer**  
*Board Chair, President and CEO*  
Office: 515-440-7888  
Toll Free: 800-477-3633 Ext. 7888  
email: sshaffer@homesteaderslife.com

May 21, 2021

Mr. Philip Barlow  
Chair  
NAIC Life Risk-Based Capital Working Group

Dear Mr. Barlow,

I am writing on behalf of my company, Homesteaders Life Company, concerning the two exposure drafts related to RBC factors for bonds. As bonds are, by far, the largest asset class that we own, the choice of RBC factors is critical. We have reviewed both the Academy proposal (2021-10-L) and the ACLI proposal (2021-11-L) and support the adoption of the ACLI proposal. The ACLI proposal was developed by Moody's Analytics, which is a premier credit analysis company. We believe that the methodology they used in developing the factors is state-of-the-art and superior to the older methods employed by the Academy. As a result, companies investing in highly-rated bonds are not penalized for holding those assets. Furthermore, the portfolio adjustment factor proposed by Moody's is much less punitive than that in the Academy proposal for small companies such as ours. As a result, I highly urge the Working Group to adopt the ACLI proposal.

Thank you for taking our concerns into account as you deliberate this important matter.

Sincerely,

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David Fleming  
Senior Insurance Reporting Analyst  
NAIC  
444 North Capitol Street NW, Suite 700  
Washington, DC 20001

Dear Mr. Fleming,

The American Fraternal Alliance (Alliance) appreciates the opportunity to provide input to the Life Risk-Based Capital Working Group on the review of the proposal from the American Academy of Actuaries (Academy) and a newer plan supplied by ACLI and Moody's Analytics (ACLI) related to the C-1 Bond Factor project.

The Alliance urges the NAIC to consider implementing the proposal provided the ACLI. In previous years, Alliance members participated in a survey that demonstrated that incorporating the Academy recommendations unintentionally reduced the RBC ratios of many small-to-mid size insurers, including fraternal, significantly.

This impact to solvency ratio(s) can be misinterpreted by regulators or the general public based solely on a change in the formula. A fraternal's actual assets, liabilities and surplus will not have changed, but the change in ratio(s) calculation or trend can be very misleading.

The magnitude of the changes in the Academy proposal is severe for smaller companies when the new portfolio adjustment factor is applied. The impact of the proposed changes will be significant, especially for smaller insurers like many fraternal.

The Alliance supports consideration of the ACLI proposal which includes up-to-date data, provides more intuitive results, and is less punitive than the Academy proposal on smaller insurers like fraternal.

Thank you for giving the Alliance the opportunity to provide feedback. Please contact me with questions or comments.

A handwritten signature in black ink that reads "Allison H. Koppel". The signature is fluid and cursive, with the first name being the most prominent.

Allison Koppel  
CEO  
American Fraternal Alliance  
[akoppel@fraternalalliance.org](mailto:akoppel@fraternalalliance.org)

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May 27, 2021

NAIC

Attn: Mr. Dave Fleming  
1100 Walnut Street, Suite 1500  
Kansas City, MO 64106-2197

Re: RBC

Dear Mr. Fleming,

Catholic Financial Life appreciates the opportunity to provide input to the Life Risk-Based Capital Working Group on the review of the proposal from the American Academy of Actuaries (Academy) and a newer plan supplied by ACLI and Moody's Analytics (ACLI) related to the C-1 Bond Factor project.

Consistent with the view from the American Fraternal Alliance (AFA), the Society urges the NAIC to consider implementing the proposal provided by the ACLI. Following is the projected impact on the Society utilizing March 31, 2021 assets, assumptions and factors for both the Academy and ACLI:

	<b>Actual</b>	<b>Academy Factors</b>	<b>ACLI Factors</b>
RBC Ratio	1087%	923%	1000%
Difference from Actual	0%	-164%	-87%

While Catholic Financial Life remains well capitalized under both proposed factor changes, the impact to solvency ratio(s) can be misinterpreted by regulators or the general public based solely on a change in the formula. A fraternal's actual assets, liabilities and surplus will not have changed, but the change in ratio(s) calculation, or trend, can be very misleading. Additionally, the magnitude of the changes in the Academy proposal is anticipated to be severe for smaller companies when the new portfolio adjustment factor is applied. This is reflective for Catholic Financial Life as the



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[www.catholicfinanciallife.org](http://www.catholicfinanciallife.org)



Academy factors are projected to decrease by nearly twice as much as the ACLI factors.

Catholic Financial Life supports consideration of the ACLI proposal which includes up-to-date data, provides more intuitive results, and is less punitive than the Academy proposal on insurers like Catholic Financial Life and other smaller fraternal.

Thank you for giving Catholic Financial Life the opportunity to provide feedback. Please contact us with questions or comments.

Sincerely,

William R. O'Toole  
 CEO  
 T (414) 278-6700 | (800) 927-2547  
 F (414) 273-2120  
[Bill.Otoole@catholicfinanciallife.org](mailto:Bill.Otoole@catholicfinanciallife.org)

John Borgen  
 President  
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 F (414) 273-2120  
[John.Borgen@catholicfinanciallife.org](mailto:John.Borgen@catholicfinanciallife.org)

Kari Diestelhorst  
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[Kari.Diestelhorst@catholicfinanciallife.org](mailto:Kari.Diestelhorst@catholicfinanciallife.org)



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Via Email

Friday, May 21, 2021

Mr. Fleming,

I am reaching out regarding the two Bond Factor proposals that the NAIC is considering. The Catholic Association of Foresters supports the ACLI proposal as it includes up to date data and provides more intuitive results. This option is also less punitive to smaller insurers.

Thank you in advance for your support.

Christine Cunningham  
High Secretary – Treasurer  
Catholic Association of Foresters

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Via Email

Wednesday, May 26, 2021

I respectfully request that the Life Risk-Based Capital (E) Working Group consider supporting the ACLI proposal as opposed to the American Academy of Actuaries (Academy). The ACLI proposal includes up-to-date data, provides more intuitive results and is less punitive than the Academy's proposal on smaller insurers like fraternal.

Thank you for your consideration in this matter.

Theresa

*Theresa A. Kluchinski  
National President  
Ladies Pennsylvania Slovak Catholic Union  
71 S. Washington Street  
Wilkes-Barre, PA 18701*

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Via Email

Thursday, May 20, 2021

Good afternoon Mr. Fleming,

My name is Scott Pogorelec and I am the Executive Secretary of the Slovak Catholic Sokol (#57193). Just wanted to reach out to the Life RBC Working Group in hopes you support the ACLI proposal in regard to the adjustment of bond factors. The Academy's proposal would negatively impact fraternalists like ourself in a major way.

I thank you for your time in reading this.

All the best!

Scott T. Pogorelec, F.I.C.  
Supreme Secretary

Slovak Catholic Sokol  
205 Madison St.  
Passaic, NJ 07055

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Via Email

Monday, May 24, 2021

Mr. Fleming,

As the CFO of a small fraternal insurer I am contacting you to urge the NAIC to support the ACLI proposal for revised C-1 bond factors. While both the American Academy of Actuaries and ACLI proposals could suddenly lower our RBC, the ACLI model includes up-to-date data, provides more intuitive results, and is less punitive than the Academy proposal on smaller insurers like Sons of Norway. Thank you for your time and attention to this matter.

Fraternally,

**Erica Oberg**  
Chief Financial Officer



Our mailing address is  
1455 W Lake St, Minneapolis, MN, 55408

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JOHN A. FRIEDERICH  
GENERAL COUNSEL AND SECRETARY



230 16<sup>th</sup> Street  
Rock Island, Illinois 61201  
Toll-free: (800) 627-4762

Direct: (309) 732-8281  
Fax: (309) 788-3887  
Email: John.Friederich@royalneighbors.org

May 25, 2021

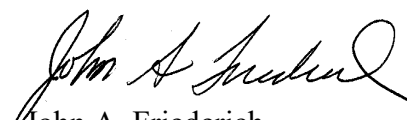
Mr. Philip Barlow  
Chair  
NAIC Life Risk-Based Capital Working Group

Dear Mr. Barlow,

I am writing on behalf of my society, Royal Neighbors of America, concerning the two exposure drafts related to RBC factors for bonds. As bonds are, by far, the largest asset class that we own, the choice of RBC factors is critical. We have reviewed both the Academy proposal (2021-10-L) and the ACLI proposal (2021-11-L) and support the adoption of the ACLI proposal. The ACLI proposal was developed by Moody's Analytics, which is a premier credit analysis company. We believe that the methodology they used in developing the factors is state-of-the-art and superior to the older methods employed by the Academy. The proposed Moody's C-1 Factors are more differentiated across the current C-1 factors and have a steeper slope than the current C-1 factors proposed by the Society of Actuaries. In addition, the method used by Moody's Analytics better captures economic risks of insurers fixed income portfolios. As a result, companies investing in highly rated bonds are not penalized for holding those assets. Furthermore, the portfolio adjustment factor proposed by Moody's is much less punitive than that in the Academy proposal for small companies such as ours. Given all of these factors, I highly urge the Working Group to adopt the ACLI proposal.

Thank you for taking our concerns into account as you deliberate this important matter.

Sincerely,



John A. Friederich  
General Counsel & Secretary

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AMERICAN ACADEMY of ACTUARIES

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*Objective. Independent. Effective.™*

May 27, 2021

Mr. Philip Barlow  
Chair  
Life Risk-Based Capital Working Group (LRBCWG)  
National Association of Insurance Commissioners (NAIC)

Dear Philip,

The American Academy of Actuaries<sup>1</sup> C1 Work Group (C1WG) appreciates the opportunity to comment on the exposure drafts of factors for bonds (*Exposure of American Academy of Actuaries' and American Council of Life Insurers' Proposed Bond Factors and Instructions*, exposed by the LRBCWG on April 21, 2021). We recognize the tight timetable to adopt a set of bond factors by June 30, 2021, and as such our comments will highlight the areas of greatest importance consistent with this timeline. In particular, our letter highlights those areas that are both material to the resulting factors and represent the greatest difference with the C1WG's updated factors.<sup>2</sup>

The choice before the LRBCWG involves two different methodologies to forecast credit risk for the purpose of determining capital requirements. With the exception of the corporate tax rate, the C1WG's recommendations are based on the existing C1 bond framework with updated assumptions consistent with the timeframe when the majority of our modeling was conducted (in the early 2010s). The C1WG has provided extensive analysis, documentation, and explanations for the updated factors. Our work was guided by the request of regulators and several discussions with regulators throughout our work.

Moody's Analytics (MA) has provided the LRBCWG with an alternative approach using a different method for measuring credit risk along with different assumptions. Some of its modeling choices have been described as more sophisticated and utilize more modern techniques. Some of the methods used by MA to project credit losses not only update for recent experience, but also represent a philosophical departure from the methods that have been used in establishing capital requirements. While some of their methods may do a better job projecting credit risk, it is difficult to completely analyze the differences without full disclosure and detailed documentation of the basis and assumptions used in the MA model.

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<sup>1</sup> The American Academy of Actuaries is a 19,500-member professional association whose mission is to serve the public and the U.S. actuarial profession. For more than 50 years, the Academy has assisted public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

<sup>2</sup> [https://www.actuary.org/sites/default/files/2021-03/C1\\_Bond\\_Factor\\_Tax\\_Update\\_03112021\\_Final.pdf](https://www.actuary.org/sites/default/files/2021-03/C1_Bond_Factor_Tax_Update_03112021_Final.pdf).

Nevertheless, comparing the MA recommended factors to the factors recommended by the C1WG, we make the following high-level comparisons based on some rudimentary analysis:

- A. MA modeled loss experience has almost no effect, on average, on the bond factors but has significant effect across ratings. Modeled loss experience is a combination of the assumptions for default rates, loss given default (1 – recovery percentage), and the use of a correlated default rate approach;
- B. MA risk premium assumptions decrease the factors by approximately 18%; and
- C. MA discount rate assumption increases the factors by approximately 6-7%.

In the following section, we identify our most significant questions with each of these major areas of difference.

## **A. Modeled Loss Experience**

The C1WG estimates the MA base factors are 0.2% lower than the C1WG's factors due to differences between the C1WG and MA assumptions for modeled loss experience where the materiality of those differences varies by rating class. Isolating only the modeled loss experience, the MA factors for Aaa-A1 ratings are lower than the C1WG bond factors on average by 11.3% while the Baa1-Caa3 factors recommended by MA are higher by 12.5% on average. Though not completely quantifiable due to undisclosed assumptions, our analysis suggests that most of the difference in modeled loss is attributable to the default rate assumption rather than the recovery assumption.

### **1. Default Rates**

A comparison of default rates assumed by MA and the C1WG is challenging given the use of different time periods for the experience and MA's use of a tailored life industry default series. We observe that the additional eight years of default experience reduces the default probabilities for all corporate sectors combined. If the C1WG used the additional eight years in its model, the C1 bond factors would decrease. Whether to use the additional eight years would be the subject of significant discussion; the C1WG would explore if 38 years of experience should be used, or whether it would make sense to use a set time frame (e.g., 30 or 35 years).

Further complicating the comparison of base default rates is that MA uses default rates specifically developed for the life insurance industry. MA's decision to include or exclude certain experience results in a downward bias for Aaa-A2 issuers and an upward bias for Baa1-Ba2 issuers as compared to default experience for the entire corporate sector. These customized default rates resulted in the "steeper slope" for the 20 C1 bond factors, resulting in lower capital charges for the highest investment-grade bonds.

In the next several paragraphs, we expand on the observations above. However, the overriding consideration for regulators should be whether the capital requirements should be based solely on aggregate historical default probabilities for the entire corporate sector applied to typical life



insurance portfolios, or whether capital requirements should be based on customized default probabilities (i.e., historical experience adjusted for outliers, shifting sector allocations, and other subjective considerations). The current basis for capital requirements is historical default experience for the entire U.S. corporate holdings (financials, industrials, and utilities).

Figure 1 shows that the additional default experience of 2013–2020 decreased 10-year cumulative default rates by about 20% with all quality ratings showing lower default rates except for Aa1 (note that 1983–2020 experience is in the numerator and 1983–2012 experience is in the denominator). Ratings below B3 are not shown because they are not available for Caa1–Caa3 in the 1983–2020 Moody’s report (*Moody’s Annual Default Study*, January 28, 2021).

Figure 1

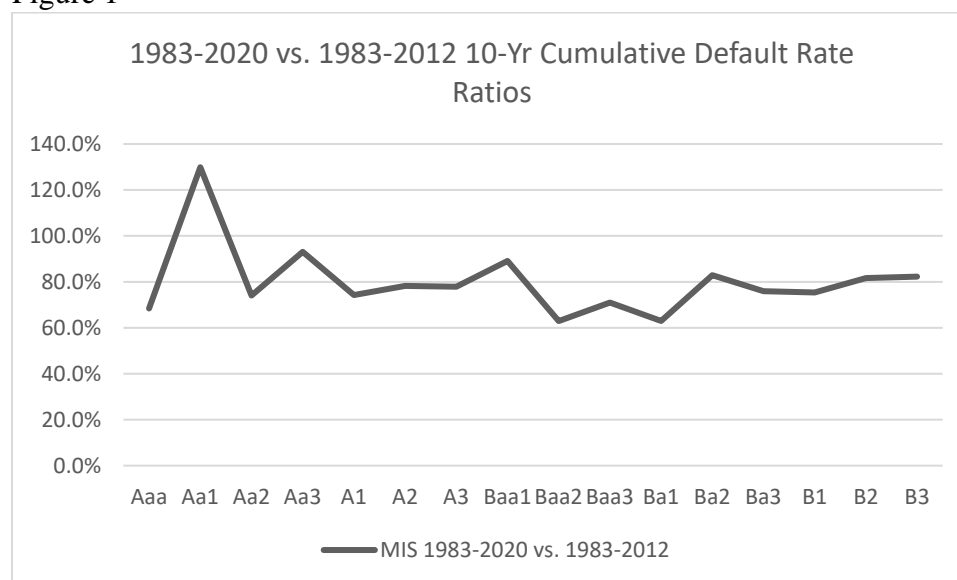


Figure 2 shows the ratios of the default rates assumed vs. reported by Moody’s Investor Service (MIS) for the respective experience periods evaluated by the C1WG and MA. The MA ratios show a downward bias of assumed rates for Aaa–A2 and upward bias for Baa1–Ba2 whereas the C1WG ratios tend to track more closely to 100% of the MIS default rates.

Figure 2

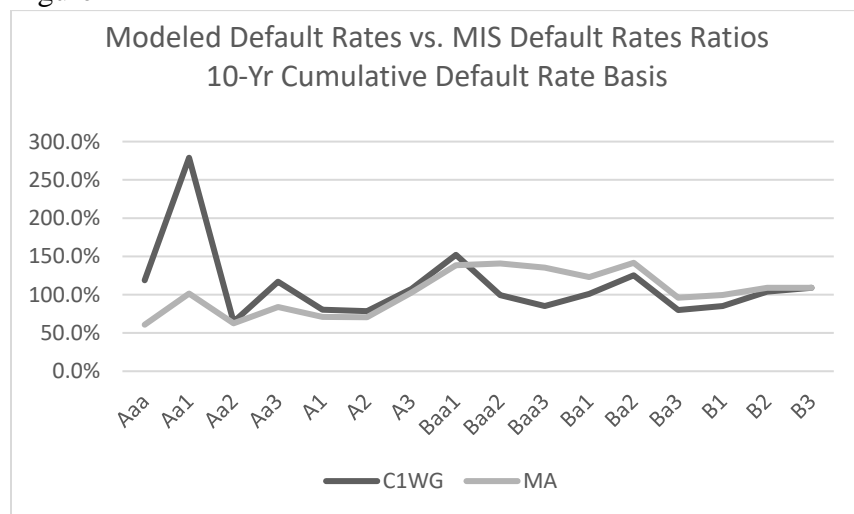


Figure 3 shows a side-by-side view of the values embedded in the ratios of Figure 2. The bias described above of the MA rates is apparent in the right-hand graph.

Figure 3

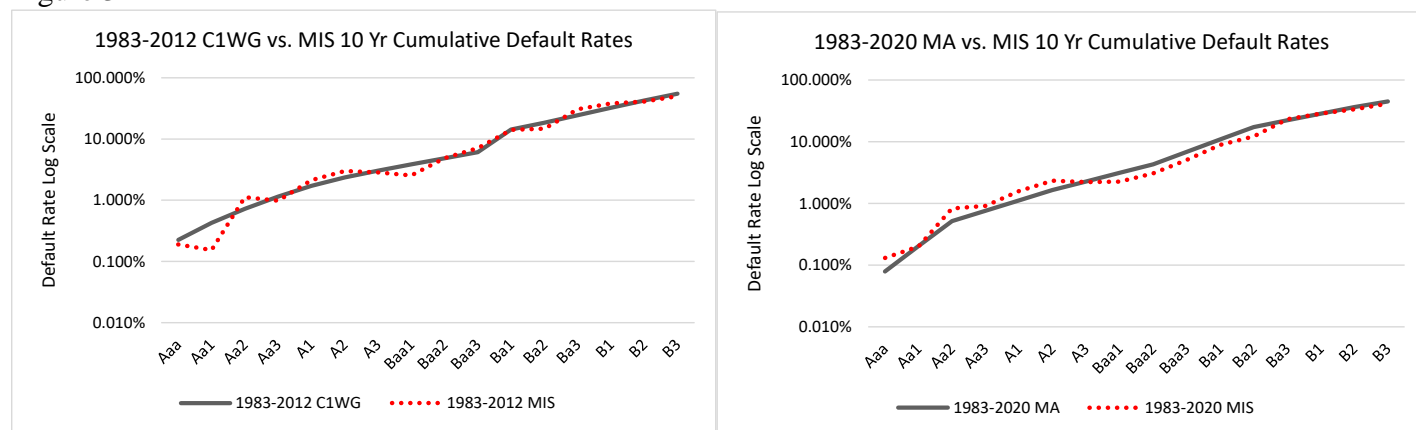
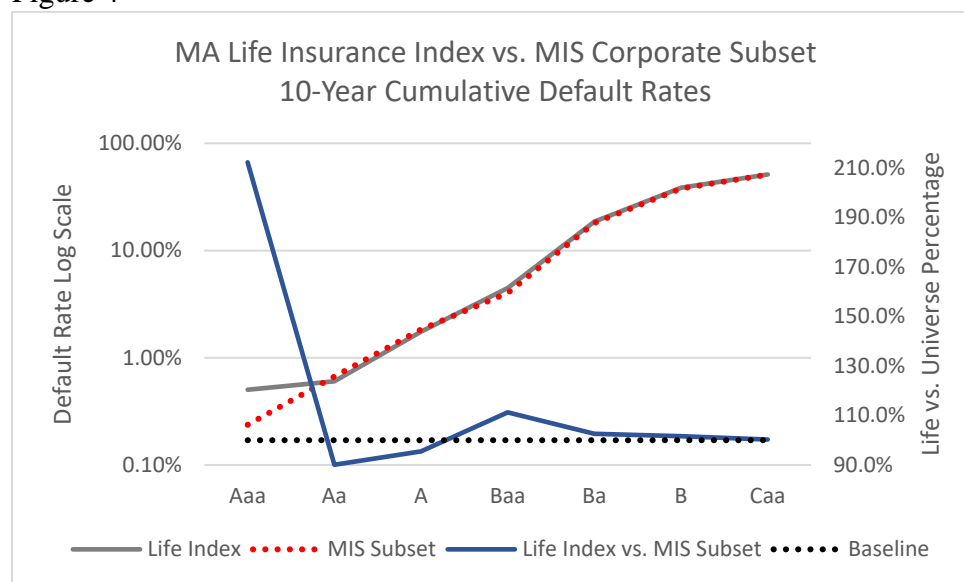


Figure 4 shows the 1983–2020 10-year cumulative default rates for U.S. corporates (a subset of the annually reported MIS default rates) before smoothing and adjustments on two bases: 1) MA’s tailored life insurance series (Life Index) based on life insurance industry sector weightings and, 2) the MIS U.S. corporate rates (MIS Subset) weighted by total corporate issuance of the sectors shown. Because the rate differences are difficult to illustrate using base values, they are shown as the percentage of the Life Index to the MIS Subset in the right-hand secondary axis. The bias of the MA Life Index rates above and below the MIS Subset rates suggests that at least some of the bias noted above is due to the construction of the tailored life insurance default rates. Because the MA Life Index rates are unsmoothed in this view, the bias for Aaa is not apparent.

The tailored Aaa life insurance default rate was reduced from 0.503% to 0.079%.

Figure 4



Based on the above analysis in Figures 1-4, the C1WG concludes that there is a downward bias for higher ratings of default rates assumed by MA relative to historical 1983–2020 default rates published by MIS. This is due at least in part to the tailored weightings of life insurance industry exposure of sector-specific default rates.

The MA default rates relative to the MIS rates for the same period are also affected by the selection of a subset of the MIS universe as described in the MA documentation. These filters produced the default rates shown in Tables 8 and 16 that directly inform MA’s baseline empirical default rates, as described in Appendix Section 8.2. Because the filtering process does not completely reconcile the starting point of the MIS published rates and the endpoint of the U.S. corporate issuers, the C1WG is unable to draw further conclusions about the appropriateness of these exclusions and the resulting subset of U.S. corporate-based default rates.

A few additional comments:

- a. MA has separated default experience for three different sectors (utilities, financials, and industrials). Based on conversations with Moody’s Investor Services, our understanding was that differences in expected loss were captured in the assigned rating class. We are curious why different C1 bond factors are created for different sectors, given that Global Ratings Methodology assigns equivalent ratings across all sectors. The LRBC calculation relies on the assigned rating from an NRSRO (nationally recognized statistical rating organizations) and the principle of equivalent ratings by sector. Why is MA subdividing default experience by sector when MIS has stated the equivalence of ratings by sector?

- b. The downward adjustment of Aaa experience based on removing the two selected events as outliers (Getty Oil and Texaco) has contributed to pulling down the MA loss curve for higher-quality ratings. This pulling down of the fitted curve at its inception point contributes to the difficulties of tracking closer to MIS experience. We are curious as to why this modification was made, given the apparent bias created. Additionally, the Aaa default probability is used as an anchor point for all other default probabilities along the credit spectrum; therefore, while life insurers have a relatively small exposure to Aaa securities, adjusting the Aaa loss assumptions downward affects all exposures.

## 2. Variation of Baseline Total Loss Experience

The C1WG model uses an economic state model to project different loss experience that varies with the economic state (i.e., contraction, expansion). The C1WG bond model projects loss experience over 10,000 economic scenarios, with the resulting C1 bond factors developed from equal weighting of the scenario specific results. Moody's is recommending a different approach using a more complex model that assumes correlated loss experience between bonds. MA analysis showed that use of this correlation model increased total loss from the base case by 24-28%. The C1WG's analysis concluded that its economic state model increased total loss from the base case by 26%. Therefore, the approach for reflecting how total loss varies due to economic conditions is approximately the same on average but the effect varies materially by rating.

The documentation provided by MA does not describe how its correlation algorithm was calibrated and validated against actual default experience. In parameterizing the economic state algorithm, the C1WG's bond model increased losses in contractions and decreased losses in expansions. Additionally, we compared the "stressed results" to actual loss experience to ensure the model was reasonable over the entire 10-year projection period.

While there may be validity in assuming correlation within a bond portfolio, the approach used by MA is a significant departure in method. Without further study and greater disclosure of the MA model, it is difficult to provide additional comments.

## 3. Recovery Assumptions

The differences between MA and the C1WG on this assumption are relatively minor. The average loss given default (LGD) for MA is 52% while the average LGD used by the C1WG is 53%. Each entity uses a histogram of possible recovery percentages in developing its respective sets of C1 bond factors. The C1WG used recovery assumptions for senior unsecured debt as approximately 85% of bonds held by life insurers are senior unsecured bonds. While MA also used senior unsecured debt as the assumed lien position, it produced a weighted LGD tailored to the sector mix of life insurance industry holdings. The difference as modeled by MA between the C1WG and MA LGD assumptions was described as a "moderate decrease" in MA's April 15, 2021, presentation to the LRBCWG. These slight differences between the recovery assumptions do not appear to be material relative to other assumptions (particularly the default rate).

## **B. Risk Premium**

As we have discussed in our July 17, 2018, [letter<sup>3</sup> to the Investment Risk-Based Capital \(IRBC\) Working Group](#), we continue to recommend the use of the mean of the loss distribution for the risk premium (RP). The RP assumption was established when the existing NAIC solvency framework was implemented. The C-1 bond factors assume that statutory policy reserves cover moderately adverse conditions, approximated as one standard deviation. The Asset Valuation Reserve (AVR) bond component is assumed to cover risks between the mean and one standard deviation, with the C-1 bond component covering risks between one standard deviation and the 96<sup>th</sup> percentile. Capital requirements for life insurers are not intended to make up for any deficiencies in reserve requirements and do not make allowances for any excesses or deficiencies in statutory policy reserves. Finally, the C-1 bond factor is applied to all bonds, and not just those bonds backing statutory policy reserves; consequently, any offset for the C-1 factor should only apply to those assets backing policy reserves.

If the RP is changed in the C1 bond factors, then the AVR Bond Component should be reviewed as well as the requirements for reflecting credit risk in statutory policy reserves, including the Actuarial Opinion and Memorandum. Reducing capital requirements for credit risk under the guise that statutory policy reserves cover a larger portion of credit risk than when RBC was first designed should be done with the assurance that corresponding provisions have been made for statutory policy reserves.

## **C. Discount Rate**

We believe the use of a discount rate updated for recent experience, consistent with other updated assumptions, is appropriate.

## **D. Modeling Questions**

1. Representative Portfolio
2. Cash Flow Projections
3. Stochastic Scenario Calculation

We also have questions related to the modeling mechanics and the derivation of the specific bond factors. Our understanding of the Moody's loss assumptions is that they were developed for a typical life insurer's bond portfolio. MA has used default probabilities that have been customized for the life insurance industry by removing specific default events and

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<sup>3</sup> [https://www.actuary.org/sites/default/files/files/publications/Academy\\_C1WG\\_RP\\_Assumptions\\_071718.pdf](https://www.actuary.org/sites/default/files/files/publications/Academy_C1WG_RP_Assumptions_071718.pdf).

altering the sector weightings (e.g., reducing the weight assigned to financials, a sector with poor credit experience in the Great Recession). Those default probabilities are applied to a modeled portfolio of bonds to project credit losses. What are the characteristics of that portfolio?

The C1WG's factors were based on sector-wide loss given default experience for all corporate bonds (public bonds, senior unsecured) and applied to a representative portfolio for life insurers. The C1WG calculated the after tax base factor capital (before the portfolio adjustment) as the after tax present value of the maximum loss over a 10-year period. Losses are defined as the total annual losses offset by annual risk premium. Losses occurring before the end of the 10-year period are reinvested at the original quality rating and subject to subsequent additional loss until the end of the original 10-year period. Losses for these preliminary base factors were calculated at the 96<sup>th</sup> percentile level.

Although an 824-issuer portfolio is referenced in the MA documentation, it is not clear how this portfolio is used in the MA projection of bond losses. Also, there is no description of the projection mechanics (e.g., scenarios, calculation of the scenario-specific factor, scenario weights, etc.).

The components for determining projected losses comprise a material assumption and are critical to gaining comfort with the recommended factors.

\*\*\*\*\*

We continue to encourage the LRBC to adopt the factors recommended by the C1WG. These factors were developed in response to the request of the C1WG by regulators, which was to update the C1 bond factors, consistent with the prevailing solvency framework for U.S. life insurance companies. Throughout the lengthy process in which the NAIC has been considering this proposal, the C1WG has worked with regulators and industry in evaluating the merits of different modeling choices and the impact of assumptions. Our recommended factors reflect the regulators' decisions leading up to the request being made and during this process. These factors satisfy the regulator-stated objectives of identifying potentially weakly capitalized companies using public information reported in statutory financial statements. A key question may be whether regulators are seeking a new framework for the factors or a framework to pursue factors in line with the prior framework.

We continue to be available to answer regulators' questions and look forward to the final disposition on this lengthy project.

Sincerely,

Nancy Bennett, MAAA, FSA, CERA

Co-Chairperson, C1WG

Jerry Holman, MAAA, FSA, CFA

Co-Chairperson, C1WG

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## Capital Adequacy (E) Task Force

### RBC Proposal Form

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Capital Adequacy (E) Task Force  | <input type="checkbox"/> Health RBC (E) Working Group     | <input checked="" type="checkbox"/> Life RBC (E) Working Group |
| <input type="checkbox"/> Catastrophe Risk (E) Subgroup    | <input type="checkbox"/> Investment RBC (E) Working Group | <input type="checkbox"/> Operational Risk (E) Subgroup         |
| <input type="checkbox"/> C3 Phase II/ AG43 (E/A) Subgroup | <input type="checkbox"/> P/C RBC (E) Working Group        | <input type="checkbox"/> Longevity Risk (A/E) Subgroup         |

<b>DATE:</b> <u>4/22/21</u>	<b><u>FOR NAIC USE ONLY</u></b>
<b>CONTACT PERSON:</b> <u>Dave Fleming</u>	Agenda Item # <u>2021-10-L</u>
<b>TELEPHONE:</b> <u>816-783-8121</u>	Year <u>2021</u>
<b>EMAIL ADDRESS:</b> <u>dfleming@naic.org</u>	<b><u>DISPOSITION</u></b>
<b>ON BEHALF OF:</b> <u>Life Risk-Based Capital (E) Working Group</u>	<input type="checkbox"/> ADOPTED
<b>NAME:</b> <u>Philip Barlow, Chair</u>	<input type="checkbox"/> REJECTED _____
<b>TITLE:</b> <u>Associate Commissioner of Insurance</u>	<input type="checkbox"/> DEFERRED TO _____
<b>AFFILIATION:</b> <u>District of Columbia</u>	<input type="checkbox"/> REFERRED TO OTHER NAIC GROUP
<b>ADDRESS:</b> <u>1050 First Street, NE Suite 801</u>	<input checked="" type="checkbox"/> EXPOSED <u>4/22/21</u>
<u>Washington, DC 20002</u>	<input type="checkbox"/> OTHER (SPECIFY) _____

#### IDENTIFICATION OF SOURCE AND FORM(S)/INSTRUCTIONS TO BE CHANGED

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Health RBC Blanks       | <input type="checkbox"/> Property/Casualty RBC Blanks       | <input checked="" type="checkbox"/> Life and Fraternal RBC Instructions |
| <input type="checkbox"/> Health RBC Instructions | <input type="checkbox"/> Property/Casualty RBC Instructions | <input checked="" type="checkbox"/> Life and Fraternal RBC Blanks       |
| <input type="checkbox"/> OTHER _____             |   |   |

#### DESCRIPTION OF CHANGE(S)

This proposal incorporates bond factors proposed by the American Academy of Actuaries (Academy) for the expanded presentation of bond designation categories in the annual statement and risk-based capital (RBC) schedules.

#### REASON OR JUSTIFICATION FOR CHANGE \*\*

The expanded presentation of bonds is a result of the work of the Investment Risk-Based Capital (E) Working Group. The factors represent the Academy's work on this project. The Academy's proposed factors had been previously discussed and exposed for comment at the Investment Risk-Based Capital (E) Working Group in the Academy's 2015 and 2017 reports. The factors included in this proposal have been updated for tax changes that occurred after the initial factors were presented.

#### Additional Staff Comments:

- 4-22-21: Proposal was exposed for comments (DBF)

\*\* This section must be completed on all forms.

Revised 2-2019

Company Name

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Attachment 24  
NAIC Company Code

BONDS

SVO Bond		Annual Statement Source	(1)		(2)	
Designation Category			Book / Adjusted	Factor	RBC	Requirement
Long Term Bonds			Carrying Value			
(1)	Exempt Obligations	AVR Default Component Column 1 Line 1	_____	X 0.0000	=	_____
(2.1)	NAIC Designation Category 1.A	AVR Default Component Column 1 Line 2.1	_____	X 0.0029	=	_____
(2.2)	NAIC Designation Category 1.B	AVR Default Component Column 1 Line 2.2	_____	X 0.0042	=	_____
(2.3)	NAIC Designation Category 1.C	AVR Default Component Column 1 Line 2.3	_____	X 0.0055	=	_____
(2.4)	NAIC Designation Category 1.D	AVR Default Component Column 1 Line 2.4	_____	X 0.0070	=	_____
(2.5)	NAIC Designation Category 1.E	AVR Default Component Column 1 Line 2.5	_____	X 0.0084	=	_____
(2.6)	NAIC Designation Category 1.F	AVR Default Component Column 1 Line 2.6	_____	X 0.0102	=	_____
(2.7)	NAIC Designation Category 1.G	AVR Default Component Column 1 Line 2.7	_____	X 0.0119	=	_____
(2.8)	Subtotal NAIC 1	Sum of Lines (2.1) through (2.7)	=====		=	=====
(3.1)	NAIC Designation Category 2.A	AVR Default Component Column 1 Line 3.1	_____	X 0.0137	=	_____
(3.2)	NAIC Designation Category 2.B	AVR Default Component Column 1 Line 3.2	_____	X 0.0163	=	_____
(3.3)	NAIC Designation Category 2.C	AVR Default Component Column 1 Line 3.3	_____	X 0.0194	=	_____
(3.4)	Subtotal NAIC 2	Sum of Lines (3.1) through (3.3)	=====		=	=====
(4.1)	NAIC Designation Category 3.A	AVR Default Component Column 1 Line 4.1	_____	X 0.0365	=	_____
(4.2)	NAIC Designation Category 3.B	AVR Default Component Column 1 Line 4.2	_____	X 0.0466	=	_____
(4.3)	NAIC Designation Category 3.C	AVR Default Component Column 1 Line 4.3	_____	X 0.0597	=	_____
(4.4)	Subtotal NAIC 3	Sum of Lines (4.1) through (4.3)	=====		=	=====
(5.1)	NAIC Designation Category 4.A	AVR Default Component Column 1 Line 5.1	_____	X 0.0615	=	_____
(5.2)	NAIC Designation Category 4.B	AVR Default Component Column 1 Line 5.2	_____	X 0.0832	=	_____
(5.3)	NAIC Designation Category 4.C	AVR Default Component Column 1 Line 5.3	_____	X 0.1148	=	_____
(5.4)	Subtotal NAIC 4	Sum of Lines (5.1) through (5.3)	=====		=	=====
(6.1)	NAIC Designation Category 5.A	AVR Default Component Column 1 Line 6.1	_____	X 0.1683	=	_____
(6.2)	NAIC Designation Category 5.B	AVR Default Component Column 1 Line 6.2	_____	X 0.2280	=	_____
(6.3)	NAIC Designation Category 5.C	AVR Default Component Column 1 Line 6.3	_____	X 0.3000	=	_____
(6.4)	Subtotal NAIC 5	Sum of Lines (6.1) through (6.3)	=====		=	=====
(7)	NAIC 6	AVR Default Component Column 1 Line 7	_____	X 0.3000	=	_____
(8)	Total Long-Term Bonds	Sum of Lines (1) + (2.8) + (3.4) + (4.4) + (5.4) + (6.4) + (7)	=====		=	=====

(Column (1) should equal Page 2 Column 3 Line 1 + Schedule DL Part 1 Column 6 Line 7099999)

Company Name

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Short Term Bonds					
(9)	Exempt Obligations	AVR Default Component Column 1 Line 18	X	0.0000	=
(10.1)	NAIC Designation Category 1.A	AVR Default Component Column 1 Line 19.1	X	0.0029	=
(10.2)	NAIC Designation Category 1.B	AVR Default Component Column 1 Line 19.2	X	0.0042	=
(10.3)	NAIC Designation Category 1.C	AVR Default Component Column 1 Line 19.3	X	0.0055	=
(10.4)	NAIC Designation Category 1.D	AVR Default Component Column 1 Line 19.4	X	0.0070	=
(10.5)	NAIC Designation Category 1.E	AVR Default Component Column 1 Line 19.5	X	0.0084	=
(10.6)	NAIC Designation Category 1.F	AVR Default Component Column 1 Line 19.6	X	0.0102	=
(10.7)	NAIC Designation Category 1.G	AVR Default Component Column 1 Line 19.7	X	0.0119	=
(10.8)	Subtotal NAIC 1	Sum of Lines (10.1) through (10.7)			
(11.1)	NAIC Designation Category 2.A	AVR Default Component Column 1 Line 20.1	X	0.0137	=
(11.2)	NAIC Designation Category 2.B	AVR Default Component Column 1 Line 20.2	X	0.0163	=
(11.3)	NAIC Designation Category 2.C	AVR Default Component Column 1 Line 20.3	X	0.0194	=
(11.4)	Subtotal NAIC 2	Sum of Lines (11.1) through (11.3)			
(12.1)	NAIC Designation Category 3.A	AVR Default Component Column 1 Line 21.1	X	0.0365	=
(12.2)	NAIC Designation Category 3.B	AVR Default Component Column 1 Line 21.2	X	0.0466	=
(12.3)	NAIC Designation Category 3.C	AVR Default Component Column 1 Line 21.3	X	0.0597	=
(12.4)	Subtotal NAIC 3	Sum of Lines (12.1) through (12.3)			
(13.1)	NAIC Designation Category 4.A	AVR Default Component Column 1 Line 22.1	X	0.0615	=
(13.2)	NAIC Designation Category 4.B	AVR Default Component Column 1 Line 22.2	X	0.0832	=
(13.3)	NAIC Designation Category 4.C	AVR Default Component Column 1 Line 22.3	X	0.1148	=
(13.4)	Subtotal NAIC 4	Sum of Lines (13.1) through (13.3)			
(14.1)	NAIC Designation Category 5.A	AVR Default Component Column 1 Line 23.1	X	0.1683	=
(14.2)	NAIC Designation Category 5.B	AVR Default Component Column 1 Line 23.2	X	0.2280	=
(14.3)	NAIC Designation Category 5.C	AVR Default Component Column 1 Line 23.3	X	0.3000	=
(14.4)	Subtotal NAIC 5	Sum of Lines (14.1) through (14.3)			
(15)	NAIC 6	AVR Default Component Column 1 Line 24	X	0.3000	=
(16)	Total Short-Term Bonds	Sum of Lines (9) + (10.8) + (11.4) + (12.4) + (13.4) + (14.4) + (15)			
		(Column (1) should equal Schedule DA Part 1 Column 7 Line 8399999 +			
		Schedule DL Part 1 Column 6 Line 8999999 + LR012 Miscellaneous Assets Column (1) Line (2.2) )			
(17)	Total Long-Term and Short-Term Bonds	Line (8) + (16)			
	(pre-MODCO/Funds Withheld)				
(18)	Credit for Hedging	LR014 Hedged Asset Bond Schedule Column 13 Line 0399999			
(19)	Reduction in RBC for MODCO/Funds	LR045 Modco or Funds Withheld Reinsurance			
	Withheld Reinsurance Ceded Agreements	Ceded - Bonds C-1o Column (4) Line (9999999)			
(20)	Increase in RBC for MODCO/Funds	LR046 Modco or Funds Withheld Reinsurance			
	Withheld Reinsurance Assumed Agreements	Assumed - Bonds C-1o Column (4) Line (9999999)			
(21)	Total Long-Term and Short-Term Bonds	Lines (17) - (18) - (19) + (20)			
	(including MODCO/Funds Withheld and Credit for Hedging adjustments.)				
(22)	Non-exempt U.S.	Schedule D Part 1-and Schedule DA	X	0.0029	=
	Government Agency Bonds	Part 1, in part†			
(23)	Bonds Subject to Size Factor	Line (21) - Line (1) - Line (9) - Line (22)			
(24)	Number of Issuers	Company Records			
(25)	Size Factor for Bonds				
(26)	Bonds Subject to Size Factor after the Size Factor is Applied	Line (23) x Line (25)			
(27)	Total Bonds	Line (22) + Line (26)			

† Only investments in U.S. Government agency bonds previously reported in Lines (2.8) and (10.8), net of those included on Line (19), plus the portion of Line (20) attributable to ceding companies' Lines (2.8) and (10.8) should be included on Line (22). No other bonds should be included on this line. Exempt U.S. Government bonds shown on Lines (1) and (9) should not be included on Line (22). Refer to the bond section of the risk-based capital instructions for more clarification.

Denotes items that must be manually entered on the filing software.

Company Name

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ASSET CONCENTRATION FACTOR

	(1)	(2)	(3)	(4)	(5)	(6)
		Book / Adjusted	Factor	Additional	Adjustment/	RBC
Asset Type		Carrying Value		RBC	Subsidiary RBC	Requirement
Issuer Name:						
(1.1) Bond NAIC Designation Category 2.A			X 0.0137	=		
(1.2) Bond NAIC Designation Category 2.B			X 0.0163	=		
(1.3) Bond NAIC Designation Category 2.C			X 0.0194	=		
(2.1) Bond NAIC Designation Category 3.A			X 0.0365	=		
(2.2) Bond NAIC Designation Category 3.B			X 0.0466	=		
(2.3) Bond NAIC Designation Category 3.C			X 0.0597	=		
(3.1) Bond NAIC Designation Category 4.A			X 0.0615	=		
(3.2) Bond NAIC Designation Category 4.B			X 0.0832	=		
(3.3) Bond NAIC Designation Category 4.C			X 0.1148	=		
(4.1) Bond NAIC Designation Category 5.A			X 0.1683	=		
(4.2) Bond NAIC Designation Category 5.B			X 0.2220	=		
(4.3) Bond NAIC Designation Category 5.C			X 0.1500	=		
(5) Bond NAIC 6			X 0.1500	=		
(6.1) Bond NAIC Designation Category 1.A †			X 0.0029	=		
(6.2) Bond NAIC Designation Category 1.B †			X 0.0042	=		
(6.3) Bond NAIC Designation Category 1.C †			X 0.0055	=		
(6.4) Bond NAIC Designation Category 1.D †			X 0.0070	=		
(6.5) Bond NAIC Designation Category 1.E †			X 0.0084	=		
(6.6) Bond NAIC Designation Category 1.F †			X 0.0102	=		
(6.7) Bond NAIC Designation Category 1.G †			X 0.0119	=		
(7) Unaffiliated Preferred Stock NAIC 2			X 0.0126	=		
(8) Unaffiliated Preferred Stock NAIC 3			X 0.0446	=		
(9) Unaffiliated Preferred Stock NAIC 4			X 0.0970	=		
(10) Unaffiliated Preferred Stock NAIC 5			X 0.2231	=		
(11) Unaffiliated Preferred Stock NAIC 6			X 0.1500	=		
(12) Unaffiliated Preferred Stock NAIC 1 †			X 0.0039	=		
(13) Collateral Loans			X 0.0680	=		
(14) Receivable for Securities			X 0.0140	=		
(15) Write-ins for Invested Assets			X 0.0680	=		
(16) Premium Notes			X 0.0680	=		
(17) Real Estate - Foreclosed				=		
(18) Real Estate - Foreclosed Encumbrances			X ‡	=		
(19) Real Estate - Investments				=		
(20) Real Estate - Investment Encumbrances			X ‡	=		
(21) Real Estate - Schedule BA				=		
(22) Real Estate - Schedule BA Encumbrances			X ‡	=		
(23) Farm Mortgages - Category CM2			X 0.0175	=		
(24) Farm Mortgages - Category CM3			X 0.0300	=		
(25) Farm Mortgages - Category CM4			X 0.0500	=		
(26) Farm Mortgages - Category CM5			X 0.0750	=		
(27) Commercial Mortgages - Category CM2			X 0.0175	=		
(28) Commercial Mortgages - Category CM3			X 0.0300	=		
(29) Commercial Mortgages - Category CM4			X 0.0500	=		
(30) Commercial Mortgages - Category CM5			X 0.0750	=		

† After the ten largest issuer exposures are chosen, any NAIC 1 bonds or preferred stocks from any of these issuers should be included.

‡ Refer to the instructions for the Asset Concentration Factor for details of this calculation.

Denotes items that must be manually entered on the filing software.

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ASSET CONCENTRATION FACTOR (CONTINUED)

(1)	(2) Book / Adjusted Carrying Value	(3) Factor	(4) Additional RBC	(5) Adjustment/ Subsidiary RBC	(6) RBC Requirement
(31) Farm Mortgages - 90 Days Overdue					
(32) Farm Mortgages - 90 Days Overdue - Cumulative Writedowns		X ‡			
(33) Residential Mortgages - 90 Days Overdue					
(34) Residential Mortgages - 90 Days Overdue - Cumulative Writedowns		X ‡			
(35) Commercial Mortgages - 90 Days Overdue					
(36) Commercial Mortgages - 90 Days Overdue - Cumulative Writedowns		X ‡			
(37) Farm Mortgages in Foreclosure					
(38) Farm Mortgages in Foreclosure - Cumulative Writedowns		X ‡			
(39) Residential Mortgages in Foreclosure					
(40) Residential Mortgages in Foreclosure - Cumulative Writedowns		X ‡			
(41) Commercial Mortgages in Foreclosure					
(42) Commercial Mortgages in Foreclosure - Cumulative Writedowns		X ‡			
(43) Unaffiliated Mortgages with Covenants		X ‡			
(44) Unaffiliated Mortgages - Defeased with Government Securities		X 0.0090			
(45) Unaffiliated Mortgages - Primarily Senior		X 0.0175			
(46) Unaffiliated Mortgages - All Other		X 0.0300			
(47) Affiliated Mortgages - Category CM2		X 0.0175			
(48) Affiliated Mortgages - Category CM3		X 0.0300			
(49) Affiliated Mortgages - Category CM4		X 0.0500			
(50) Affiliated Mortgages - Category CM5		X 0.0750			
(51) Schedule BA Mortgages 90 Days Overdue					
(52) Schedule BA Mortgages 90 Days Overdue - Cumulative Writedowns		X ‡			
(53) Schedule BA Mortgages in Process of Foreclosure					
(54) Schedule BA Mortgages Foreclosed - Cumulative Writedowns		X ‡			
(55) Federal Guaranteed Low Income Housing Tax Credits		X 0.0014			
(56) Federal Non-Guaranteed Low Income Housing Tax Credits		X 0.0260			
(57) State Guaranteed Low Income Housing Tax Credits		X 0.0014			
(58) State Non-Guaranteed Low Income Housing Tax Credits		X 0.0260			
(59) All Other Low Income Housing Tax Credits		X 0.1500			
(60) NAIC 02 Working Capital Finance Notes		X 0.0163			
(61) Other Schedule BA Assets		X 0.1500			
(62) Total of Issuer = Sum of Lines (1) through (61)					

NOTE: Ten issuer sections and a grand total page will be available on the filing software. The grand total page is calculated as the sum of issuers 1-10 by asset type.

‡ Refer to the instructions for the Asset Concentration Factor for details of this calculation.

Denotes items that must be manually entered on the filing software.

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HEDGED ASSET BOND SCHEDULE

As of:

Type of Hedged Asset	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Hedging Instruments				Hedged Asset - Bonds								RBC Credit	
	Description †	Notional Amount †	Relationship Type of the Hedging Instrument and Hedged Asset	Maturity Date †	Description †	CUSIP †	Book / Adjusted Carrying Value †	Overlap with Insurer's Bond Portfolio ‡	Maturity Date †	NAIC Designation Category †	RBC Factor §	Gross RBC Charge *	RBC Credit for Hedging Instruments £	Net RBC Charge **
Bonds														
(0100001)														
(0100002)														
(0100003)														
(0100004)														
(0100005)														
(0100006)														
(0100007)														
(0100008)														
(0100009)														
(0100010)														
(0100011)														
(0100012)														
(0100013)														
(0100014)														
(0100015)														
(0100016)														
(0100017)														
(0100018)														
(0100019)														
(0100020)														
(0100021)														
(0100022)														
(0100023)														
(0100024)														
(0100025)														
(0100026)														
(0100027)														
(0100028)														
(0100029)														
(0100030)														
(0199999)	Subtotal - NAIC 1 Through 5 Bonds		XXXXX	XXXXX	Subtotal	XXXXX			XXXXX	XXXXX	XXXXX			
(0299999)	Subtotal - NAIC 6 Bonds		XXXXX	XXXXX	Subtotal	XXXXX			XXXXX	XXXXX	XXXXX			
(0399999)	Total		XXXXX	XXXXX	Total	XXXXX			XXXXX	XXXXX	XXXXX			

Note: For the intermediate category of hedging, we recommend that the risk mitigation and resulting RBC credit be determined as if each specific security common to both the index/basket hedge and the portfolio is a basic hedge with the entire basic hedge methodology applied to each matching name. This includes the application of the maturity mismatch formula and the maximum RBC credit of 94% of the C-1 asset charge for fixed income hedges.

† Columns are derived from Investment schedules.

‡ The portion of Column (2) Notional Amount of the Hedging Instrument that hedges Column (7) Book / Adjusted Carrying Value. This amount cannot exceed Column (7) Book / Adjusted Carrying Value.

§ Factor based on Column (10) NAIC Designation and NAIC C-1 RBC factors table.

\* Column (7) Book Adjusted Carrying Value multiplied by Column (11) RBC Factor.

£ Column (13) is calculated according to the risk-based capital instructions.

\*\* Column (12) Gross RBC Charge minus Column (13) RBC Credit for Hedging Instruments.

Denotes manual entry items that do not come directly from the annual statement.

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**OFF-BALANCE SHEET COLLATERAL**

(Including any Schedule DL, Part 1 Assets not Included in the Asset Valuation Reserve)

		(1) Book / Adjusted Carrying Value	(2) Factor	(3) RBC Requirement
<u>Fixed Income - Bonds</u>				
(1) Exempt Obligations	Company Records		X 0.000	=
(2.1) NAIC Designation Category 1.A	Company Records		X 0.0029	=
(2.2) NAIC Designation Category 1.B	Company Records		X 0.0042	=
(2.3) NAIC Designation Category 1.C	Company Records		X 0.0055	=
(2.4) NAIC Designation Category 1.D	Company Records		X 0.0070	=
(2.5) NAIC Designation Category 1.E	Company Records		X 0.0084	=
(2.6) NAIC Designation Category 1.F	Company Records		X 0.0102	=
(2.7) NAIC Designation Category 1.G	Company Records		X 0.0119	=
(2.8) Subtotal NAIC 1	Sum of Lines (2.1) through (2.7)			
(3.1) NAIC Designation Category 2.A	Company Records		X 0.0137	=
(3.2) NAIC Designation Category 2.B	Company Records		X 0.0163	=
(3.3) NAIC Designation Category 2.C	Company Records		X 0.0194	=
(3.4) Subtotal NAIC 2	Sum of Lines (3.1) through (3.3)			
(4.1) NAIC Designation Category 3.A	Company Records		X 0.0365	=
(4.2) NAIC Designation Category 3.B	Company Records		X 0.0466	=
(4.3) NAIC Designation Category 3.C	Company Records		X 0.0597	=
(4.4) Subtotal NAIC 3	Sum of Lines (4.1) through (4.3)			
(5.1) NAIC Designation Category 4.A	Company Records		X 0.0615	=
(5.2) NAIC Designation Category 4.B	Company Records		X 0.0832	=
(5.3) NAIC Designation Category 4.C	Company Records		X 0.1148	=
(5.4) Subtotal NAIC 4	Sum of Lines (5.1) through (5.3)			
(6.1) NAIC Designation Category 5.A	Company Records		X 0.1683	=
(6.2) NAIC Designation Category 5.B	Company Records		X 0.2280	=
(6.3) NAIC Designation Category 5.C	Company Records		X 0.3000	=
(6.4) Subtotal NAIC 5	Sum of Lines (6.1) through (6.3)			
(7) NAIC 6	Company Records		X 0.300	=
(8) Total Bonds	Sum of Lines (1) + (2.8) + (3.4) + (4.4) + (5.4) + (6.4) + (7)			
<u>Fixed Income - Preferred Stock</u>				
(9) Asset NAIC 1	Company Records		X 0.0039	=
(10) Asset NAIC 2	Company Records		X 0.0126	=
(11) Asset NAIC 3	Company Records		X 0.0446	=
(12) Asset NAIC 4	Company Records		X 0.0970	=
(13) Asset NAIC 5	Company Records		X 0.2231	=
(14) Asset NAIC 6	Company Records		X 0.300	=
(15) Total Preferred Stock	Sum of Lines (9) through (14)			
(16) Common Stock	Company Records		X 0.450 †	=
(17) Schedule BA - Other Invested Assets	Company Records		X 0.300	=
(18) Other Invested Assets	Company Records		X 0.300	=
(19) Total Off-Balance Sheet Collateral	Lines (8) + (15) + (16) + (17) + (18)			

† The factor for common stock can vary depending on the type of stock. The factor would be subject to a minimum of 22.5 percent and a maximum of 45 percent.

Denotes items that must be manually entered on the filing software.

#REF!

## BONDS

### LR002

#### *Basis of Factors*

The bond factors are based on cash flow modeling using historically adjusted default rates for each bond category. For each of 2,000 trials, annual economic conditions were generated for the 10-year modeling period. Each bond of a 400-bond portfolio was annually tested for default (based on a “roll of the dice”) where the default probability varies by designation category and that year’s economic environment. When a default takes place, the actual loss considers the expected principal loss by category, the time until the sale actually occurs and the assumed tax consequences.

Actual surplus needs are reduced by incorporating anticipated annual contributions to the asset valuation reserve (AVR) as offsetting cash flow. Required surplus for a given trial is calculated as the amount of initial surplus funds needed so that the accumulation with interest of this initial amount and subsequent cash flows will not become negative at any point throughout the modeling period. The factors chosen for the proposed formula produce a level of surplus at least as much as needed in 92 percent of the trials by category and a 96 percent level for the entire bond portfolio.

The factor for NAIC 6 bonds recognizes that the book/adjusted carrying value of these bonds reflects a loss of value upon default by being marked to market.

#### *Specific Instructions for Application of the Formula*

##### Lines (1) through (7)

The book/adjusted carrying value of all bonds and related fixed-income investments should be reported in Column (1). The bonds are split into seven different risk classifications. For long-term bonds, these classifications are found on Lines 1 through 7 of the Asset Valuation Reserve Default Component, Page 30 of the annual statement.

##### Line (8)

The total should equal long-term bonds and other fixed-income instruments reported on Page 2, Column 3, Line 1 plus Schedule DL Part 1, Column 6, Line 7099999 ~~minus Schedule D, Part 1A, Section 1, Column 7, Line 7.7 of the annual statement.~~

##### Lines (9) through (15)

The book/adjusted carrying value of all bonds and related fixed-income investments should be reported in Column (1). The bonds are split into seven different risk classifications. For short-term bonds, these classifications are found on Lines 18 through 24 of the Asset Valuation Reserve Default Component, Page 30 of the annual statement.

##### Line (16)

The total should equal short-term bonds reported on Schedule DA, Part 1, Line 8399999 plus Schedule DL Part 1, Column 6, Line 8999999 plus LR012 Miscellaneous Assets Column (1) Line (2.2).

##### Line (22)

Class 1 bonds (highest quality) issued by a U.S. government agency that are not backed by the full faith and credit of the U.S. government should be reported on this line. The loan-backed securities of the Federal National Mortgage Association (FNMA) and the Federal Home Loan Mortgage Corporation (FHLMC) would be examples of the securities reported on this line. Line (22) should not be larger than the sum of Lines (2) and (10). Exempt obligations should not be included on this line.

##### Line (24)

Bonds should be aggregated by issuer (the first six digits of the CUSIP number can be used). Exempt U.S. government bonds and bonds reported on Line (22) are not counted in determining the size factor. The RBC for those bonds will not be included in the base to which the size factor is applied. If this field is left blank, the maximum size factor adjustment of ~~2.57.5~~ will be used.



Line (25)

The size factor reflects the higher risk of a bond portfolio that contains relatively fewer bonds. The overall factor decreases as the portfolio size increases. Portfolios with more than 1,300 issuers will receive a discount. The size factor is based on the weighted number of issuers. (The calculation shown below will not appear on the RBC filing software but will be calculated automatically.)

<u>Line (25)</u>	<u>Source</u>	(a)		(b)
		<u>Number of Issuers</u>		<u>Weighted Issuers</u>
First <del>50</del> 10	Company Records	_____	X <del>2.57.5</del>	= _____
Next <del>50</del> 90	Company Records	_____	X <del>4.31.75</del>	= _____
Next <del>300</del> 100	Company Records	_____	X <del>1.00.9</del>	= _____
<b>Next 300</b>	<b>Company Records</b>	_____	<b>XX 0.86.85</b>	<b>== _____</b>
Over <del>400</del> 500	Company Records	_____	X <del>0.90.75</del>	= _____
Total Number of Issuers from Line (23)		=====		=====
Total Weighted Issuers				=====
Size Factor = Total Weighted Issuers divided by Total Number of Issuers				=====

## ASSET CONCENTRATION FACTOR LR010

### *Basis of Factors*

The purpose of the concentration factor is to reflect the additional risk of high concentrations in single exposures (represented by an individual issuer of a security or a holder of a mortgage, etc.) The concentration factor doubles the risk-based capital pre-tax factor (with a maximum of 45 percent pre-tax) of the 10 largest asset exposures excluding various low-risk categories or categories that already have a maximum factor. Since the risk-based capital of the assets included in the concentration factor has already been counted once in the basic formula, the asset concentration factor only serves to add in the additional risk-based capital required. The calculation is completed on a consolidated basis; however, the concentration factor is reduced by amounts already included in the concentration factors of subsidiaries to avoid double-counting.

### *Specific Instructions for Application of the Formula*

The 10 largest asset exposures should be developed by consolidating the assets of the parent with the assets of the company's insurance and investment subsidiaries. The concentration factor component on any asset already reflected in the subsidiary's RBC for the concentration factor should be deducted from Column (4). This consolidation process affects higher tiered companies only. Companies on the lowest tier of the organizational chart will prepare the asset concentration on a "stand alone" basis.

The 10 largest exposures should exclude the following: affiliated and non-affiliated common stock, affiliated preferred stock, home office properties, policy loans, bonds for which AVR and RBC are zero, NAIC 1 bonds, NAIC 1 unaffiliated preferred stock, NAIC 1 Hybrids, CM 1 Commercial and Farm Mortgages and any other asset categories with RBC factors less than 0.8 percent post-tax (this includes residential mortgages in good standing, insured or guaranteed mortgages, and cash and short-term investments).

In determining the assets subject to the concentration factor for both C-1o and C-1cs, the ceding company should exclude any asset whose performance inures primarily (>50 percent) to one reinsurer under modified coinsurance or funds withheld arrangements. The reinsurer should include 100 percent of such asset. Any asset where no one reinsurer receives more than 50 percent of its performance should remain with the ceding company.

Assets should be aggregated by issuer before determining the 10 largest exposures. Aggregations should be done separately for bonds and preferred stock (the first six digits of the CUSIP number can be used as a starting point) (please note that the same issuer may have more than one unique series of the first six digits of the CUSIP), mortgages and real estate. Securities held within Schedule BA partnerships should be aggregated by issuer as if the securities are held directly. Likewise, where joint venture real estate is mortgaged by the insurer, both the mortgage and the joint venture real estate should be considered as part of a single exposure. Tenant exposure is not included. For bonds and unaffiliated preferred stock, aggregations should be done first for classes 2 through 6. After the 10 largest issuer exposures are chosen, any NAIC 1 bonds, NAIC 1 unaffiliated preferred stock or NAIC 1 hybrids from any of these issuers should be included before doubling the risk-based capital. For some companies, following the above steps may generate less than 10 "issuer" exposures. These companies should list all available exposures.

Replicated assets other than synthetically created indices should be included in the asset concentration calculation in the same manner as other assets.

The book/adjusted carrying value of each asset is listed in Column (2).

The RBC factor will correspond to the risk-based capital category of the asset reported previously in the formula before application of the size factor for bonds. The RBC filing software automatically allows for an overall 45 percent RBC cap.

Lines (17) through (22)

The Asset Concentration RBC Requirement for a particular property plus the Real Estate RBC Requirement for a particular property cannot exceed the book/adjusted carrying value of the property. Any properties exceeding the book/adjusted carrying value must be adjusted down to the book/adjusted carrying value in Column (6) of the Asset Concentration.

Line (18), Column (4) is calculated as Line (17), Column (2) multiplied by 0.2300 plus Line (18), Column (2) multiplied by 0.2000, but not greater than Line (17), Column (2).

Line (20), Column (4) is calculated as Line (19), Column (2) multiplied by 0.1500 plus Line (20), Column (2) multiplied by 0.1200, but not greater than Line (19), Column (2).

Line (22), Column (4) is calculated as Line (21), Column (2) multiplied by 0.2300 plus Line (22), Column (2) multiplied by 0.2000, but not greater than Line (21), Column (2).

Lines (23) through (54)

The Asset Concentration RBC Requirement for a particular mortgage plus the LR004 Mortgages RBC Requirement or LR009 Schedule BA Mortgages RBC Requirement for a particular mortgage cannot exceed 45 percent of the book/adjusted carrying value of the mortgage. Any mortgages exceeding 45 percent of the book/adjusted carrying value must be adjusted down in Column (6) of the Asset Concentration.

Line (32), Column (4) is calculated as the greater of 0.1800 multiplied by [(Line (31) plus Line (32))] less Line (32) or Line (31) multiplied by the appropriate factor for the CM class to which the loan is assigned.

Line (34), Column (4) is calculated as the greater of 0.0140 multiplied by [(Line (33) plus Line (34))] less Line (34) or Line (33) multiplied by 0.0068.

Line (36), Column (4) is calculated as the greater of 0.1800 multiplied by [(Line (35) plus Line (36))] less Line (36) or Line (35) multiplied by the appropriate factor for the CM class to which the loan is assigned.

Line (38), Column (4) is calculated as the greater of 0.2200 multiplied by [(Line (37) plus Line (38))] less Line (38) or Line (37) multiplied by the appropriate factor for the CM class to which the loan is assigned.

Line (40), Column (4) is calculated as the greater of 0.0270 multiplied by [(Line (39) plus Line (40))] less Line (40) or Line (39) multiplied by 0.0068.

Line (42), Column (4) is calculated as the greater of 0.2200 multiplied by [(Line (41) plus Line (42))] less Line (42) or Line (41) multiplied by the appropriate factor for the CM class to which the loan is assigned.

Line (43), Column (4) is calculated as Line (43) multiplied by the appropriate factor for the CM class to which the loan is assigned.

Line (52), Column (4) is calculated as the greater of 0.1800 multiplied by [(Line (51) plus Line (52))] less Line (52) or Line (51) multiplied by the appropriate factor for the CM class to which the loan is assigned.

Line (54), Column (4) is calculated as the greater of 0.2200 multiplied by [(Line (53) plus Line (54))] less Line (54) or Line (53) multiplied by the appropriate factor for the CM class to which the loan is assigned.

## HEDGED ASSET BOND AND COMMON STOCK SCHEDULES

LR014 and LR015

*(Instructions related to intermediate hedges are in italics.)*

### Hedging

The concept of hedging credit, equity and other risks is widely accepted and understood among insurers and their regulators. In order for regulators to distinguish between insurers that have effectively reduced their risks from those insurers that have not, the risk based capital computation should be sensitive to such differences. Increasing or decreasing exposure to different asset classes in relation to a benchmark asset allocation tailored to meet the long term obligations to policy owners is critical to successfully managing an insurance company. Hedging is the process of using derivative instruments to most efficiently limit risk associated with a particular asset in a manner consistent with the insurer's long term objectives. The relative advantage of using cash market transactions versus derivative market transactions depends upon market conditions.

The NAIC model investment laws and regulations establish specific constraints on the use of derivatives. Governance of derivative use starts with approved and documented authorities from the insurer's Board of Directors to management. These authorities are coordinated with and enhanced by limits established by the insurer's domiciliary state.

Hedging strategies currently employed by insurers range from straightforward relationships between the hedged asset and the derivative instrument (the hedge) to more complex relationships. The purpose of this section of the RBC calculation is to measure and reflect in RBC the risk reduction achieved by an insurer's use of the most straightforward types of hedges involving credit default and equity C-1 risks.

To avoid the possible double counting of RBC credits, excluded from this section are any RBC credits arising from hedges that are part of the Clearly Defined Hedging Strategy (CDHS) required for C-3 cash flow testing or other risk mitigation techniques (e.g. reinsurance) which produce reduced levels of RBC by operation of other parts of the RBC formula.

### RBC and Measuring the Risk Reduced by Hedging

To measure the risks reduced by hedging and reflect the effects in RBC it is important to understand the characteristics and purpose of the hedge. A portfolio manager seeking to hedge a particular asset or portfolio risk must determine if the derivative instruments available will do a suitable job of risk mitigation.

Default risk - A portfolio manager may determine that the default risk of a particular debt security which matures in 8 years needs to be hedged because of a near term credit concern which may resolve before the debt matures. A credit default swap (CDS) would be the most effective hedging instrument. In some circumstances the manager may purchase a CDS with 8 years to maturity which fully mitigates the default risk and shall result in an RBC credit which fully offsets the C-1 default risk charge on the debt security. However, seeking the most liquid and cost efficient market for the purchase of such an instrument may lead to the purchase of a 5 year CDS which the manager plans to renew (roll) as the credit circumstances evolve in the coming years. In this case there is a 3 year maturity mismatch between the debt security and the hedging instrument. To account for the difference between insurers that have hedged the debt security to full maturity versus those with a mismatched position, the determination of the RBC credit shall be made in accordance with the following formula which limits the results to a fraction of the C-1 charge for the hedged asset.

$$\text{RBC Credit As \% of C1 Asset Charge} = \text{Min} \left( 1, \frac{\text{Time to Maturity of CDS}}{\text{Time to Maturity of Bond}} \right) \times (94\% - 10\%) + 10\%$$

This accounts for mismatched maturities and provides a regulatory margin of safety within a range of 94%-10% of the C-1 asset charge.

*There may also be circumstances where default risk is reduced by hedging specific portfolios using a basket or index-based derivative (e.g. CDX family of derivatives) with the same or very similar components as the portfolio. For these hedges the risk reduction shall be measured based on the number of issuers common to both the insurer's portfolio and the index/basket CDS. A minimum of 50% overlap of the derivative instrument notional amount and the book/adjusted carrying value of the hedged bonds shall be required to qualify for any RBC credit. Additionally, if the insurer hedges an index, each bond must be listed (e. g. if the insurer acquires a CDX that hedges 125 names equally, then the insurer must list all 125 names on the schedule), regardless if the insurer owns all the bonds in the index.*

As RBC is currently measured and reported annually and to an extent provides a regulator with an indicator of capital sufficiency for the near term future; default risk protection as provided by CDS (based on a specific security or an index of securities) shall have more than 1 year remaining to maturity in order to receive any RBC credit, provided that the remaining maturity of the hedged debt security or average maturity of the hedged portfolio is greater than 1 year. When both the default risk protection and the hedged debt security have less than one year to maturity, full RBC credit shall be allowed provided that the maturity of the protection is later than the maturity of the debt security; otherwise no RBC credit is allowed.

Equity market risk - A portfolio manager may determine that the market risk of holding a particular common stock needs to be reduced. Because an outright sale at that point in time might be disadvantageous to the insurer and/or policy owners, a short futures contract may be purchased to eliminate the current market risk by establishing a sale price in the future. The C-1 RBC equity risk credit shall be limited to 94%.

*There may also be circumstances where equity market risk is reduced by hedging equity portfolios using derivatives based on equity market indices (e.g. S&P 500 futures contracts). Unless the equity portfolio is exactly matched to the index, the hedge will not provide precise one-to-one protection from fluctuations in value. The insurer must list all positions in the equity index individually (e. g. all 500 common stocks that are part of the S&P 500), regardless if the insurer owns all the stocks in the index.*

#### Definitions and Instructions for the Spreadsheet Computation of Risk Reduction

(Numeric references represent spreadsheet columns)

#### Bonds

- (1) Description - Reported on Schedule DB.
- (2) Notional Amount - Amount reported on Schedule DB.
- (3) Relationship Type of the Hedging Instrument and Hedged Asset. There are two categories; Basic and Intermediate relationships. Basic relationship = Single issuer credit default swap on a single issuer name to hedge the credit risk of a specific hedged asset. *Intermediate relationship = A portfolio of insurer assets paired with a basket or index based hedging instrument with the same or very similar components as the portfolio. For intermediate relationships, a minimum of 50% overlap of the derivative instrument notional amount and the book adjusted carrying value of the hedged bonds shall be required to qualify for any RBC credit.*
- (4) Maturity Date - Date reported on Schedule DB.

- (5) Description - Bond description found in Schedule D. *For intermediate relationships, each bond must be listed (e. g. if the insurer acquires a credit default index that hedges 125 names equally, then the insurer must list all 125 names on the schedule.)*
- (6) CUSIP Identification - Bond unique identifier found in Schedule D.
- (7) Book Adjusted Carrying Value - Value found on Schedule D.
- (8) Overlap with Insurer's Bond Portfolio – The portion of Column (2) Notional Amount of the Hedging Instrument that hedges Column (7) Book Adjusted Carrying Value. This amount cannot exceed Column (7) Book Adjusted Carrying Value.
- (9) Maturity Date - The date is found in Schedule D.
- (10) NAIC Designation - Designation found in Schedule D. Necessary to determine correct RBC Factor for the Bonds.
- (11) RBC Factor - Factor based on Column (10) NAIC Designation and NAIC C-1 RBC factors table.
- (12) Gross RBC Charge – This is the C-1 RBC charge based on holdings at the end of the year. Calculation: Columns (7) Book Adjusted Carrying Value multiplied by (11) RBC Factor.
- (13) RBC Credit for Hedging Instruments – If Column (8) Overlap with Insurer's Bond Portfolio is zero; the RBC Credit would also be zero. The Hedging Instrument must have more than 1 year remaining to maturity in order to receive any RBC credit provided that the remaining time to maturity of the Hedged Asset - Bonds is greater than 1 year. If both the Hedging Instrument and the Hedged Asset - Bonds maturity dates are less than 1 year, the maximum RBC credit determined using the formula below shall be allowed provided that the maturity of the hedging instrument is equal to or later than the maturity of the bond. Calculation is Column (8) Overlap with Insurer's Bond Portfolio multiplied by RBC Credit as % of C-1 Asset Charge formula (formula listed below) multiplied by Column (11) RBC Factor.

$$\text{RBC Credit as \% of C1 Asset Charge} = \text{Min} \left( 1, \frac{\text{Time to Maturity of Hedging Instrument}}{\text{Time to Maturity of Bond}} \right) \times (94\% - 10\%) + 10\%$$

Time to Maturity of Hedging Instrument divided by Time to Maturity of Bond cannot exceed 1.

- (14) Net RBC Charge – Column (12) Gross RBC Charge minus (13) RBC Credit for Hedging Instruments.

#### Common Stocks

- (1) Description - Reported on Schedule DB.
- (2) Notional Amount - Amount reported on Schedule DB.
- (3) Relationship Type of the Hedging Instrument and Hedged Asset. There are two categories; Basic relationships or Intermediate relationships. Basic relationship = Single name equity Hedging Instrument paired with a specific common stock. *Intermediate relationship = A portfolio of common stocks paired with a basket or index based Hedging Instrument with the same or very similar components as the portfolio. For intermediate relationships, a minimum of 50% overlap of the derivative instrument notional amount and the book adjusted carrying value of the hedged common stocks shall be required to qualify for any RBC credit.*

- (4) Description - Common Stock description found in Schedule D Part 2 Section 2. *For intermediate relationships, each common stock must be listed (e. g. if the insurer acquires a short futures contract that hedges the S&P 500, then the insurer must list all 500 stocks on the schedule).*
- (5) CUSIP Identification - Common Stock unique identifier found in Schedule D Part 2 Section 2.
- (6) Book Adjusted Carrying Value - Value found on Schedule D Part 2 Section 2.
- (7) Overlap with Insurer's Stock Portfolio – The portion of Column (2) Notional Amount of the Hedging Instrument that hedges Column (6) Book/Adjusted Carrying Value. This amount cannot exceed the Column (6) Book Adjusted Carrying Value.
- (8) RBC Factor - Factor based on NAIC C-1 RBC factors table.
- (9) Gross RBC Charge - The C-1 RBC charge based on holdings at the end of the year. Calculation: Columns (6) Book Adjusted Carrying Value multiplied by (8) RBC Factor.
- (10) RBC Credit for Hedging Instruments - RBC credit for equity market risk reduction is limited to 94% of the C-1 Asset charge. Calculation: Column (7) Overlap with Insurer's Stock Portfolio multiplied by (8) RBC Factor multiplied by 94%.
- (11) Net RBC Charge - Column (9) Gross RBC Charge minus (10) RBC Credit for Hedging Instruments.

## Factors Table As determined by the NAIC

NAIC Designation	Factor
	0.0000
1	0.0029
1.A	0.0029
1.B	0.0042
1.C	0.0055
1.D	0.0070
1.E	0.0084
1.F	0.0102
1.G	0.0119
2.A	0.0137
2.B	0.0163
2.C	0.0194
3.A	0.0365
3.B	0.0466
3.C	0.0597
4.A	0.0615
4.B	0.0832
4.C	0.1148
5.A	0.1683
5.B	0.2280
5.C	0.3000
6	0.3000

Common Stock Type	Factor
Other Unaffiliated Public Common Stock	0.4500 †
Money Market Mutual Funds	0.0040
Federal Home Loan Bank Common Stock	0.0110
Unaffiliated Private Common Stock	0.3000

† - 30 percent adjusted up or down by the weighted average beta for the publicly traded common stock portfolio subject to a minimum of 22.5 percent and a maximum of 45 percent.



## OFF-BALANCE SHEET COLLATERAL

(Including any Schedule DL, Part 1 Assets not Included in the Asset Valuation Reserve)  
LR018

### *Basis of Factors*

Security lending programs are required to maintain collateral. Some entities post the collateral supporting security lending programs on their financial statements, and incur C-1 risk charges on those assets. Other entities have collateral that is not recorded on their financial statements. While not recorded on the financial statements of the company, such collateral has risks that are not otherwise captured in the RBC formula.

Annual Statement Schedule DL, Part 1, Securities Lending Collateral Assets reported on the balance sheet (Assets Page, Line 10) should be included on the schedule with the Off-Balance Sheet Collateral if they are not already reflected in the Asset Valuation Reserve and are reflected in another portion of the Life RBC formula.

The collateral in these accounts is maintained by a third-party (typically a bank or other agent). The collateral agent maintains on behalf of the company detail asset listings of the collateral assets, and this data is the source for preparation of this schedule. The company should maintain such asset listings, at a minimum CUSIP, market value, book/carrying value, and maturity date. The asset risk charges are derived from existing RBC factors for bonds, preferred and common stocks, other invested assets, and invested assets not otherwise classified (aggregate write-ins).

### *Specific Instructions for Application of the Formula*

Off-balance sheet collateral included in General Interrogatories, Part 1, Lines 24.05 and 24.06 of the annual statement should agree with Line (19).

#### Lines (1) through (8) – Bonds

Bond factors are described on page LR002 Bonds.

#### Line (9) through (15) – Preferred Stocks

Preferred stock factors are described on page LR005 Unaffiliated Preferred and Common Stock.

#### Line (16) – Common Stock

Common stock factors are described on page LR005 Unaffiliated Preferred and Common Stock.

#### Line (17) – Schedule BA – Other Invested Assets

Other invested assets factors are described on page LR008 Other Long Term Assets.

#### Line (18) – Aggregate Write-ins for Other Invested Assets

Aggregate write-ins for other invested assets factors are described on page LR012 Miscellaneous Assets.




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AMERICAN ACADEMY of ACTUARIES

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*Objective. Independent. Effective.™*

March 11, 2021

Philip Barlow  
 Chair  
 Life Risk-Based Capital (E) Working Group  
 National Association of Insurance Commissioners (NAIC)

Dear Philip,

On behalf of the American Academy of Actuaries<sup>1</sup> C1 Work Group (C1WG), we present to the Life Risk-Based Capital (E) Working Group updated base bond factors and a companion portfolio adjustment formula to reflect corporate tax rates enacted by the Tax Cuts and Jobs Act of 2017 for the Life Risk-Based Capital (LRBC) formula. The C1WG's most recent recommendation on updated bond factors was provided to the NAIC's Investment Risk-Based Capital Working Group on October 10, 2017.<sup>2</sup> No other changes have been made to the October 17, 2017, recommendation.

As we have done in previous reports to the NAIC, we are providing direct model output for the base factors. As is the case with the current capital requirements for bonds, we recommend capping the base factor for the lowest-quality bond designation at 30%. Note that this approach caps the capital requirement for bonds at the base factor for unaffiliated common stock. In addition to capping the factor, we have not rounded any of the factors, as was done for the current bond factors.

## **A. UPDATED BASE FACTORS**

The table below shows updated bond factors using a 21% corporate tax rate and the factors recommended in October 2017. These factors are used in the first step in calculating the basic capital requirements for bonds. These factors have been established at the statistical safety level specified by regulators. These factors in combination with the portfolio adjustment are expected to establish required capital at the 96<sup>th</sup> percentile over a 10-year time horizon. The assumptions used in developing these factors are based on expected loss given default experience for a portfolio of bonds that is representative of a typical life insurer's bond portfolio.

In the development of the capital requirements for credit risk, recall that the tax rate affects the net loss flowing through statutory surplus. The factor is based on a discounted after-tax cash flows. As such, an after-tax discount is used in the calculation. In the October 2017 recommendation, the after-tax cash flows were discounted at 3.25%. The updated bond factors are based on after-tax cash flows discounted at

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<sup>1</sup> The American Academy of Actuaries is a 19,500-member professional association whose mission is to serve the public and the U.S. actuarial profession. For more than 50 years, the Academy has assisted public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

<sup>2</sup>[https://www.actuary.org/sites/default/files/files/publications/Academy\\_C1WG\\_Comments\\_to\\_NAIC\\_IRBC\\_101017.pdf](https://www.actuary.org/sites/default/files/files/publications/Academy_C1WG_Comments_to_NAIC_IRBC_101017.pdf).

3.95%. Note that both sets of factors are based on a 5% pre-tax rate; only the after-tax discount rate has changed.

### Base C1 Bond Factors

	10.17.2017 Recommendation	3.5.2021 Update
	Pre-Tax	Pre-Tax
Aaa	0.31%	0.29%
Aa1	0.43%	0.42%
Aa2	0.57%	0.55%
Aa3	0.72%	0.70%
A1	0.86%	0.84%
A2	1.06%	1.02%
A3	1.24%	1.19%
Baa1	1.42%	1.37%
Baa2	1.69%	1.63%
Baa3	2.00%	1.94%
Ba1	3.75%	3.65%
Ba2	4.76%	4.66%
Ba3	6.16%	5.97%
B1	6.35%	6.15%
B2	8.54%	8.32%
B3	11.82%	11.48%
Caa1	17.31%	16.83%
Caa2	23.22%	22.80%
Caa3	34.11%	33.86%

## B. UPDATED PORTFOLIO ADJUSTMENT FORMULA

The table below shows an updated portfolio adjustment formula, as developed for the updated base factors above. As a reminder, the purpose of the adjustment is to modify the base calculation for the diversification of the insurer's bond portfolio, relative to the representative portfolio. The portfolio adjustment increases or decreases the base capital requirement (equal to the arithmetic sum of the base factor times the statutory carrying value of each bond) based on the number of issuers in the insurer's portfolio.

The representative bond portfolio used in developing the base factors contained 824 issuers. As per the October 2017 recommended portfolio adjustment, the updated portfolio adjustment is neutral or approximately equal to 1.0 for an average portfolio (i.e., a portfolio with the same number of bonds as contained in the representative portfolio.) The updated approach meets that criterion because the exact percentile confidence level of the base factors was selected to reproduce aggregate industry C1 requirements when the base factors are applied to each company portfolio. That said, the confidence level for the base factors is close to the 96<sup>th</sup> percentile for each rating class, and the portfolio adjustment only captures differences in a company's diversification risk relative to the representative portfolio.

### **Portfolio Adjustment Factors**

	<b>10.17.2017</b>		<b>3.5.2021</b>		
	<b>Recommendation</b>		<b>Update</b>		
	Issuers	Factor		Issuers	Factor
Up to	10	7.80	Up to	10	7.50
Next	90	1.75	Next	90	1.75
Next	100	1.00	Next	100	0.90
Next	300	0.80	Next	300	0.85
Over	500	0.75	Over	500	0.75

## **C. COMMENTS ON THE AGE OF ASSUMPTIONS**

The C1WG began its work on the C1 Bond Capital Requirements in 2011. With input from regulators (NAIC's C1 Factor Review Subgroup, NAIC's Investment RBC Working Group, and the NAIC's Life Risk-Based Capital Working Group), the C1WG updated the capital requirements to be used within the U.S. Solvency framework.

Many of the assumptions used in these factors, such as the bond default and recovery assumptions, are based on the experience for corporate bonds through 1983–2012. Other assumptions, notably the discount rate, are also based on data from a similar time period.

We understand that regulators are intent on adopting updated bond factors for the 2021 Life Risk-Based Capital calculation, particularly given the shortfall of the current requirements to meet regulators' desired statistical safety level for credit risk. However, we would be remiss in not stating our concern about adopting a set of factors based on outdated assumptions.

While we have not modeled any assumption changes, we are concerned that the factors in this letter may be lower than what an analysis of updated data would produce. The base factors recommended in 2017

for bonds, exclusive of the impact of increased requirements from the tax change, increase the capital requirements for credit risk approximately 15-20% for the industry, on average. Updated assumptions might indicate that capital requirements should be increased further. We understand the desire to now adopt factors that move the capital requirements closer to the desired statistical level but encourage regulators to consider more frequent reviews of the assumptions and the resulting factors.

We appreciate your consideration of this update. Please contact Nancy Bennett, senior life fellow (bennett@actuary.org), or Khloe Greenwood, life policy analyst (greenwood@actuary.org), with any questions.

Sincerely,

Nancy Bennett, MAAA, FSA, CERA  
Co-Chairperson, C1 Work Group  
American Academy of Actuaries

Jerry Holman, MAAA, FSA, CFA  
Co-Chairperson, C1 Work Group  
American Academy of Actuaries

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## Capital Adequacy (E) Task Force

### RBC Proposal Form

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Capital Adequacy (E) Task Force  | <input type="checkbox"/> Health RBC (E) Working Group     | <input checked="" type="checkbox"/> Life RBC (E) Working Group |
| <input type="checkbox"/> Catastrophe Risk (E) Subgroup    | <input type="checkbox"/> Investment RBC (E) Working Group | <input type="checkbox"/> Operational Risk (E) Subgroup         |
| <input type="checkbox"/> C3 Phase II/ AG43 (E/A) Subgroup | <input type="checkbox"/> P/C RBC (E) Working Group        | <input type="checkbox"/> Longevity Risk (A/E) Subgroup         |

<b>DATE:</b> <u>4/22/21</u>	<b><u>FOR NAIC USE ONLY</u></b>
<b>CONTACT PERSON:</b> <u>Dave Fleming</u>	Agenda Item # <u>2021-11-L</u>
<b>TELEPHONE:</b> <u>816-783-8121</u>	Year <u>2021</u>
<b>EMAIL ADDRESS:</b> <u>dfleming@naic.org</u>	<b><u>DISPOSITION</u></b>
<b>ON BEHALF OF:</b> <u>Life Risk-Based Capital (E) Working Group</u>	<input type="checkbox"/> ADOPTED
<b>NAME:</b> <u>Philip Barlow, Chair</u>	<input type="checkbox"/> REJECTED _____
<b>TITLE:</b> <u>Associate Commissioner of Insurance</u>	<input type="checkbox"/> DEFERRED TO _____
<b>AFFILIATION:</b> <u>District of Columbia</u>	<input type="checkbox"/> REFERRED TO OTHER NAIC GROUP
<b>ADDRESS:</b> <u>1050 First Street, NE Suite 801</u>	<input checked="" type="checkbox"/> EXPOSED <u>4/22/21</u>
<u>Washington, DC 20002</u>	<input type="checkbox"/> OTHER (SPECIFY) _____

#### IDENTIFICATION OF SOURCE AND FORM(S)/INSTRUCTIONS TO BE CHANGED

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Health RBC Blanks       | <input type="checkbox"/> Property/Casualty RBC Blanks       | <input checked="" type="checkbox"/> Life and Fraternal RBC Instructions |
| <input type="checkbox"/> Health RBC Instructions | <input type="checkbox"/> Property/Casualty RBC Instructions | <input checked="" type="checkbox"/> Life and Fraternal RBC Blanks       |
| <input type="checkbox"/> OTHER _____             |   |   |

#### DESCRIPTION OF CHANGE(S)

This proposal incorporates bond factors proposed by the American Council of Life Insurers (ACLI) which are based on the work of Moody's Analytics for the expanded presentation of bond designation categories in the annual statement and risk-based capital (RBC) schedules.

#### REASON OR JUSTIFICATION FOR CHANGE \*\*

The expanded presentation of bonds is a result of the work of the Investment Risk-Based Capital (E) Working Group. This proposal presents alternative factors to those proposed by the American Academy of Actuaries (Academy).

#### Additional Staff Comments:

- 4-22-21: Proposal was exposed for comments (DBF)

\*\* This section must be completed on all forms.

Revised 2-2019

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BONDS

SVO Bond		Annual Statement Source	(1)		(2)	
Designation Category			Book / Adjusted	Factor	RBC	Requirement
Long Term Bonds			Carrying Value			
(1)	Exempt Obligations	AVR Default Component Column 1 Line 1		X 0.00000	=	
(2.1)	NAIC Designation Category 1.A	AVR Default Component Column 1 Line 2.1		X 0.00158	=	
(2.2)	NAIC Designation Category 1.B	AVR Default Component Column 1 Line 2.2		X 0.00271	=	
(2.3)	NAIC Designation Category 1.C	AVR Default Component Column 1 Line 2.3		X 0.00419	=	
(2.4)	NAIC Designation Category 1.D	AVR Default Component Column 1 Line 2.4		X 0.00523	=	
(2.5)	NAIC Designation Category 1.E	AVR Default Component Column 1 Line 2.5		X 0.00657	=	
(2.6)	NAIC Designation Category 1.F	AVR Default Component Column 1 Line 2.6		X 0.00816	=	
(2.7)	NAIC Designation Category 1.G	AVR Default Component Column 1 Line 2.7		X 0.01016	=	
(2.8)	Subtotal NAIC 1	Sum of Lines (2.1) through (2.7)			=	
(3.1)	NAIC Designation Category 2.A	AVR Default Component Column 1 Line 3.1		X 0.01261	=	
(3.2)	NAIC Designation Category 2.B	AVR Default Component Column 1 Line 3.2		X 0.01523	=	
(3.3)	NAIC Designation Category 2.C	AVR Default Component Column 1 Line 3.3		X 0.02168	=	
(3.4)	Subtotal NAIC 2	Sum of Lines (3.1) through (3.3)			=	
(4.1)	NAIC Designation Category 3.A	AVR Default Component Column 1 Line 4.1		X 0.03151	=	
(4.2)	NAIC Designation Category 3.B	AVR Default Component Column 1 Line 4.2		X 0.04537	=	
(4.3)	NAIC Designation Category 3.C	AVR Default Component Column 1 Line 4.3		X 0.06017	=	
(4.4)	Subtotal NAIC 3	Sum of Lines (4.1) through (4.3)			=	
(5.1)	NAIC Designation Category 4.A	AVR Default Component Column 1 Line 5.1		X 0.07386	=	
(5.2)	NAIC Designation Category 4.B	AVR Default Component Column 1 Line 5.2		X 0.09535	=	
(5.3)	NAIC Designation Category 4.C	AVR Default Component Column 1 Line 5.3		X 0.12428	=	
(5.4)	Subtotal NAIC 4	Sum of Lines (5.1) through (5.3)			=	
(6.1)	NAIC Designation Category 5.A	AVR Default Component Column 1 Line 6.1		X 0.16942	=	
(6.2)	NAIC Designation Category 5.B	AVR Default Component Column 1 Line 6.2		X 0.23798	=	
(6.3)	NAIC Designation Category 5.C	AVR Default Component Column 1 Line 6.3		X 0.30000	=	
(6.4)	Subtotal NAIC 5	Sum of Lines (6.1) through (6.3)			=	
(7)	NAIC 6	AVR Default Component Column 1 Line 7		X 0.30000	=	
(8)	Total Long-Term Bonds	Sum of Lines (1) + (2.8) + (3.4) + (4.4) + (5.4) + (6.4) + (7)			=	

(Column (1) should equal Page 2 Column 3 Line 1 + Schedule DL Part 1 Column 6 Line 7099999)



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Short Term Bonds					
(9)	Exempt Obligations	AVR Default Component Column 1 Line 18		X	0.00000
(10.1)	NAIC Designation Category 1.A	AVR Default Component Column 1 Line 19.1		X	0.00158
(10.2)	NAIC Designation Category 1.B	AVR Default Component Column 1 Line 19.2		X	0.00271
(10.3)	NAIC Designation Category 1.C	AVR Default Component Column 1 Line 19.3		X	0.00419
(10.4)	NAIC Designation Category 1.D	AVR Default Component Column 1 Line 19.4		X	0.00523
(10.5)	NAIC Designation Category 1.E	AVR Default Component Column 1 Line 19.5		X	0.00657
(10.6)	NAIC Designation Category 1.F	AVR Default Component Column 1 Line 19.6		X	0.00816
(10.7)	NAIC Designation Category 1.G	AVR Default Component Column 1 Line 19.7		X	0.01016
(10.8)	Subtotal NAIC 1	Sum of Lines (10.1) through (10.7)			
(11.1)	NAIC Designation Category 2.A	AVR Default Component Column 1 Line 20.1		X	0.01261
(11.2)	NAIC Designation Category 2.B	AVR Default Component Column 1 Line 20.2		X	0.01523
(11.3)	NAIC Designation Category 2.C	AVR Default Component Column 1 Line 20.3		X	0.02168
(11.4)	Subtotal NAIC 2	Sum of Lines (11.1) through (11.3)			
(12.1)	NAIC Designation Category 3.A	AVR Default Component Column 1 Line 21.1		X	0.03151
(12.2)	NAIC Designation Category 3.B	AVR Default Component Column 1 Line 21.2		X	0.04537
(12.3)	NAIC Designation Category 3.C	AVR Default Component Column 1 Line 21.3		X	0.06017
(12.4)	Subtotal NAIC 3	Sum of Lines (12.1) through (12.3)			
(13.1)	NAIC Designation Category 4.A	AVR Default Component Column 1 Line 22.1		X	0.07386
(13.2)	NAIC Designation Category 4.B	AVR Default Component Column 1 Line 22.2		X	0.09535
(13.3)	NAIC Designation Category 4.C	AVR Default Component Column 1 Line 22.3		X	0.12428
(13.4)	Subtotal NAIC 4	Sum of Lines (13.1) through (13.3)			
(14.1)	NAIC Designation Category 5.A	AVR Default Component Column 1 Line 23.1		X	0.16942
(14.2)	NAIC Designation Category 5.B	AVR Default Component Column 1 Line 23.2		X	0.23798
(14.3)	NAIC Designation Category 5.C	AVR Default Component Column 1 Line 23.3		X	0.30000
(14.4)	Subtotal NAIC 5	Sum of Lines (14.1) through (14.3)			
(15)	NAIC 6	AVR Default Component Column 1 Line 24		X	0.30000
(16)	Total Short-Term Bonds	Sum of Lines (9) + (10.8) + (11.4) + (12.4) + (13.4) + (14.4) + (15)			
	(Column (1) should equal Schedule DA Part 1 Column 7 Line 8399999 + Schedule DL Part 1 Column 6 Line 8999999 + LR012 Miscellaneous Assets Column (1) Line (2.2))				
(17)	Total Long-Term and Short-Term Bonds (pre-MODCO/Funds Withheld)	Line (8) + (16)			
(18)	Credit for Hedging	LR014 Hedged Asset Bond Schedule Column 13 Line 0399999			
(19)	Reduction in RBC for MODCO/Funds Withheld Reinsurance Ceded Agreements	LR045 Modco or Funds Withheld Reinsurance Ceded - Bonds C-1o Column (4) Line (9999999)			
(20)	Increase in RBC for MODCO/Funds Withheld Reinsurance Assumed Agreements	LR046 Modco or Funds Withheld Reinsurance Assumed - Bonds C-1o Column (4) Line (9999999)			
(21)	Total Long-Term and Short-Term Bonds (including MODCO/Funds Withheld and Credit for Hedging adjustments.)	Lines (17) - (18) - (19) + (20)			
(22)	Non-exempt U.S. Government Agency Bonds	Schedule D Part 1 and Schedule DA Part 1, in part†		X	0.00158
(23)	Bonds Subject to Size Factor	Line (21) - Line (1) - Line (9) - Line (22)			
(24)	Number of Issuers	Company Records			
(25)	Size Factor for Bonds				
(26)	Bonds Subject to Size Factor after the Size Factor is Applied	Line (23) x Line (25)			
(27)	Total Bonds	Line (22) + Line (26)			

† Only investments in U.S. Government agency bonds previously reported in Lines (2.8) and (10.8), net of those included on Line (19), plus the portion of Line (20) attributable to ceding companies' Lines (2.8) and (10.8) should be included on Line (22). No other bonds should be included on this line. Exempt U.S. Government bonds shown on Lines (1) and (9) should not be included on Line (22). Refer to the bond section of the risk-based capital instructions for more clarification.

Denotes items that must be manually entered on the filing software.

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ASSET CONCENTRATION FACTOR

	(1)	(2)	(3)	(4)	(5)	(6)
<u>Asset Type</u>		Book / Adjusted	Factor	Additional	Adjustment/	RBC
Issuer Name:		Carrying Value		RBC	Subsidiary RBC	Requirement
(1.1) Bond NAIC Designation Category 2.A			X 0.01261	=		
(1.2) Bond NAIC Designation Category 2.B			X 0.01523	=		
(1.3) Bond NAIC Designation Category 2.C			X 0.02168	=		
(2.1) Bond NAIC Designation Category 3.A			X 0.03151	=		
(2.2) Bond NAIC Designation Category 3.B			X 0.04537	=		
(2.3) Bond NAIC Designation Category 3.C			X 0.06017	=		
(3.1) Bond NAIC Designation Category 4.A			X 0.07386	=		
(3.2) Bond NAIC Designation Category 4.B			X 0.09535	=		
(3.3) Bond NAIC Designation Category 4.C			X 0.12428	=		
(4.1) Bond NAIC Designation Category 5.A			X 0.16942	=		
(4.2) Bond NAIC Designation Category 5.B			X 0.21202	=		
(4.3) Bond NAIC Designation Category 5.C			X 0.15000	=		
(5) Bond NAIC 6			X 0.15000	=		
(6.1) Bond NAIC Designation Category 1.A †			X 0.00158	=		
(6.2) Bond NAIC Designation Category 1.B †			X 0.00271	=		
(6.3) Bond NAIC Designation Category 1.C †			X 0.00419	=		
(6.4) Bond NAIC Designation Category 1.D †			X 0.00523	=		
(6.5) Bond NAIC Designation Category 1.E †			X 0.00657	=		
(6.6) Bond NAIC Designation Category 1.F †			X 0.00816	=		
(6.7) Bond NAIC Designation Category 1.G †			X 0.01016	=		
(7) Unaffiliated Preferred Stock NAIC 2			X 0.01260	=		
(8) Unaffiliated Preferred Stock NAIC 3			X 0.04460	=		
(9) Unaffiliated Preferred Stock NAIC 4			X 0.09700	=		
(10) Unaffiliated Preferred Stock NAIC 5			X 0.22310	=		
(11) Unaffiliated Preferred Stock NAIC 6			X 0.15000	=		
(12) Unaffiliated Preferred Stock NAIC 1 †			X 0.00390	=		
(13) Collateral Loans			X 0.06800	=		
(14) Receivable for Securities			X 0.01400	=		
(15) Write-ins for Invested Assets			X 0.06800	=		
(16) Premium Notes			X 0.06800	=		
(17) Real Estate - Foreclosed				=		
(18) Real Estate - Foreclosed Encumbrances			X ‡	=		
(19) Real Estate - Investments				=		
(20) Real Estate - Investment Encumbrances			X ‡	=		
(21) Real Estate - Schedule BA				=		
(22) Real Estate - Schedule BA Encumbrances			X ‡	=		
(23) Farm Mortgages - Category CM2			X 0.01750	=		
(24) Farm Mortgages - Category CM3			X 0.03000	=		
(25) Farm Mortgages - Category CM4			X 0.05000	=		
(26) Farm Mortgages - Category CM5			X 0.07500	=		
(27) Commercial Mortgages - Category CM2			X 0.01750	=		
(28) Commercial Mortgages - Category CM3			X 0.03000	=		
(29) Commercial Mortgages - Category CM4			X 0.05000	=		
(30) Commercial Mortgages - Category CM5			X 0.07500	=		

† After the ten largest issuer exposures are chosen, any NAIC 1 bonds or preferred stocks from any of these issuers should be included.

‡ Refer to the instructions for the Asset Concentration Factor for details of this calculation.

Denotes items that must be manually entered on the filing software.

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ASSET CONCENTRATION FACTOR (CONTINUED)

(1)	(2)	(3)	(4)	(5)	(6)
<u>Asset Type</u>	<u>Book / Adjusted Carrying Value</u>	<u>Factor</u>	<u>Additional RBC</u>	<u>Adjustment/ Subsidiary RBC</u>	<u>RBC Requirement</u>
(31) Farm Mortgages - 90 Days Overdue					
(32) Farm Mortgages - 90 Days Overdue - Cumulative Writedowns		X ‡ =			
(33) Residential Mortgages - 90 Days Overdue					
(34) Residential Mortgages - 90 Days Overdue - Cumulative Writedowns		X ‡ =			
(35) Commercial Mortgages - 90 Days Overdue					
(36) Commercial Mortgages - 90 Days Overdue - Cumulative Writedowns		X ‡ =			
(37) Farm Mortgages in Foreclosure					
(38) Farm Mortgages in Foreclosure - Cumulative Writedowns		X ‡ =			
(39) Residential Mortgages in Foreclosure					
(40) Residential Mortgages in Foreclosure - Cumulative Writedowns		X ‡ =			
(41) Commercial Mortgages in Foreclosure					
(42) Commercial Mortgages in Foreclosure - Cumulative Writedowns		X ‡ =			
(43) Unaffiliated Mortgages with Covenants		X ‡ =			
(44) Unaffiliated Mortgages - Defeased with Government Securities		X 0.00900 =			
(45) Unaffiliated Mortgages - Primarily Senior		X 0.01750 =			
(46) Unaffiliated Mortgages - All Other		X 0.03000 =			
(47) Affiliated Mortgages - Category CM2		X 0.01750 =			
(48) Affiliated Mortgages - Category CM3		X 0.03000 =			
(49) Affiliated Mortgages - Category CM4		X 0.05000 =			
(50) Affiliated Mortgages - Category CM5		X 0.07500 =			
(51) Schedule BA Mortgages 90 Days Overdue					
(52) Schedule BA Mortgages 90 Days Overdue - Cumulative Writedowns		X ‡ =			
(53) Schedule BA Mortgages in Process of Foreclosure					
(54) Schedule BA Mortgages Foreclosed - Cumulative Writedowns		X ‡ =			
(55) Federal Guaranteed Low Income Housing Tax Credits		X 0.00140 =			
(56) Federal Non-Guaranteed Low Income Housing Tax Credits		X 0.02600 =			
(57) State Guaranteed Low Income Housing Tax Credits		X 0.00140 =			
(58) State Non-Guaranteed Low Income Housing Tax Credits		X 0.02600 =			
(59) All Other Low Income Housing Tax Credits		X 0.15000 =			
(60) NAIC 02 Working Capital Finance Notes		X 0.01630 =			
(61) Other Schedule BA Assets		X 0.15000 =			
(62) Total of Issuer = Sum of Lines (1) through (61)					

NOTE: Ten issuer sections and a grand total page will be available on the filing software. The grand total page is calculated as the sum of issuers 1-10 by asset type.

‡ Refer to the instructions for the Asset Concentration Factor for details of this calculation.

Denotes items that must be manually entered on the filing software.

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HEDGED ASSET BOND SCHEDULE

As of:

Type of Hedged Asset	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Hedging Instruments				Hedged Asset - Bonds								RBC Credit	
	Description †	Notional Amount †	Relationship Type of the Hedging Instrument and Hedged Asset	Maturity Date †	Description †	CUSIP †	Book / Adjusted Carrying Value †	Overlap with Insurer's Bond Portfolio ‡	Maturity Date †	NAIC Designation Category †	RBC Factor §	Gross RBC Charge *	RBC Credit for Hedging Instruments £	Net RBC Charge **
Bonds														
(0100001)														
(0100002)														
(0100003)														
(0100004)														
(0100005)														
(0100006)														
(0100007)														
(0100008)														
(0100009)														
(0100010)														
(0100011)														
(0100012)														
(0100013)														
(0100014)														
(0100015)														
(0100016)														
(0100017)														
(0100018)														
(0100019)														
(0100020)														
(0100021)														
(0100022)														
(0100023)														
(0100024)														
(0100025)														
(0100026)														
(0100027)														
(0100028)														
(0100029)														
(0100030)														
(0199999)	Subtotal - NAIC 1 Through 5 Bonds		XXXXX	XXXXX	Subtotal	XXXXX			XXXXX	XXXXX	XXXXX			
(0299999)	Subtotal - NAIC 6 Bonds		XXXXX	XXXXX	Subtotal	XXXXX			XXXXX	XXXXX	XXXXX			
(0399999)	Total		XXXXX	XXXXX	Total	XXXXX			XXXXX	XXXXX	XXXXX			

Note: For the intermediate category of hedging, we recommend that the risk mitigation and resulting RBC credit be determined as if each specific security common to both the index/basket hedge and the portfolio is a basic hedge with the entire basic hedge methodology applied to each matching name. This includes the application of the maturity mismatch formula and the maximum RBC credit of 94% of the C-1 asset charge for fixed income hedges.

† Columns are derived from Investment schedules.

‡ The portion of Column (2) Notional Amount of the Hedging Instrument that hedges Column (7) Book / Adjusted Carrying Value. This amount cannot exceed Column (7) Book / Adjusted Carrying Value.

§ Factor based on Column (10) NAIC Designation and NAIC C-1 RBC factors table.

\* Column (7) Book Adjusted Carrying Value multiplied by Column (11) RBC Factor.

£ Column (13) is calculated according to the risk-based capital instructions.

\*\* Column (12) Gross RBC Charge minus Column (13) RBC Credit for Hedging Instruments.

Denotes manual entry items that do not come directly from the annual statement.

Company Name

Confidential when Completed

**OFF-BALANCE SHEET COLLATERAL**

(Including any Schedule DL, Part 1 Assets not Included in the Asset Valuation Reserve)

		(1) Book / Adjusted Carrying Value	2.00000 Factor	(3) RBC Requirement
<u>Fixed Income - Bonds</u>				
(1) Exempt Obligations	Company Records		X 0.00000	=
(2.1) NAIC Designation Category 1.A	Company Records		X <b>0.00158</b>	=
(2.2) NAIC Designation Category 1.B	Company Records		X <b>0.00271</b>	=
(2.3) NAIC Designation Category 1.C	Company Records		X <b>0.00419</b>	=
(2.4) NAIC Designation Category 1.D	Company Records		X <b>0.00523</b>	=
(2.5) NAIC Designation Category 1.E	Company Records		X <b>0.00657</b>	=
(2.6) NAIC Designation Category 1.F	Company Records		X <b>0.00816</b>	=
(2.7) NAIC Designation Category 1.G	Company Records		X <b>0.01016</b>	=
(2.8) Subtotal NAIC 1	Sum of Lines (2.1) through (2.7)			
(3.1) NAIC Designation Category 2.A	Company Records		X <b>0.01261</b>	=
(3.2) NAIC Designation Category 2.B	Company Records		X <b>0.01523</b>	=
(3.3) NAIC Designation Category 2.C	Company Records		X <b>0.02168</b>	=
(3.4) Subtotal NAIC 2	Sum of Lines (3.1) through (3.3)			
(4.1) NAIC Designation Category 3.A	Company Records		X <b>0.03151</b>	=
(4.2) NAIC Designation Category 3.B	Company Records		X <b>0.04537</b>	=
(4.3) NAIC Designation Category 3.C	Company Records		X <b>0.06017</b>	=
(4.4) Subtotal NAIC 3	Sum of Lines (4.1) through (4.3)			
(5.1) NAIC Designation Category 4.A	Company Records		X <b>0.07386</b>	=
(5.2) NAIC Designation Category 4.B	Company Records		X <b>0.09535</b>	=
(5.3) NAIC Designation Category 4.C	Company Records		X <b>0.12428</b>	=
(5.4) Subtotal NAIC 4	Sum of Lines (5.1) through (5.3)			
(6.1) NAIC Designation Category 5.A	Company Records		X <b>0.16942</b>	=
(6.2) NAIC Designation Category 5.B	Company Records		X <b>0.23798</b>	=
(6.3) NAIC Designation Category 5.C	Company Records		X <b>0.30000</b>	=
(6.4) Subtotal NAIC 5	Sum of Lines (6.1) through (6.3)			
(7) NAIC 6	Company Records		X 0.30000	=
(8) Total Bonds	Sum of Lines (1) + (2.8) + (3.4) + (4.4) + (5.4) + (6.4) + (7)			
<u>Fixed Income - Preferred Stock</u>				
(9) Asset NAIC 1	Company Records		X 0.00390	=
(10) Asset NAIC 2	Company Records		X 0.01260	=
(11) Asset NAIC 3	Company Records		X 0.04460	=
(12) Asset NAIC 4	Company Records		X 0.09700	=
(13) Asset NAIC 5	Company Records		X 0.22310	=
(14) Asset NAIC 6	Company Records		X 0.30000	=
(15) Total Preferred Stock	Sum of Lines (9) through (14)			
(16) Common Stock	Company Records		X <b>0.45000</b> †	=
(17) Schedule BA - Other Invested Assets	Company Records		X 0.30000	=
(18) Other Invested Assets	Company Records		X 0.30000	=
(19) Total Off-Balance Sheet Collateral	Lines (8) + (15) + (16) + (17) + (18)			

† The factor for common stock can vary depending on the type of stock. The factor would be subject to a minimum of 22.5 percent and a maximum of 45 percent.

Denotes items that must be manually entered on the filing software.

#REF!

## BONDS

### LR002

#### *Basis of Factors*

The bond factors are based on cash flow modeling using historically adjusted default rates for each bond category. For each of 2,000 trials, annual economic conditions were generated for the 10-year modeling period. Each bond of a 400-bond portfolio was annually tested for default (based on a “roll of the dice”) where the default probability varies by designation category and that year’s economic environment. When a default takes place, the actual loss considers the expected principal loss by category, the time until the sale actually occurs and the assumed tax consequences.

Actual surplus needs are reduced by incorporating anticipated annual contributions to the asset valuation reserve (AVR) as offsetting cash flow. Required surplus for a given trial is calculated as the amount of initial surplus funds needed so that the accumulation with interest of this initial amount and subsequent cash flows will not become negative at any point throughout the modeling period. The factors chosen for the proposed formula produce a level of surplus at least as much as needed in 92 percent of the trials by category and a 96 percent level for the entire bond portfolio.

The factor for NAIC 6 bonds recognizes that the book/adjusted carrying value of these bonds reflects a loss of value upon default by being marked to market.

#### *Specific Instructions for Application of the Formula*

##### Lines (1) through (7)

The book/adjusted carrying value of all bonds and related fixed-income investments should be reported in Column (1). The bonds are split into seven different risk classifications. For long-term bonds, these classifications are found on Lines 1 through 7 of the Asset Valuation Reserve Default Component, Page 30 of the annual statement.

##### Line (8)

The total should equal long-term bonds and other fixed-income instruments reported on Page 2, Column 3, Line 1 plus Schedule DL Part 1, Column 6, Line 7099999 ~~minus Schedule D, Part 1A, Section 1, Column 7, Line 7.7 of the annual statement.~~

##### Lines (9) through (15)

The book/adjusted carrying value of all bonds and related fixed-income investments should be reported in Column (1). The bonds are split into seven different risk classifications. For short-term bonds, these classifications are found on Lines 18 through 24 of the Asset Valuation Reserve Default Component, Page 30 of the annual statement.

##### Line (16)

The total should equal short-term bonds reported on Schedule DA, Part 1, Line 8399999 plus Schedule DL Part 1, Column 6, Line 8999999 plus LR012 Miscellaneous Assets Column (1) Line (2.2).

##### Line (22)

Class 1 bonds (highest quality) issued by a U.S. government agency that are not backed by the full faith and credit of the U.S. government should be reported on this line. The loan-backed securities of the Federal National Mortgage Association (FNMA) and the Federal Home Loan Mortgage Corporation (FHLMC) would be examples of the securities reported on this line. Line (22) should not be larger than the sum of Lines (2) and (10). Exempt obligations should not be included on this line.

##### Line (24)

Bonds should be aggregated by issuer (the first six digits of the CUSIP number can be used). Exempt U.S. government bonds and bonds reported on Line (22) are not counted in determining the size factor. The RBC for those bonds will not be included in the base to which the size factor is applied. If this field is left blank, the maximum size factor adjustment of ~~2.55.87~~ will be used.

Line (25)

The size factor reflects the higher risk of a bond portfolio that contains relatively fewer bonds. The overall factor decreases as the portfolio size increases. Portfolios with more than 1,300 issuers will receive a discount. The size factor is based on the weighted number of issuers. (The calculation shown below will not appear on the RBC filing software but will be calculated automatically.)

		<u>(a)</u>			<u>(b)</u>	
	<u>Source</u>	<u>Number of Issuers</u>			<u>Weighted Issuers</u>	
<u>Line (25)</u>						
<u>First 10</u>	<u>Company Records</u>	<u>_____</u>	<u>X 5.87</u>	<u>≡</u>	<u>_____</u>	<u>_____</u>
<u>Next 90</u>	<u>Company Records</u>	<u>_____</u>	<u>X 1.54</u>	<u>≡</u>	<u>_____</u>	<u>_____</u>
<u>Next 100</u>	<u>Company Records</u>	<u>_____</u>	<u>X 0.85</u>	<u>≡</u>	<u>_____</u>	<u>_____</u>
<u>Next 300</u>	<u>Company Records</u>	<u>_____</u>	<u>XX 0.85</u>	<u>≡</u>	<u>_____</u>	<u>_____</u>
<u>Over 500</u>	<u>Company Records</u>	<u>_____</u>	<u>X 0.82</u>	<u>≡</u>	<u>_____</u>	<u>_____</u>
<u>Total Number of Issuers from Line (23)</u>		<u>_____</u>				
<u>Total Weighted Issuers</u>					<u>_____</u>	<u>_____</u>
<u>Size Factor = Total Weighted Issuers divided by Total Number of Issuers</u>						<u>_____</u>

		<u>(a)</u>			<u>(b)</u>	
	<u>Source</u>	<u>Number of Issuers</u>			<u>Weighted Issuers</u>	
<u>Line (25)</u>						
<u>First 50</u>	<u>Company Records</u>	<u>_____</u>	<u>X 2.5</u>	<u>=</u>	<u>_____</u>	<u>_____</u>
<u>Next 50</u>	<u>Company Records</u>	<u>_____</u>	<u>X 1.3</u>	<u>=</u>	<u>_____</u>	<u>_____</u>
<u>Next 300</u>	<u>Company Records</u>	<u>_____</u>	<u>X 1.0</u>	<u>=</u>	<u>_____</u>	<u>_____</u>
<u>Over 400</u>	<u>Company Records</u>	<u>_____</u>	<u>X 0.9</u>	<u>=</u>	<u>_____</u>	<u>_____</u>
<u>Total Number of Issuers from Line (23)</u>		<u>_____</u>				
<u>Total Weighted Issuers</u>					<u>_____</u>	<u>_____</u>
<u>Size Factor = Total Weighted Issuers divided by Total Number of Issuers</u>						<u>_____</u>

## ASSET CONCENTRATION FACTOR LR010

### *Basis of Factors*

The purpose of the concentration factor is to reflect the additional risk of high concentrations in single exposures (represented by an individual issuer of a security or a holder of a mortgage, etc.) The concentration factor doubles the risk-based capital pre-tax factor (with a maximum of 45 percent pre-tax) of the 10 largest asset exposures excluding various low-risk categories or categories that already have a maximum factor. Since the risk-based capital of the assets included in the concentration factor has already been counted once in the basic formula, the asset concentration factor only serves to add in the additional risk-based capital required. The calculation is completed on a consolidated basis; however, the concentration factor is reduced by amounts already included in the concentration factors of subsidiaries to avoid double-counting.

### *Specific Instructions for Application of the Formula*

The 10 largest asset exposures should be developed by consolidating the assets of the parent with the assets of the company's insurance and investment subsidiaries. The concentration factor component on any asset already reflected in the subsidiary's RBC for the concentration factor should be deducted from Column (4). This consolidation process affects higher tiered companies only. Companies on the lowest tier of the organizational chart will prepare the asset concentration on a "stand alone" basis.

The 10 largest exposures should exclude the following: affiliated and non-affiliated common stock, affiliated preferred stock, home office properties, policy loans, bonds for which AVR and RBC are zero, NAIC 1 bonds, NAIC 1 unaffiliated preferred stock, NAIC 1 Hybrids, CM 1 Commercial and Farm Mortgages and any other asset categories with RBC factors less than 0.8 percent post-tax (this includes residential mortgages in good standing, insured or guaranteed mortgages, and cash and short-term investments).

In determining the assets subject to the concentration factor for both C-1o and C-1cs, the ceding company should exclude any asset whose performance inures primarily (>50 percent) to one reinsurer under modified coinsurance or funds withheld arrangements. The reinsurer should include 100 percent of such asset. Any asset where no one reinsurer receives more than 50 percent of its performance should remain with the ceding company.

Assets should be aggregated by issuer before determining the 10 largest exposures. Aggregations should be done separately for bonds and preferred stock (the first six digits of the CUSIP number can be used as a starting point) (please note that the same issuer may have more than one unique series of the first six digits of the CUSIP), mortgages and real estate. Securities held within Schedule BA partnerships should be aggregated by issuer as if the securities are held directly. Likewise, where joint venture real estate is mortgaged by the insurer, both the mortgage and the joint venture real estate should be considered as part of a single exposure. Tenant exposure is not included. For bonds and unaffiliated preferred stock, aggregations should be done first for classes 2 through 6. After the 10 largest issuer exposures are chosen, any NAIC 1 bonds, NAIC 1 unaffiliated preferred stock or NAIC 1 hybrids from any of these issuers should be included before doubling the risk-based capital. For some companies, following the above steps may generate less than 10 "issuer" exposures. These companies should list all available exposures.

Replicated assets other than synthetically created indices should be included in the asset concentration calculation in the same manner as other assets.

The book/adjusted carrying value of each asset is listed in Column (2).

The RBC factor will correspond to the risk-based capital category of the asset reported previously in the formula before application of the size factor for bonds. The RBC filing software automatically allows for an overall 45 percent RBC cap.



Lines (17) through (22)

The Asset Concentration RBC Requirement for a particular property plus the Real Estate RBC Requirement for a particular property cannot exceed the book/adjusted carrying value of the property. Any properties exceeding the book/adjusted carrying value must be adjusted down to the book/adjusted carrying value in Column (6) of the Asset Concentration.

Line (18), Column (4) is calculated as Line (17), Column (2) multiplied by 0.2300 plus Line (18), Column (2) multiplied by 0.2000, but not greater than Line (17), Column (2).

Line (20), Column (4) is calculated as Line (19), Column (2) multiplied by 0.1500 plus Line (20), Column (2) multiplied by 0.1200, but not greater than Line (19), Column (2).

Line (22), Column (4) is calculated as Line (21), Column (2) multiplied by 0.2300 plus Line (22), Column (2) multiplied by 0.2000, but not greater than Line (21), Column (2).

Lines (23) through (54)

The Asset Concentration RBC Requirement for a particular mortgage plus the LR004 Mortgages RBC Requirement or LR009 Schedule BA Mortgages RBC Requirement for a particular mortgage cannot exceed 45 percent of the book/adjusted carrying value of the mortgage. Any mortgages exceeding 45 percent of the book/adjusted carrying value must be adjusted down in Column (6) of the Asset Concentration.

Line (32), Column (4) is calculated as the greater of 0.1800 multiplied by [(Line (31) plus Line (32))] less Line (32) or Line (31) multiplied by the appropriate factor for the CM class to which the loan is assigned.

Line (34), Column (4) is calculated as the greater of 0.0140 multiplied by [(Line (33) plus Line (34))] less Line (34) or Line (33) multiplied by 0.0068.

Line (36), Column (4) is calculated as the greater of 0.1800 multiplied by [(Line (35) plus Line (36))] less Line (36) or Line (35) multiplied by the appropriate factor for the CM class to which the loan is assigned.

Line (38), Column (4) is calculated as the greater of 0.2200 multiplied by [(Line (37) plus Line (38))] less Line (38) or Line (37) multiplied by the appropriate factor for the CM class to which the loan is assigned.

Line (40), Column (4) is calculated as the greater of 0.0270 multiplied by [(Line (39) plus Line (40))] less Line (40) or Line (39) multiplied by 0.0068.

Line (42), Column (4) is calculated as the greater of 0.2200 multiplied by [(Line (41) plus Line (42))] less Line (42) or Line (41) multiplied by the appropriate factor for the CM class to which the loan is assigned.

Line (43), Column (4) is calculated as Line (43) multiplied by the appropriate factor for the CM class to which the loan is assigned.

Line (52), Column (4) is calculated as the greater of 0.1800 multiplied by [(Line (51) plus Line (52))] less Line (52) or Line (51) multiplied by the appropriate factor for the CM class to which the loan is assigned.

Line (54), Column (4) is calculated as the greater of 0.2200 multiplied by [(Line (53) plus Line (54))] less Line (54) or Line (53) multiplied by the appropriate factor for the CM class to which the loan is assigned.

## HEDGED ASSET BOND AND COMMON STOCK SCHEDULES

LR014 and LR015

*(Instructions related to intermediate hedges are in italics.)*

### Hedging

The concept of hedging credit, equity and other risks is widely accepted and understood among insurers and their regulators. In order for regulators to distinguish between insurers that have effectively reduced their risks from those insurers that have not, the risk based capital computation should be sensitive to such differences. Increasing or decreasing exposure to different asset classes in relation to a benchmark asset allocation tailored to meet the long term obligations to policy owners is critical to successfully managing an insurance company. Hedging is the process of using derivative instruments to most efficiently limit risk associated with a particular asset in a manner consistent with the insurer's long term objectives. The relative advantage of using cash market transactions versus derivative market transactions depends upon market conditions.

The NAIC model investment laws and regulations establish specific constraints on the use of derivatives. Governance of derivative use starts with approved and documented authorities from the insurer's Board of Directors to management. These authorities are coordinated with and enhanced by limits established by the insurer's domiciliary state.

Hedging strategies currently employed by insurers range from straightforward relationships between the hedged asset and the derivative instrument (the hedge) to more complex relationships. The purpose of this section of the RBC calculation is to measure and reflect in RBC the risk reduction achieved by an insurer's use of the most straightforward types of hedges involving credit default and equity C-1 risks.

To avoid the possible double counting of RBC credits, excluded from this section are any RBC credits arising from hedges that are part of the Clearly Defined Hedging Strategy (CDHS) required for C-3 cash flow testing or other risk mitigation techniques (e.g. reinsurance) which produce reduced levels of RBC by operation of other parts of the RBC formula.

### RBC and Measuring the Risk Reduced by Hedging

To measure the risks reduced by hedging and reflect the effects in RBC it is important to understand the characteristics and purpose of the hedge. A portfolio manager seeking to hedge a particular asset or portfolio risk must determine if the derivative instruments available will do a suitable job of risk mitigation.

Default risk - A portfolio manager may determine that the default risk of a particular debt security which matures in 8 years needs to be hedged because of a near term credit concern which may resolve before the debt matures. A credit default swap (CDS) would be the most effective hedging instrument. In some circumstances the manager may purchase a CDS with 8 years to maturity which fully mitigates the default risk and shall result in an RBC credit which fully offsets the C-1 default risk charge on the debt security. However, seeking the most liquid and cost efficient market for the purchase of such an instrument may lead to the purchase of a 5 year CDS which the manager plans to renew (roll) as the credit circumstances evolve in the coming years. In this case there is a 3 year maturity mismatch between the debt security and the hedging instrument. To account for the difference between insurers that have hedged the debt security to full maturity versus those with a mismatched position, the determination of the RBC credit shall be made in accordance with the following formula which limits the results to a fraction of the C-1 charge for the hedged asset.

$$\text{RBC Credit As \% of C1 Asset Charge} = \text{Min} \left( 1, \frac{\text{Time to Maturity of CDS}}{\text{Time to Maturity of Bond}} \right) \times (94\% - 10\%) + 10\%$$

This accounts for mismatched maturities and provides a regulatory margin of safety within a range of 94%-10% of the C-1 asset charge.

*There may also be circumstances where default risk is reduced by hedging specific portfolios using a basket or index-based derivative (e.g. CDX family of derivatives) with the same or very similar components as the portfolio. For these hedges the risk reduction shall be measured based on the number of issuers common to both the insurer's portfolio and the index/basket CDS. A minimum of 50% overlap of the derivative instrument notional amount and the book/adjusted carrying value of the hedged bonds shall be required to qualify for any RBC credit. Additionally, if the insurer hedges an index, each bond must be listed (e. g. if the insurer acquires a CDX that hedges 125 names equally, then the insurer must list all 125 names on the schedule), regardless if the insurer owns all the bonds in the index.*

As RBC is currently measured and reported annually and to an extent provides a regulator with an indicator of capital sufficiency for the near term future; default risk protection as provided by CDS (based on a specific security or an index of securities) shall have more than 1 year remaining to maturity in order to receive any RBC credit, provided that the remaining maturity of the hedged debt security or average maturity of the hedged portfolio is greater than 1 year. When both the default risk protection and the hedged debt security have less than one year to maturity, full RBC credit shall be allowed provided that the maturity of the protection is later than the maturity of the debt security; otherwise no RBC credit is allowed.

Equity market risk - A portfolio manager may determine that the market risk of holding a particular common stock needs to be reduced. Because an outright sale at that point in time might be disadvantageous to the insurer and/or policy owners, a short futures contract may be purchased to eliminate the current market risk by establishing a sale price in the future. The C-1 RBC equity risk credit shall be limited to 94%.

*There may also be circumstances where equity market risk is reduced by hedging equity portfolios using derivatives based on equity market indices (e.g. S&P 500 futures contracts). Unless the equity portfolio is exactly matched to the index, the hedge will not provide precise one-to-one protection from fluctuations in value. The insurer must list all positions in the equity index individually (e. g. all 500 common stocks that are part of the S&P 500), regardless if the insurer owns all the stocks in the index.*

#### Definitions and Instructions for the Spreadsheet Computation of Risk Reduction

(Numeric references represent spreadsheet columns)

##### Bonds

- (1) Description - Reported on Schedule DB.
- (2) Notional Amount - Amount reported on Schedule DB.
- (3) Relationship Type of the Hedging Instrument and Hedged Asset. There are two categories; Basic and Intermediate relationships. Basic relationship = Single issuer credit default swap on a single issuer name to hedge the credit risk of a specific hedged asset. *Intermediate relationship = A portfolio of insurer assets paired with a basket or index based hedging instrument with the same or very similar components as the portfolio. For intermediate relationships, a minimum of 50% overlap of the derivative instrument notional amount and the book adjusted carrying value of the hedged bonds shall be required to qualify for any RBC credit.*
- (4) Maturity Date - Date reported on Schedule DB.

- (5) Description - Bond description found in Schedule D. *For intermediate relationships, each bond must be listed (e. g. if the insurer acquires a credit default index that hedges 125 names equally, then the insurer must list all 125 names on the schedule.)*
- (6) CUSIP Identification - Bond unique identifier found in Schedule D.
- (7) Book Adjusted Carrying Value - Value found on Schedule D.
- (8) Overlap with Insurer's Bond Portfolio – The portion of Column (2) Notional Amount of the Hedging Instrument that hedges Column (7) Book Adjusted Carrying Value. This amount cannot exceed Column (7) Book Adjusted Carrying Value.
- (9) Maturity Date - The date is found in Schedule D.
- (10) NAIC Designation - Designation found in Schedule D. Necessary to determine correct RBC Factor for the Bonds.
- (11) RBC Factor - Factor based on Column (10) NAIC Designation and NAIC C-1 RBC factors table.
- (12) Gross RBC Charge – This is the C-1 RBC charge based on holdings at the end of the year. Calculation: Columns (7) Book Adjusted Carrying Value multiplied by (11) RBC Factor.
- (13) RBC Credit for Hedging Instruments – If Column (8) Overlap with Insurer's Bond Portfolio is zero; the RBC Credit would also be zero. The Hedging Instrument must have more than 1 year remaining to maturity in order to receive any RBC credit provided that the remaining time to maturity of the Hedged Asset - Bonds is greater than 1 year. If both the Hedging Instrument and the Hedged Asset - Bonds maturity dates are less than 1 year, the maximum RBC credit determined using the formula below shall be allowed provided that the maturity of the hedging instrument is equal to or later than the maturity of the bond. Calculation is Column (8) Overlap with Insurer's Bond Portfolio multiplied by RBC Credit as % of C-1 Asset Charge formula (formula listed below) multiplied by Column (11) RBC Factor.

$$\text{RBC Credit as \% of C1 Asset Charge} = \text{Min} \left( 1, \frac{\text{Time to Maturity of Hedging Instrument}}{\text{Time to Maturity of Bond}} \right) \times (94\% - 10\%) + 10\%$$

Time to Maturity of Hedging Instrument divided by Time to Maturity of Bond cannot exceed 1.

- (14) Net RBC Charge – Column (12) Gross RBC Charge minus (13) RBC Credit for Hedging Instruments.

#### Common Stocks

- (1) Description - Reported on Schedule DB.
- (2) Notional Amount - Amount reported on Schedule DB.
- (3) Relationship Type of the Hedging Instrument and Hedged Asset. There are two categories; Basic relationships or Intermediate relationships. Basic relationship = Single name equity Hedging Instrument paired with a specific common stock. *Intermediate relationship = A portfolio of common stocks paired with a basket or index based Hedging Instrument with the same or very similar components as the portfolio. For intermediate relationships, a minimum of 50% overlap of the derivative instrument notional amount and the book adjusted carrying value of the hedged common stocks shall be required to qualify for any RBC credit.*

- (4) Description - Common Stock description found in Schedule D Part 2 Section 2. *For intermediate relationships, each common stock must be listed (e. g. if the insurer acquires a short futures contract that hedges the S&P 500, then the insurer must list all 500 stocks on the schedule).*
- (5) CUSIP Identification - Common Stock unique identifier found in Schedule D Part 2 Section 2.
- (6) Book Adjusted Carrying Value - Value found on Schedule D Part 2 Section 2.
- (7) Overlap with Insurer's Stock Portfolio – The portion of Column (2) Notional Amount of the Hedging Instrument that hedges Column (6) Book/Adjusted Carrying Value. This amount cannot exceed the Column (6) Book Adjusted Carrying Value.
- (8) RBC Factor - Factor based on NAIC C-1 RBC factors table.
- (9) Gross RBC Charge - The C-1 RBC charge based on holdings at the end of the year. Calculation: Columns (6) Book Adjusted Carrying Value multiplied by (8) RBC Factor.
- (10) RBC Credit for Hedging Instruments - RBC credit for equity market risk reduction is limited to 94% of the C-1 Asset charge. Calculation: Column (7) Overlap with Insurer's Stock Portfolio multiplied by (8) RBC Factor multiplied by 94%.
- (11) Net RBC Charge - Column (9) Gross RBC Charge minus (10) RBC Credit for Hedging Instruments.

Factors Table  
As determined by the NAIC

NAIC Designation	Factor
	0.00000
1	0.00158
1.A	0.00158
1.B	0.00271
1.C	0.00419
1.D	0.00523
1.E	0.00657
1.F	0.00816
1.G	0.01016
2.A	0.01261
2.B	0.01523
2.C	0.02168
3.A	0.03151
3.B	0.04537
3.C	0.06017
4.A	0.07386
4.B	0.09535
4.C	0.12428
5.A	0.16942
5.B	0.23798
5.C	0.30000
6	0.30000
<b>Common Stock Type</b>	
Other Unaffiliated Public Common Stock	0.4500 †
Money Market Mutual Funds	0.0040
Federal Home Loan Bank Common Stock	0.0110
Unaffiliated Private Common Stock	0.3000
† - 30 percent adjusted up or down by the weighted average beta for the publicly traded common stock portfolio subject to a minimum of 22.5 percent and a maximum of 45 percent.	

**OFF-BALANCE SHEET COLLATERAL**  
(Including any Schedule DL, Part 1 Assets not Included in the Asset Valuation Reserve)  
LR018

*Basis of Factors*

Security lending programs are required to maintain collateral. Some entities post the collateral supporting security lending programs on their financial statements, and incur C-1 risk charges on those assets. Other entities have collateral that is not recorded on their financial statements. While not recorded on the financial statements of the company, such collateral has risks that are not otherwise captured in the RBC formula.

Annual Statement Schedule DL, Part 1, Securities Lending Collateral Assets reported on the balance sheet (Assets Page, Line 10) should be included on the schedule with the Off-Balance Sheet Collateral if they are not already reflected in the Asset Valuation Reserve and are reflected in another portion of the Life RBC formula.

The collateral in these accounts is maintained by a third-party (typically a bank or other agent). The collateral agent maintains on behalf of the company detail asset listings of the collateral assets, and this data is the source for preparation of this schedule. The company should maintain such asset listings, at a minimum CUSIP, market value, book/carrying value, and maturity date. The asset risk charges are derived from existing RBC factors for bonds, preferred and common stocks, other invested assets, and invested assets not otherwise classified (aggregate write-ins).

*Specific Instructions for Application of the Formula*

Off-balance sheet collateral included in General Interrogatories, Part 1, Lines 24.05 and 24.06 of the annual statement should agree with Line (19).

Lines (1) through (8) – Bonds

Bond factors are described on page LR002 Bonds.

Line (9) through (15) – Preferred Stocks

Preferred stock factors are described on page LR005 Unaffiliated Preferred and Common Stock.

Line (16) – Common Stock

Common stock factors are described on page LR005 Unaffiliated Preferred and Common Stock.

Line (17) – Schedule BA – Other Invested Assets

Other invested assets factors are described on page LR008 Other Long Term Assets.

Line (18) – Aggregate Write-ins for Other Invested Assets

Aggregate write-ins for other invested assets factors are described on page LR012 Miscellaneous Assets.

Preliminary Proposed Updates to RBC C1 Bond Factors  
For Discussion with Life Risk-Based Capital (E) Working Group

April 22, 2021



Moody's (NYSE:MCO) is a global integrated risk assessment firm that empowers organizations to make better decisions. Its data, analytical solutions and insights help decision-makers identify opportunities and manage the risks of doing business with others. We believe that greater transparency, more informed decisions, and fair access to information open the door to shared progress. With over 11,400 employees in more than 40 countries, Moody's combines an international presence with local expertise and more than a century of experience in financial markets. Learn more at [moody's.com/about](https://www.moody's.com/about).

Moody's Corporation is comprised of two separate companies: Moody's Investors Service (MIS) and Moody's Analytics (MA).

Moody's Investors Service (MIS) provides investors with a comprehensive view of global debt markets through credit ratings and research. Moody's Analytics (MA) provides data, analytics, and insights to equip leaders of financial, non-financial, and government organizations with effective tools to understand a range of risks.

Throughout this document, "MIS rating" refers to a MIS credit rating. And while references to MIS are made, the views and opinions in this document are solely of MA.

## Scope

What We're Doing

**Proposing RBC C1 bond factors using data and methodologies that better reflect economic risks to better assess insolvency risk and help identify potentially weakly capitalized life insurers; the C1 factors should not incentivize poor business decisions that can adversely impact solvency.**

- Methodologies and data rely entirely on public sources that are accessible and reproducible by NAIC and industry
- Articulated limitations
- NAIC to use at its discretion in setting the final C1 factors, although MA cautions isolated modifications to modeling features and parameters without considerations of the interconnected elements of the C1 modeling framework and limitations
- While the ACLI, the industry, the NAIC, and commissioners have been engaged extensively, the views are solely those of MA and based on an objective assessment of supporting documentation, and data and modeling approaches that in MA's experience viewed as best practice

## Heuristic Performance Criteria

How We're Doing It

### Proposing C1 factors that

- Better represent the historical experience of life insurers' holdings
- More accurately reflect empirically observed default correlations and issuer diversification benefits

### Challenges:

- C1 factors are cardinal, and a function of MA's default rates estimated using MIS corporate default rates that reflect the historical experience of life insurance corporate holdings for each MIS rating, which are opinions of ordinal, horizon-free credit risk, rather than cardinal
- C1 factors are static while risks and spreads change over time, across ratings and asset classes, resulting in a potential misalignment between the C1 factors and the underlying risks of varied holdings in insurers' portfolios.
- Applied to range of credit assets, based on their NAIC designations (i.e., the second lowest nationally recognized statistical rating organization (NRSRO) rating) with statistical properties that can be different from those estimated using MIS corporate default rates

## References

### Past presentation to the Life Risk-Based Capital (E) Working Group

- [Assessment of Proposed Revisions to the RBC C1 Bond Factors](#) (February 2021)
- [MA's Update on Proposed C1 Bond Factors](#) (March 2021)
- [MA's Preliminary Proposed Updates to RBC C1 Bond Factors](#) (April 15, 2021)

# Agenda

1. Overview of Impactful Targeted Improvements
2. Economic State Model and the MA Proposed Correlation Model
3. Default Rates
4. Risk Premium
5. Discount Rate and Tax Rate
6. Recap

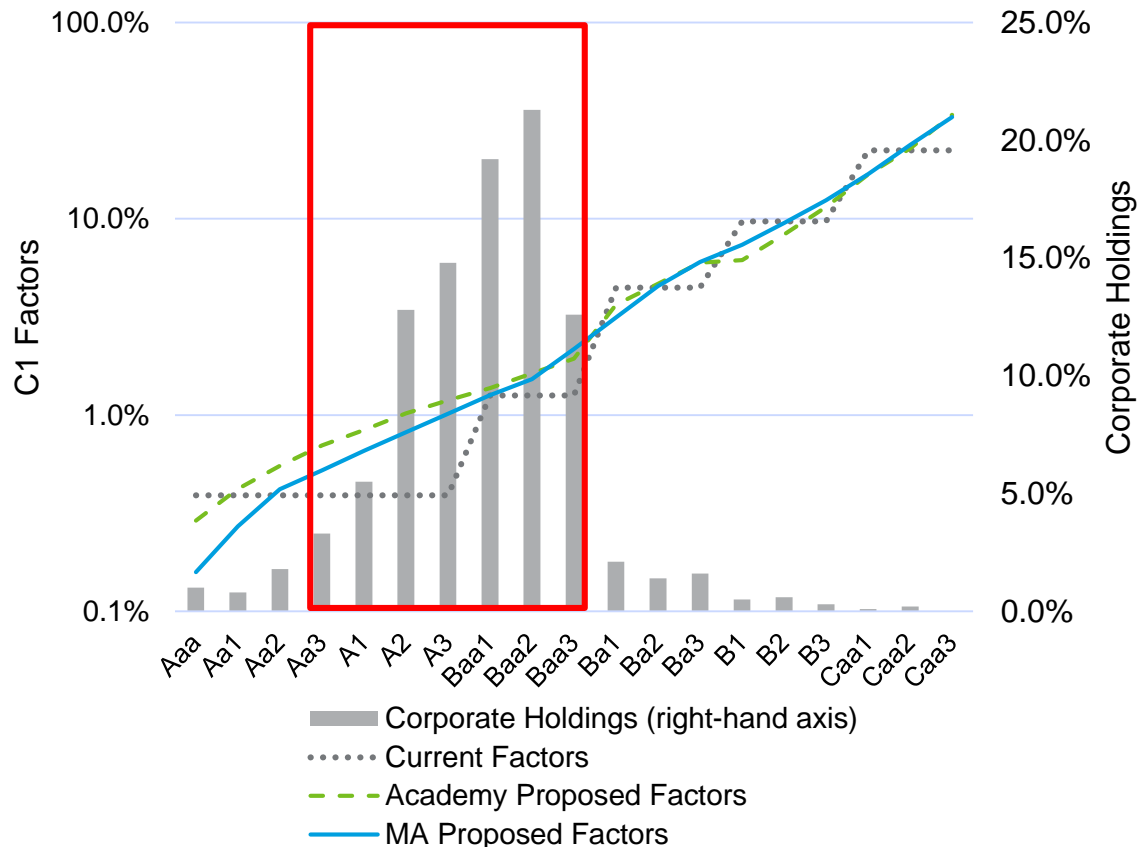
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Overview of Impactful  
Targeted Improvements

# MA's Proposed C1 Factors

Targeted improvements with largest impact

C1 Base Factors (log scale) and Corporate Holdings



**Economic state model**, initially outside scope, limitations sufficiently material that MA recommends replacement

- » Economic state model understates default correlations and overstates diversification across issuers relative to that observed empirically, resulting in:
  - C1 base factors that potentially understate credit losses
  - PAFs that are overly punitive (lenient) to portfolios with a smaller (larger) number of issuers
- » Economic Scalars result in counterfactual increases and decreases to the C1 base factors across the NAIC designation categories. They lead to an overall flattening of high yield C1 base factors relative to investment grade, and under certain parameterizations C1 base factors that are non-monotonic.
- » MA proposed correlation model is calibrated to default correlations and diversification across issuers observed empirically. Resulting C1 base factors are more conservative and differentiated across MIS ratings compared with economic state model.

**Corporate default rate term structures** estimated to historical experience of life company holdings

- » Life company holdings differ from overall issuance; e.g., life company holdings have less weight on financial institutions that tend to issue shorter term debt.
- » MA proposed default rates tend to have a steeper slope (more differentiated across MIS ratings) than those proposed by the Academy, with differentiation more closely aligning with benchmarks.

**Risk Premium** set at expected loss plus 0.5 standard deviation recognizing variation in industry reserving standards and to closer align with PBR and reserving standards generally aiming to cover moderately adverse conditions. A higher Risk Premium lowers the C1 base factors and mildly increases the cross-sectional variation (or slope) and should be set to better identify of weakly capitalized firms identify and mitigate risk shifting incentives with new bond purchases.

**Discount Rate & Tax rate** set at 3.47% (2000-2020 window) and 21% under guidance of NAIC during the Life Risk-Based Capital (E) Working Group meeting on April 22, 2021. While an alternative window start date can be justified, the discount rate enters the RBC C1 framework as a single static rate and not as impactful as some other targeted improvements, reinforced by updated tax rate offset. Potentially important term structure dynamics that interplay with credit risk are not captured within the current framework.

# 2

## Economic State Model and the MA Proposed Correlation Model

# Economic State Model Initially Outside Scope

## Two material limitations

Economic state model is calibrated to default rates across contraction and expansion states, but it implies default correlations of ~0% for IG issuers, overstating diversification across issuers relative to that observed empirically, resulting in:

- » C1 base factors that potentially understate credit losses
- » PAFs that are overly punitive (lenient) to portfolios with a smaller (larger) number of issuers

Economic Scalars, that are applied to the default rate term structure in each simulated state (expansion and contraction) exhibit counterfactual increases and decreases across the NAIC designation categories.

- » They lead to an overall flattening of C1 base factors for high yield relative to those of investment grade
  - › Contraction Economic Scalars average **2.56** for investment grade and **1.75** for high yield (1)
- » Under certain parameterizations C1 base factors are non-monotonic, e.g., contraction scalar going from 1.9421 (Ba3) to 1.4958 (B1) (2).

Economic Scalars	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3		
Continued Expansion	NA	NA	NA	NA	NA	NA	NA	0.7381	0.7380	0.7392	0.8189	0.8192	0.8189	0.8617	0.8620	0.8617	0.8549	0.8542	0.8536		
Expansion	0.7365	0.7342	0.7361	0.7334	0.7309	0.7290	0.7300	1.1301	1.1299	1.1318	0.8381	0.8384	0.8381	1.1901	1.1905	1.1901	0.9100	0.9093	0.9087		
Contraction	(1)	2.7495	2.7409	2.7482	2.7378	2.7287	2.7214	2.7252	2.1479	2.1475	2.1511	(1)	1.9422	1.9429	1.9421	1.4958	1.4964	1.4958	1.8042	1.8028	1.8016
Continued Contraction	NA	NA	NA	NA	NA	NA	NA	3.2231	3.2224	3.2279	2.9728	2.9738	2.9727	2.2114	2.2122	2.2114	2.2388	2.2371	2.2356		

# MA Proposed Correlation Model

Calibrated to default correlations observed empirically

The Academy's 10-year simulation model was adapted

- » Default rate Economic Scalars set to 1 (this effectively disables the economic state model)
- » Default correlations calibrated to empirically observed default correlations and issuer diversification benefits

Several benchmarks for default correlation

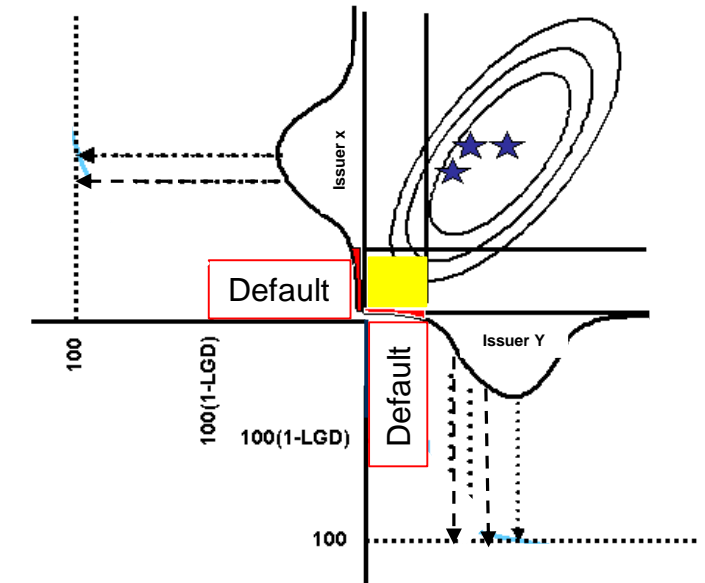
- » Joint default events
- » CDS implied
- » MIS ratings implied
- » Equity market and financial statement

MA proposed correlation model results in

- » C1 base factors that reflect empirical default correlations and are more conservative and more differentiated across MIS ratings than those implied by the economic state model; and
- » PAFs that more accurately reflect issuer diversification benefits, and that are less punitive (lenient) to portfolios with a smaller (larger) number of holdings, relative to those from Academy's proposal

MA proposed correlation model is calibrated to reflect empirically observed joint default events across MIS rating categories

- » In each period the likelihood of issuer x and y defaulting is determined by their default rates as depicted by the visualized distribution in red
- » The likelihood of a joint default, captured through a single factor model, is depicted in yellow and determined by the joint distribution represented by concentric circles
- » The model is continuous and not tied to 2 (or 4) discrete economic states, and generally results in higher 96 percentile loss





# Proposed C1 Base Factors

Incremental effects of replacing the economic state model with MA's proposed correlation model

- » MA's proposed correlation model generally increases C1 base factors
- » **(1)** As part of the economic state model, Economic Scalars lead to overall flattening of high yield C1 base factors relative to investment grade. MA's proposed correlation model
  - increases high yield factors by 28%
  - Increases investment grade factors by 24%
- » **(2)** Economic Scalars lead to non-monotonic C1 base factors under some parameterizations, e.g., 4.952% for Ba3 to 4.920% for B1
- » **(3)** Economic Scalars lead to more differentiation (22%) between A3 and Baa1 C1 base factors, compared to the correlation model (11%)

MIS Rating	Current Factors	Academy's Proposed Factors [March 2021]	MA's Preliminary Proposed Base Factors with Economic State Model & Academy's Default Rates	MA's Preliminary Proposed Base Factors with Correlation Model & Academy's Default Rates
Aaa	0.390%	0.290%	<b>(1)</b> 0.254%	0.289%
Aa1	0.390%	0.420%	0.373%	0.412%
Aa2	0.390%	0.550%	0.476%	0.550%
Aa3	0.390%	0.700%	0.593%	0.715%
A1	0.390%	0.840%	0.694%	0.896%
A2	0.390%	1.020%	0.817%	1.046%
A3	0.390%	1.190%	<b>(3)</b> 0.921%	1.254%
Baa1	1.260%	1.370%	1.128%	1.388%
Baa2	1.260%	1.630%	1.287%	1.633%
Baa3	1.260%	1.940%	1.542%	1.956%
Ba1	4.460%	3.650%	<b>(1)</b> 2.848%	3.955%
Ba2	4.460%	4.660%	3.739%	4.840%
Ba3	4.460%	5.970%	<b>(2)</b> 4.952%	5.995%
B1	9.700%	6.150%	4.920%	7.854%
B2	9.700%	8.320%	6.614%	9.901%
B3	9.700%	11.480%	9.319%	12.679%
Caa1	22.310%	16.830%	13.364%	16.044%
Caa2	22.310%	22.800%	18.788%	19.870%
Caa3	22.310%	33.860%	31.359%	28.933%

# Proposed PAF – MA's Findings

## Implications of MA's proposed correlation model

- » PAFs calibrated to the economic state model overstate issuer diversification benefits.
- » MA's proposed correlation model is calibrated to default correlations and issuer diversification benefits observed empirically.

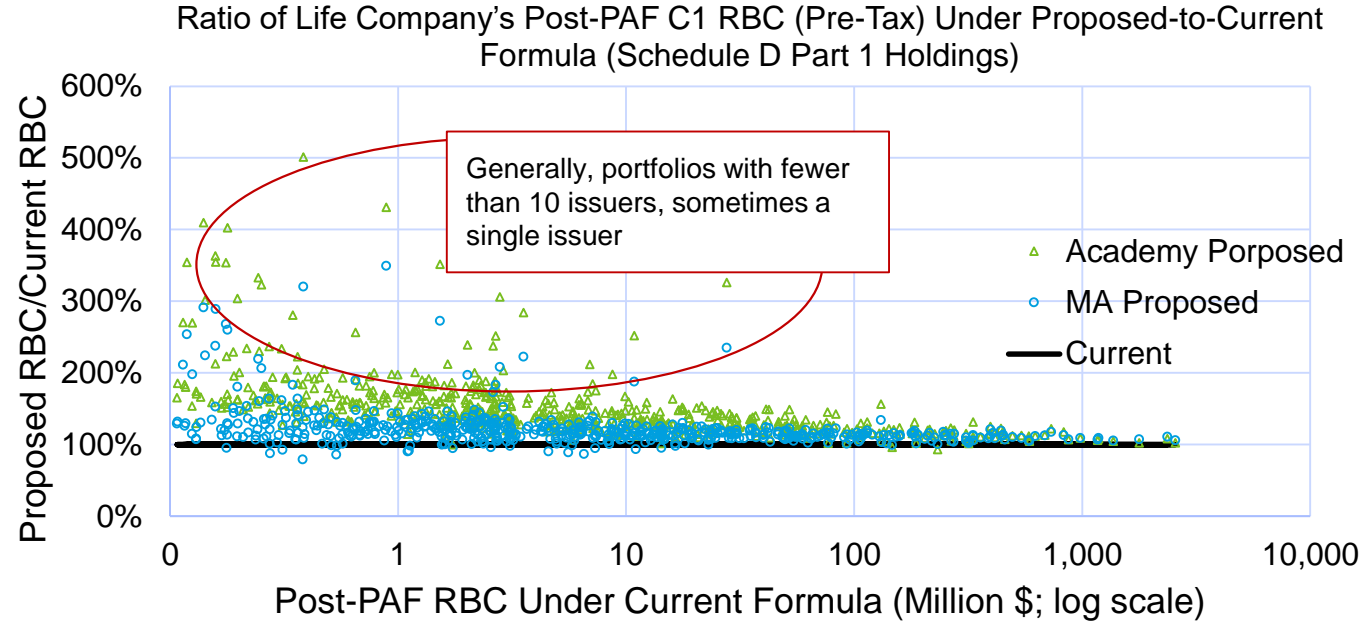
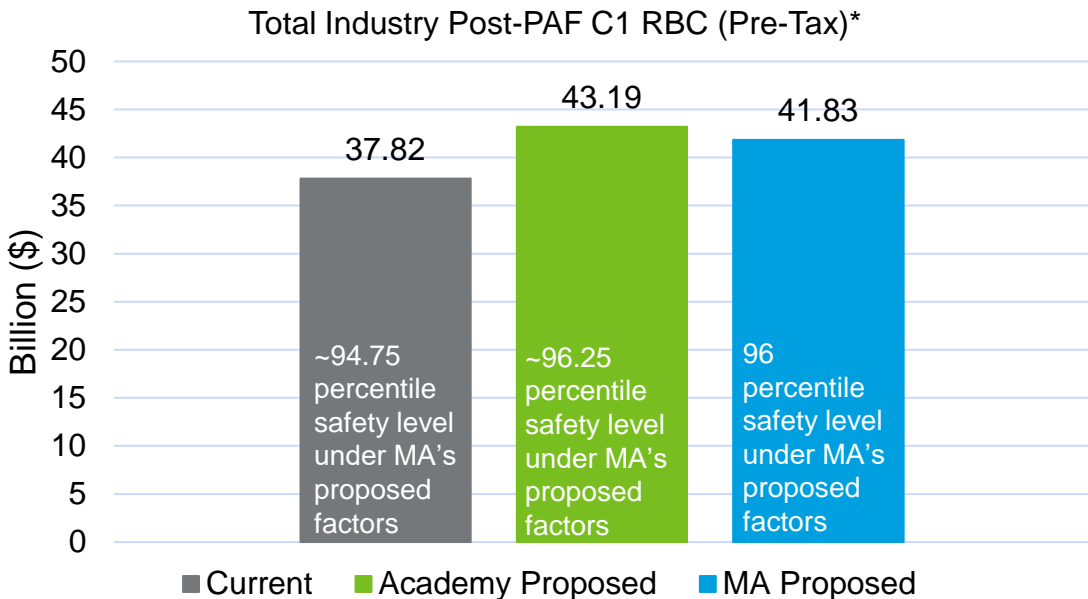
Thresholds*	Current*	Academy Proposed [March 2021]	MA Preliminary Proposed PAF
(Up to) 10	2.50	7.50	5.87
(Next) 90	1.83	1.75	1.53
(Next) 100	1.00	0.90	0.85
(Next) 300	0.97	0.85	0.85
(Above) 500	0.90	0.75	0.82

\*Current PAF converted to Academy's proposed thresholds for better comparison.

# MA's Proposed Factors

## Impact on Post-PAF C1 RBC

- » Resulting RBC under MA's proposal are generally more conservative than under the current formula, with an increase across life companies of different sizes.
- » Under the Academy's proposal, a disproportionate share of the C1 RBC increase is attributed to life companies with portfolios that have a small and medium number of issuers, driven largely by the economic state model implying more issuer diversification benefits (i.e., lower default correlations).



# 3

## Default Rates

# MA Proposed 10-Year Cumulative Default Rates

More closely reflect historical experience of life companies' corporate holdings

Raw default rates and benchmarks are subject to data challenges:

- » Non-monotonicity (1)
- » Few defaults in upper end of MIS ratings spectrum (2). 3 Aaa defaults in the US since 1970; 2 were debatable and experienced near full recovery (Texaco and Getty Oil).

Historical experience of life companies' corporate holdings differs from overall issuance (3), the resulting default rates tend to have a steeper slope (more differentiated across MIS ratings) than those proposed by the Academy.

MA proposed baseline default rates combine empirical data, anchoring, and smoothing to address data paucity and ensure conformity to economic logic.

- » **Anchoring:**
  - 10-year cumulative default rates for **Aa2, A2, Baa2, Ba2, B2, Caa** are anchored to Aa, A, Baa, Ba, B, Ca sector-weighted US corporate CDRs at 1- and 10-year, with curvature adjustment.
- » **Interpolation:**
  - Other alphanumeric ratings were interpolated geometrically between anchored ratings.

MIS Rating	Proposed by Academy	MIS IDR Rating Symbols and Definitions	MIS Annual Default Study (2021)			MA Empirical Results Based on MIS Historical Data	MA Specification
			Global Sample	Global Sample	US Sample (Sector weighted)		
			Aaa-B3 (1983-2020)	Coarse MIS Ratings	Coarse MIS ratings		
			Caa1-Caa3 (1998-2020)	(1983-2020)	Value		
Aaa	0.226%	0.010%	(2) 0.127%	0.127%	0.503%	0.079%	
Aa1	0.430%	0.100%	0.201%	(3) 0.729%	0.602%	0.203%	
Aa2	0.723%	0.200%	0.833%		0.763%		
Aa3	1.144%	0.400%	0.907%		1.122%		
A1	1.710%	0.700%	1.584%	2.065%	1.751%	1.650%	
A2	2.347%	1.200%	(1) 2.339%		2.272%		
A3	3.052%	1.800%	2.211%		3.129%		
Baa1	3.855%	2.600%	2.261%	3.362%	4.482%	4.309%	
Baa2	4.827%	3.600%	3.059%		6.850%		
Baa3	6.076%	6.100%	5.059%		10.889%		
Ba1	14.226%	9.400%	8.860%	14.943%	18.679%	17.310%	
Ba2	18.472%	13.500%	12.219%		22.191%		
Ba3	24.342%	17.660%	23.090%		28.448%		
B1	32.298%	22.200%	28.593%	34.134%	38.536%	36.471%	
B2	42.574%	27.200%	33.436%		44.981%		
B3	54.703%	34.900%	41.262%		55.478%		
Caa1	66.851%	47.700%	44.220%	50.219%	51.363%	68.424%	
Caa2	75.403%	65.000%	54.609%		84.391%		
Caa3	75.750%	80.700%	64.710%				

# Holdings Composition Differ from Overall Issuance

## Aligning parameters with Historical Experience

- » Institutional features drive life insurers towards holdings with characteristics different from overall issuance
- » Certain sectors are more suitable for life insurers across the ratings scale
  - Financial sector issued debt tends to exhibit shorter duration (3.9 average remaining maturity), with insurers holding longer dated financial sectors issues (11.1 average remaining maturity) **(1)**
  - Insurers hold a varying proportion of debt across the rating scale **(2)**
- » Relevant in the estimation of
  - Default rates
  - LGD

MIS Rating	U.S. Utility		U.S. Industrial		U.S. Financial	
	Sector as a Percentage of Life Corporate Holdings	Proportion of Corporate Issuers Attributed to Sector	Sector as a Percentage of Life Corporate Holdings	Proportion of Corporate Issuers Attributed to Sector	Sector as a Percentage of Life Corporate Holdings	Proportion of Corporate Issuers Attributed to Sector
Aaa	0.5%	5.9%	93.2%	42.9%	6.3%	51.2%
Aa	6.2%	8.3%	73.3%	36.5%	<b>(2)</b> 20.5%	55.2%
A	26.5%	17.8%	49.9%	46.0%	23.6%	36.2%
Baa	9.6%	21.2%	71.4%	58.1%	19.0%	20.7%
Ba	5.0%	5.9%	86.4%	81.5%	8.6%	12.6%
B	0.1%	1.0%	96.9%	92.8%	3.0%	6.2%
Caa	0.1%	0.6%	96.1%	95.6%	3.8%	3.9%
Ca	0.0%	1.1%	100.0%	90.4%	0.0%	8.5%
Overall	14.9%	10.4%	65.3%	68.1%	<b>(1)</b> 19.8%	21.5%

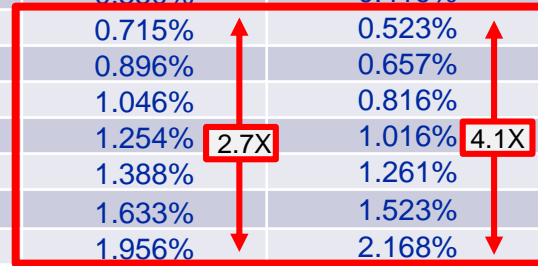
U.S. Corporate Sector	Average Time to Maturity for life insurers' US corporate holdings (notional weighted)	Average Time to Maturity for US corporate issues	Proportion of Issuers Attributed to Sector
Financial	<b>(1)</b> 11.1	3.9	21.5%
Industrial	12.8	7.7	68.1%
Utility	15.9	11.0	10.4%

# Proposed C1 Base Factors

## Incremental effects of MA proposed default rates

- » Default rate term structures representing experience of life insurance holdings tend to be more differentiated across MIS ratings than Academy proposed, and closer aligned to benchmarks
- » The resulting C1 base factors under MA's proposed default rates are generally more differentiated across the Aa3 to Baa3 range
- » The ratio of the Baa3 factor to the Aa3 factor is
  - 2.7 under MA's proposal with the Academy's default rates
  - 4.1 under MA's proposal
- » The Academy's proposed default rates result in C1 base factors being approximately 15% larger on average than under MA's proposed default rates.

MIS Rating	Current Factors	MA's Preliminary Proposed Base Factors with Academy's Default Rates	MA's Preliminary Proposed Base Factors
Aaa	0.390%	0.289%	0.158%
Aa1	0.390%	0.412%	0.271%
Aa2	0.390%	0.550%	0.419%
Aa3	0.390%	0.715%	0.523%
A1	0.390%	0.896%	0.657%
A2	0.390%	1.046%	0.816%
A3	0.390%	1.254%	1.016%
Baa1	1.260%	1.388%	1.261%
Baa2	1.260%	1.633%	1.523%
Baa3	1.260%	1.956%	2.168%
Ba1	4.460%	3.955%	3.151%
Ba2	4.460%	4.840%	4.537%
Ba3	4.460%	5.995%	6.017%
B1	9.700%	7.854%	7.386%
B2	9.700%	9.901%	9.535%
B3	9.700%	12.679%	12.428%
Caa1	22.310%	16.044%	16.942%
Caa2	22.310%	19.870%	23.798%
Caa3	22.310%	28.933%	32.975%



4

Risk Premium



# Risk Premium Updates

## Aligning with reserves

- » C1 RBC is the minimum required capital above statutory reserves to buffer against a tail loss
  - Risk Premium acts as an offset to C1 RBC; it is the part of statutory reserves provisioned against default loss
- » Variation in industry reserving standards
  - Both VM-20 and VM-21 explicitly require that reserves cover CTE 70, or approximately 88th percentile, default loss
  - VM-20 only applies to new life products after 2017. Most existing policies follow industry reserving standards that are commonly understood to cover moderately adverse conditions.
- » Recognizing variation in industry reserving standards and to closer align with PBR and reserving standards generally aim to cover moderately adverse conditions, Risk Premium is proposed to be set at **expected loss plus 0.5 standard deviation**
  - A higher Risk Premium lowers the C1 base factors and mildly increases their differentiation across MIS ratings and should better identify weakly capitalized firms and mitigate risk shifting incentives with new bond purchases
  - On average, as we decrease (increase) the risk premium by 0.5 standard deviation from MA's proposed level, the C1 base factors increase (decrease) around 20% for investment grade and around 15% for high yield factors
- » A transition to expected loss plus one standard deviation once
  - VM-20 become more widely applicable
  - VM-22 is formally updated and widely applicable

# 5

## Discount Rate and Tax Rate

# Discount and Tax Rate

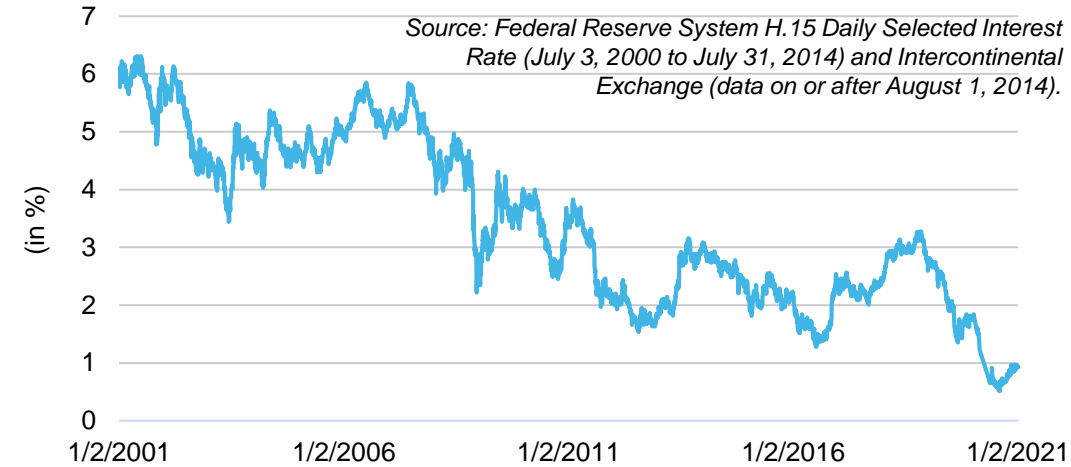
## Possible candidates

Tax rate was updated from 35% to 21%

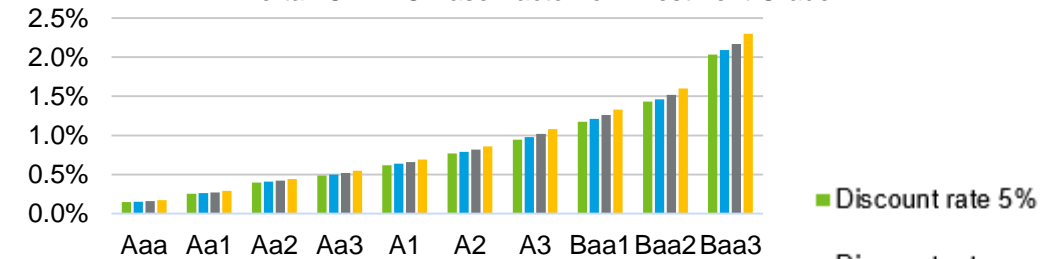
## Discount rate

- » Used to calculate the net present value of projected cash flows.
- » MA recognizes the need to parameterize the discount rate with a long-term perspective of long-term interest rates, and the desire for this parameter to be relatively stable while also allowing a closer reflection of the current, low-rate, environment
  - 2000–2020 (3.47%) used in developing MA proposed C1 base factors under guidance of NAIC during the Life Risk-Based Capital (E) Working Group meeting on April 22, 2021
- » Compared with the discount rate of 3.47%
  - 1993–2013 used by the Academy (5%) decreases C1 base factors by
    - › 6-7% for investment grade
    - › 3-6% for high-yield
  - 1993–2020 (4.32%) decreases C1 base factors by
    - › 2-6% for investment grade
    - › 2-3% for high-yield
  - 2010-2020 (2.25%) increases C1 base factors by
    - › 5-7% for investment grade
    - › 3-5% for high-yield

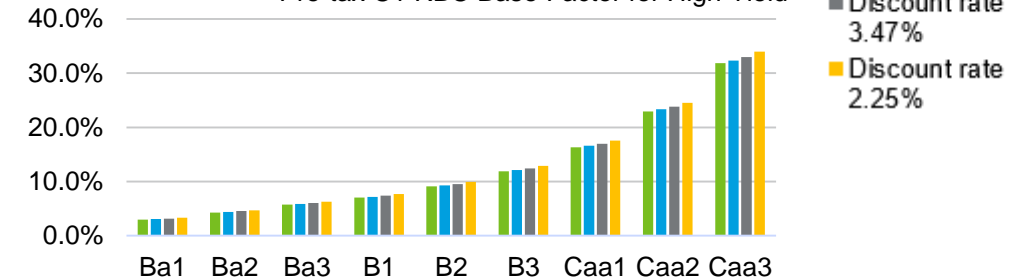
10-year USD Swap Rate



Pre-tax C1 RBC Base Factor for Investment Grade



Pre-tax C1 RBC Base Factor for High Yield

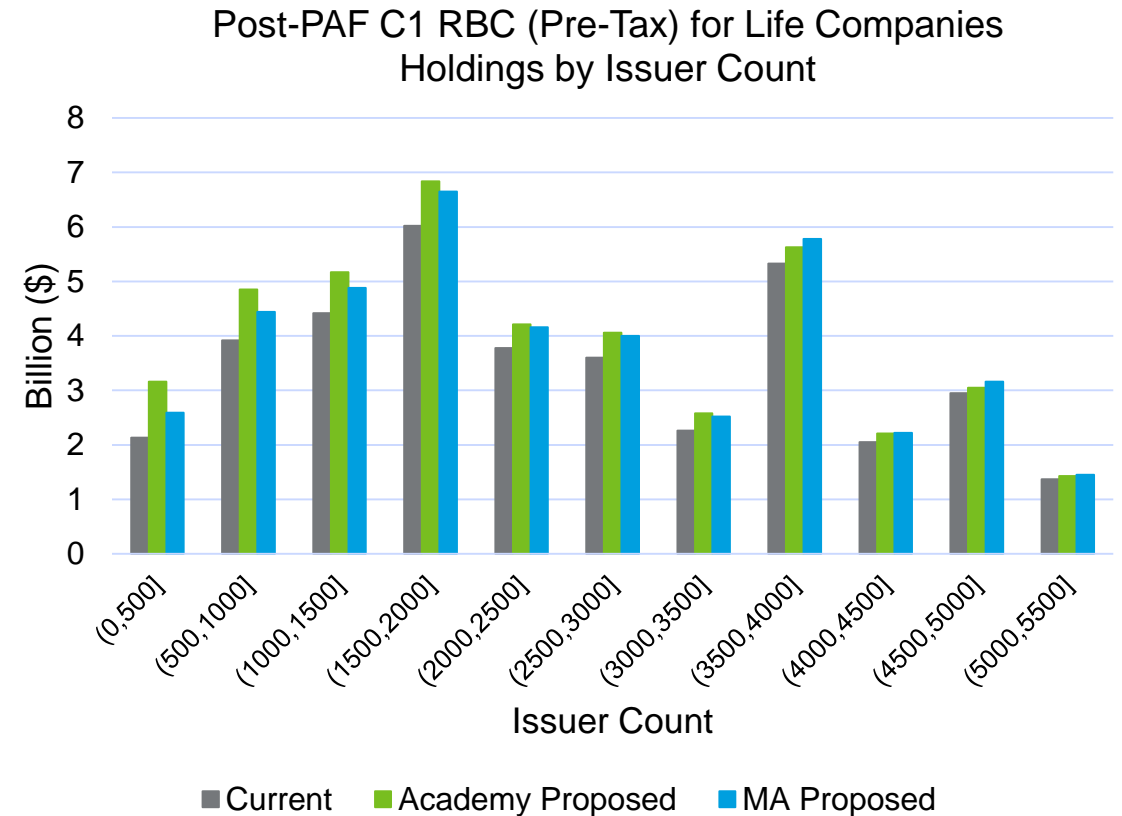
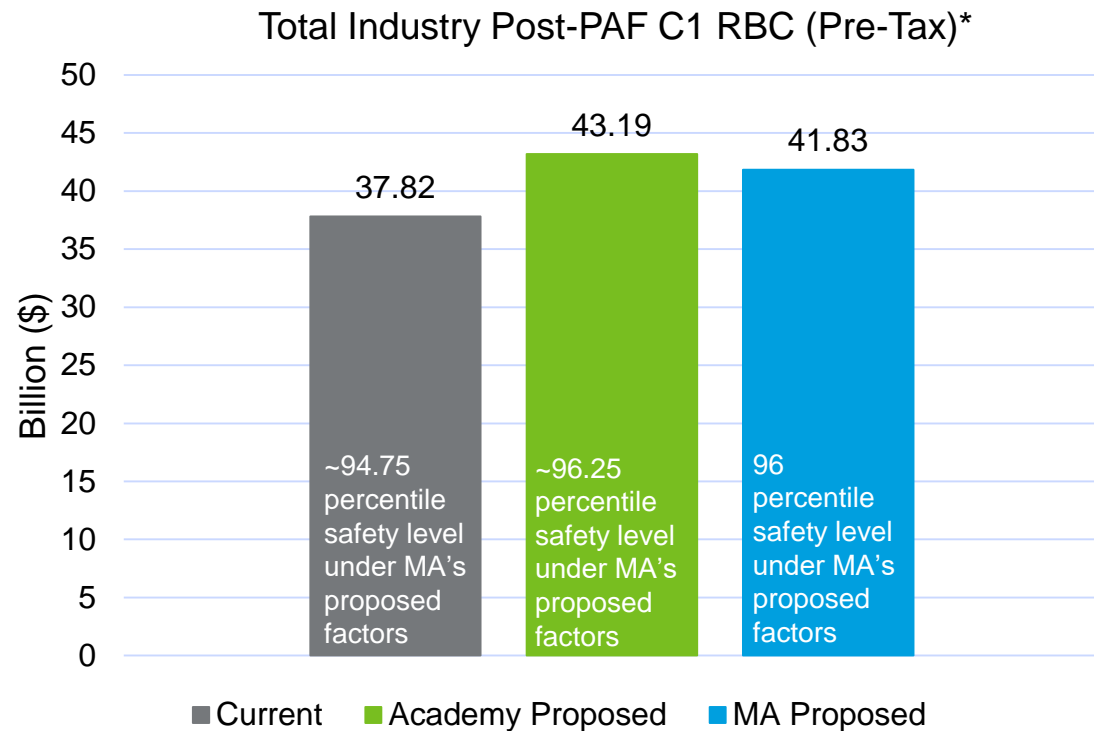


6

Recap

# Post-PAF C1 RBC Industry Impact – Complete Portfolio Holdings

Post-PAF RBC proposed by MA is higher than the current level



\*Data on ~94% life companies in US that have reported, which includes over 99% of the industry BACV as of 03/19/2021

# Summary of MA Proposed C1 Factors and their Impact

Data better represents historical experience of life insurers' holdings; methodologies better capture issuer diversification

C1 base factors & PAFs more accurately reflect empirically observed default rates, default correlations, & diversification

More accurate C1 base factors and PAFs; better aligned with insolvency risk; reduced risk-shifting incentives

## » Impact on post-PAF C1 RBC

- Higher post-PAF RBC, on average, across the life industry compared to current formula
- Larger post-PAF RBC increase compared to current formula, on average, for insurers with small and medium number of issuers, but much less so than that under Academy's proposal

## » Limitations of economic state model and their impact on accuracy of C1 base factors & PAFs

- The economic state model overstates diversification across issuers relative to that observed empirically, resulting in
  - › Understatement of credit losses in C1 base factors, all else equal
  - › PAFs that are overly punitive (lenient) to portfolios with a smaller (larger) number of issuers
- Economic Scalars, which are part of the economic state model under the Academy's proposal, result in counterfactual increases and decreases to the C1 base factors across the NAIC designation categories. They lead to an overall flattening of high yield C1 base factors relative to investment grade, and under certain parameterizations C1 base factors that are non-monotonic.

## » Impact of replacing the economic state model with MA proposed correlation model

- MA proposed correlation model more accurately reflects empirically observed default correlations and issuer diversification benefits, and that addresses all aforesaid limitations of the economic state model. As a result:
  - › MA proposed C1 base factors are more conservative and more differentiated across NAIC designation categories than those implied by the economic state model.
  - › MA proposed PAFs more accurately reflect issuer diversification benefits and are less punitive (lenient) to portfolios with a small (larger) number of issuers, relative to those from the Academy's proposal.

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MA C1 Factors with Risk Premium (RP) Sensitivity Analysis and  
Override of Portfolio Adjustment Factors (PAFs)  
For Discussion with Life Risk-Based Capital (E) Working Group

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# Requested Sensitivity Analysis of MA C1 Factors

As requested by Life Risk-Based Capital (E) Working Group on May 20, 2021

1. Sensitivity analysis of MA C1 factors with Risk Premium changed from expected loss plus 0.5 standard deviation to 60<sup>th</sup> percentile while maintaining other MA targeted modifications
  - Increases and flattens the base factors. The factors are less differentiated across NAIC designations, resulting in lower rated credit becoming more attractive on a relative basis
  - Base factors increase by ~21% for investment grade NAIC designations, and ~11% for high yield
  - The increase in Post-PAF C1 RBC range from 9% (for portfolios with lower NAIC rated issuers) to 37% (for portfolios with higher NAIC rated issuers)
  
2. Analysis of post-PAF RBC with portfolio adjustment factor (PAF) overridden for portfolios with fewer than 50 issuers (106 life portfolios; Book Adjusted Carrying Values range from \$79K to \$877M)
  - MA PAF-override post-PAF C1 RBC is, in general, higher than under the current formula, and the increase continues to be relatively evenly distributed across life companies of different sizes
  - To facilitate comparison, the Academy's PAF-override post-PAF C1 RBC is analyzed, and is found to remain disproportionately higher for small and medium sized life portfolios

**For articulation of defined scope and performance criteria associated with methodology, data, and limitations associated with MA C1 factors, see [‘Moody's Analytics' Report on Proposed Bond Factor Revisions’](#)**

# Overview of Risk Premium (Recap)

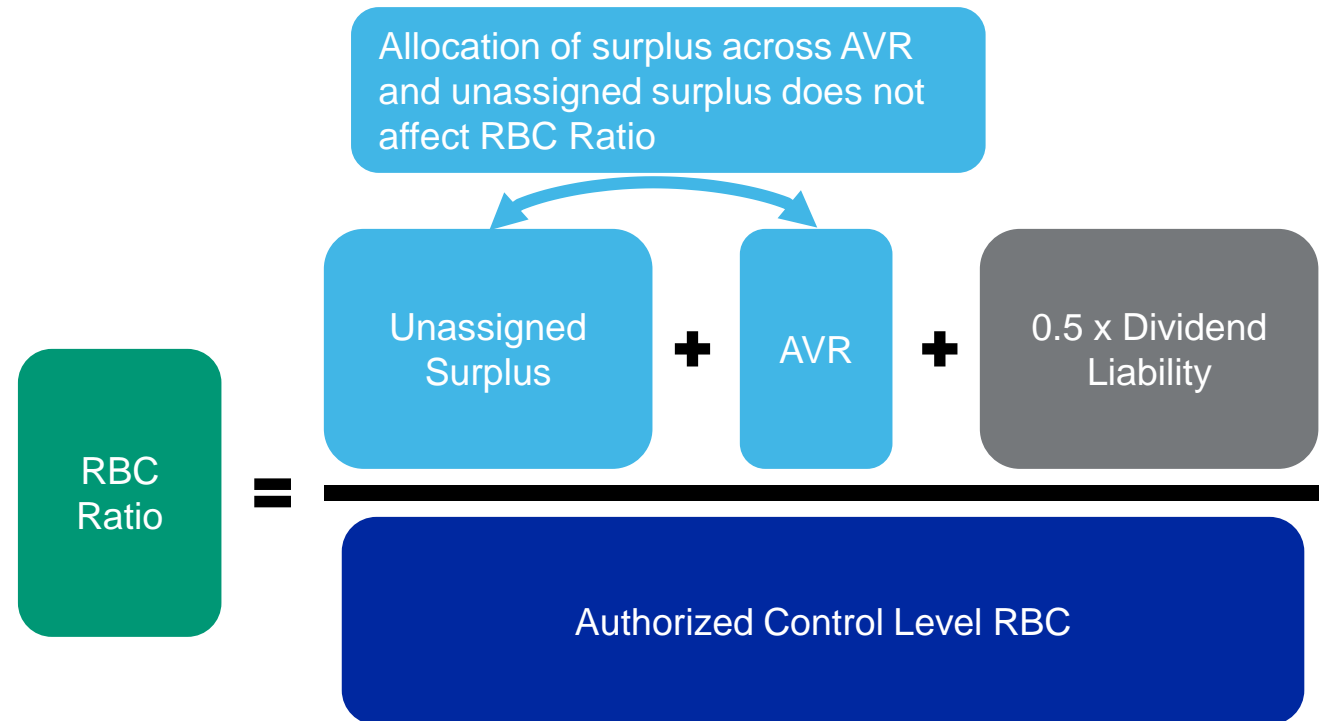
One of several interconnected modifications with largest impact to MA C1 factors

- » MA understands C1 RBC is the minimum required capital above statutory reserves to buffer against a tail loss
  - Risk Premium acts as an offset to C1 RBC
- » Variation in industry reserving standards
  - VM-20 and VM-21 explicitly require that reserves cover CTE 70, or approximately 88th percentile, default loss, without accounting for any assets backing Asset Valuation Reserve (AVR)
  - VM-20 applies to new life products after 2017; with increasing coverage for new bond purchases
  - New reserve standards such as VM-22 are also expected to follow the same framework and cover CTE 70 default loss
  - Existing policies follow industry reserving standards, which generally aim to cover moderately adverse conditions; AVR used in Cash Flow Testing (CFT) of these reserves is excluded from Total Adjusted Capital (TAC), and thus functions as additional CFT reserves rather than available capital
- » MA's Risk Premium
  - Together with several other interconnected modifications, MA's Risk Premium was set at **expected loss plus 0.5 standard deviation** recognizing variation in industry reserving standards and to closer align with PBR and other reserving standards generally aimed to cover moderately adverse conditions

# Aligning C1 Factors with AVR (Recap)

The Academy raised concerns related to Risk Premium and AVR consistency

- » AVR is an allocation of surplus to smooth the cyclical of credit default events
- » Allocation of surplus across AVR and unassigned surplus does not affect RBC Ratio
- » AVR does not enter the Academy or MA's C1 formula
- » While historically the basic contribution of AVR has been set to be the same as Risk Premium, the alignment between AVR and Risk Premium is not relevant to the RBC framework, whose purpose is to help identify potentially weakly capitalized companies



# C1 Base Factors

Sensitivity analysis with Risk Premium set at 60<sup>th</sup> percentile

- » With the Risk Premium set at the 60<sup>th</sup> percentile, base factors increase across the board
- » The factors are less differentiated across NAIC designations, resulting in lower rated credit being more attractive on a relative basis
- » Factors increase by around 21% for investment grade NAIC designations, and around 11% for high yield

MIS Rating	Current Base Factors	Academy Proposed Base Factors	MA Base Factors	MA Base Factors with Risk Premium at 60 <sup>th</sup> Percentile
Aaa	0.390%	0.290%	0.158%	0.204%
Aa1	0.390%	0.420%	0.271%	0.334%
Aa2	0.390%	0.550%	0.419%	0.501%
Aa3	0.390%	0.700%	0.523%	0.623%
A1	0.390%	0.840%	0.657%	0.787%
A2	0.390%	1.020%	0.816%	0.976%
A3	0.390%	1.190%	1.016%	1.217%
Baa1	1.260%	1.370%	1.261%	1.505%
Baa2	1.260%	1.630%	1.523%	1.782%
Baa3	1.260%	1.940%	2.168%	2.562%
Ba1	4.460%	3.650%	3.151%	3.692%
Ba2	4.460%	4.660%	4.537%	5.160%
Ba3	4.460%	5.970%	6.017%	6.858%
B1	9.700%	6.150%	7.386%	8.404%
B2	9.700%	8.320%	9.535%	10.692%
B3	9.700%	11.480%	12.428%	13.637%
Caa1	22.310%	16.830%	16.942%	18.328%
Caa2	22.310%	22.800%	23.798%	25.209%
Caa3	22.310%	33.860%	32.975%	34.720%

# PAF-Override for Portfolios with Fewer than 50 Issuers

Assigned the PAF level of a portfolio with 50 issuers

## PAFs in step function form

# of Issuers in the Portfolio	Current		Academy		MA			
					Risk Premium at Expected Loss Plus 0.5 Std Dev		Risk Premium at 60%ile	
	PAF	PAF	PAF Override	PAF	PAF Override	PAF	PAF Override	
Up to 10	2.50	7.50	2.90	5.87	2.40	6.24	2.43	
Next 40	2.50	1.75	2.90	1.53	2.40	1.48	2.43	
Next 50	1.30	1.75	1.75	1.53	1.53	1.48	1.48	
Next 100	1.00	0.90	0.90	0.85	0.85	0.86	0.86	
Next 300	0.97	0.85	0.85	0.85	0.85	0.86	0.86	
Over 500	0.90	0.75	0.75	0.82	0.82	0.83	0.83	

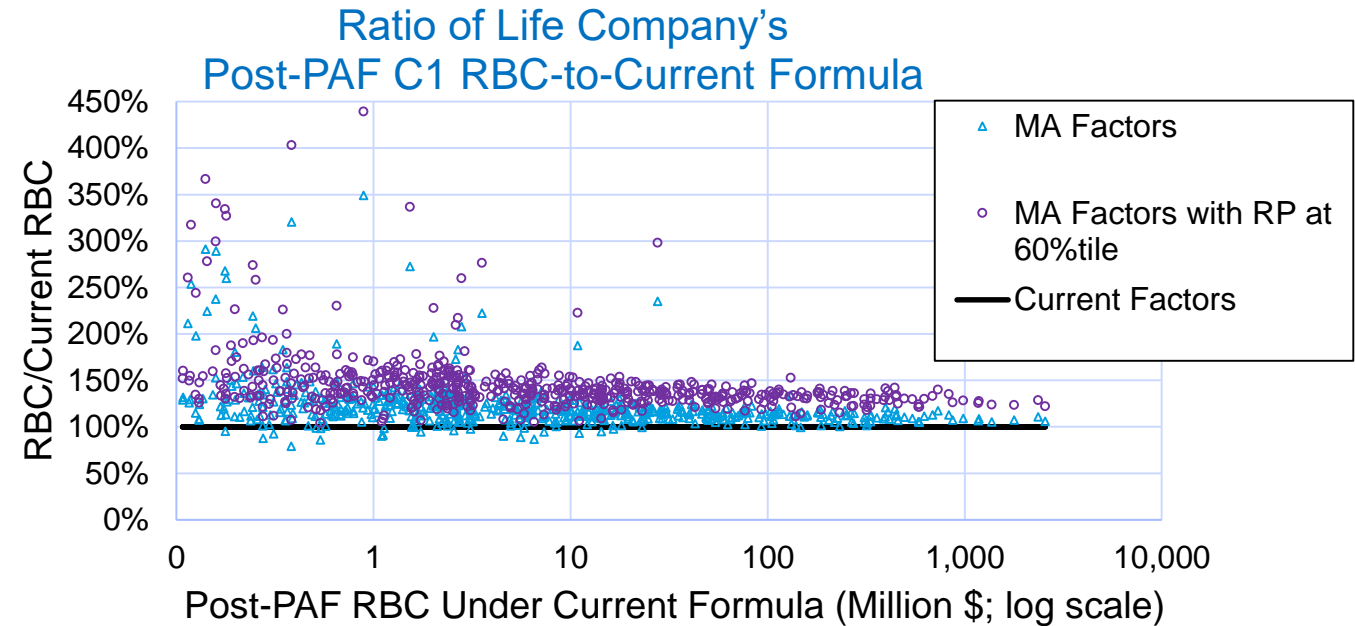
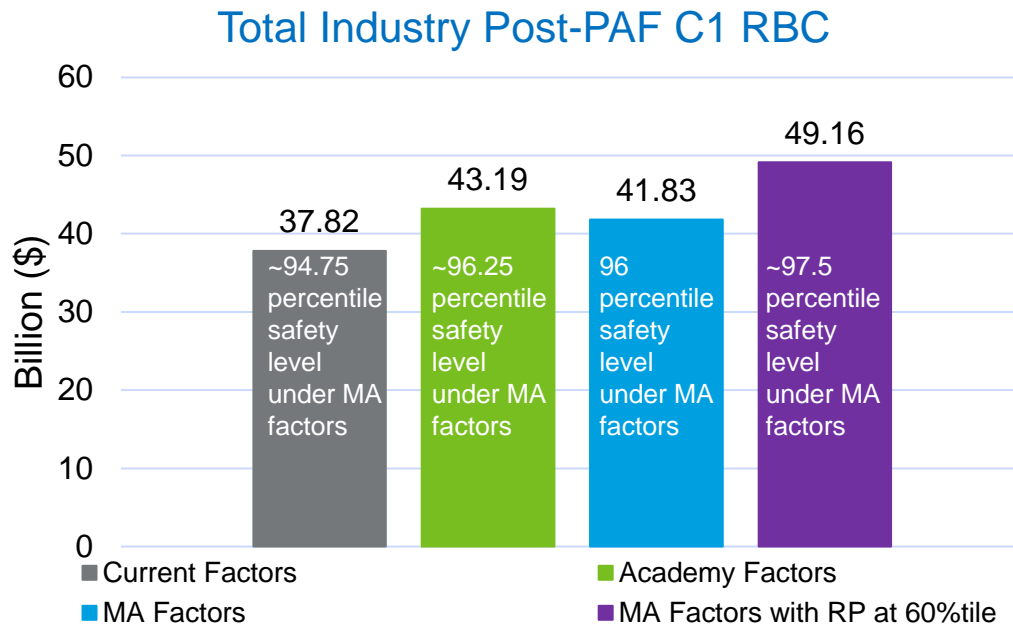
## PAFs in final form

# of Issuers in the Portfolio	Current		Academy		MA			
					Risk Premium at Expected Loss Plus 0.5 Std Dev		Risk Premium at 60%ile	
	PAF	PAF	PAF Override	PAF	PAF Override	PAF	PAF Override	
10	2.50	7.50	2.90	5.87	2.40	6.24	2.43	
50	2.50	2.90	2.90	2.40	2.40	2.43	2.43	
100	1.90	2.33	2.33	1.96	1.96	1.96	1.96	
300	1.30	1.36	1.36	1.22	1.22	1.23	1.23	
500	1.16	1.16	1.16	1.07	1.07	1.08	1.08	
1000	1.03	0.95	0.95	0.95	0.95	0.95	0.95	
2000	0.97	0.85	0.85	0.88	0.88	0.89	0.89	
3000	0.94	0.82	0.82	0.86	0.86	0.87	0.87	

# Sensitivity Analysis with Risk Premium set at 60<sup>th</sup> percentile

## Without PAF-override

- » Total industry post-PAF C1 RBC increases from \$41.83B to \$49.16B when MA formula's Risk Premium is set at 60<sup>th</sup> percentile
- » The increase in Post-PAF C1 RBC ranges from 9% (for portfolios with lower NAIC rated issuers) to 37% (for portfolios with higher NAIC rated issuers)



Note 1: Holdings includes all exposures on Schedule D Part 1 excluding US government bonds.

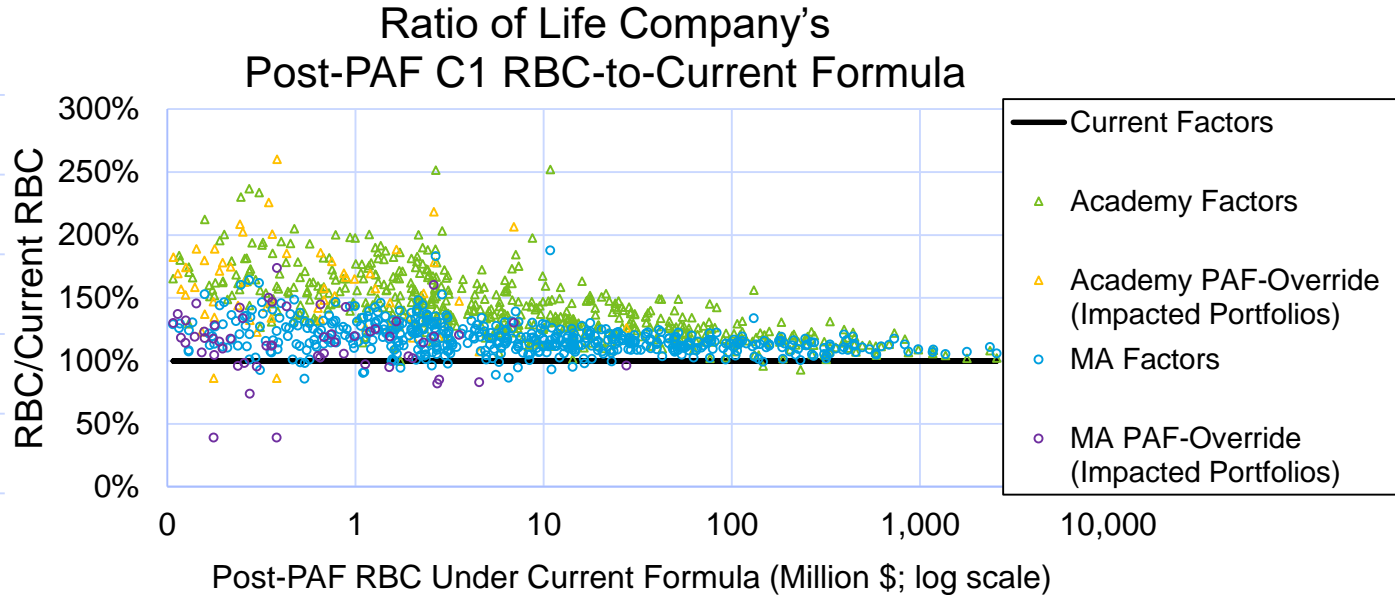
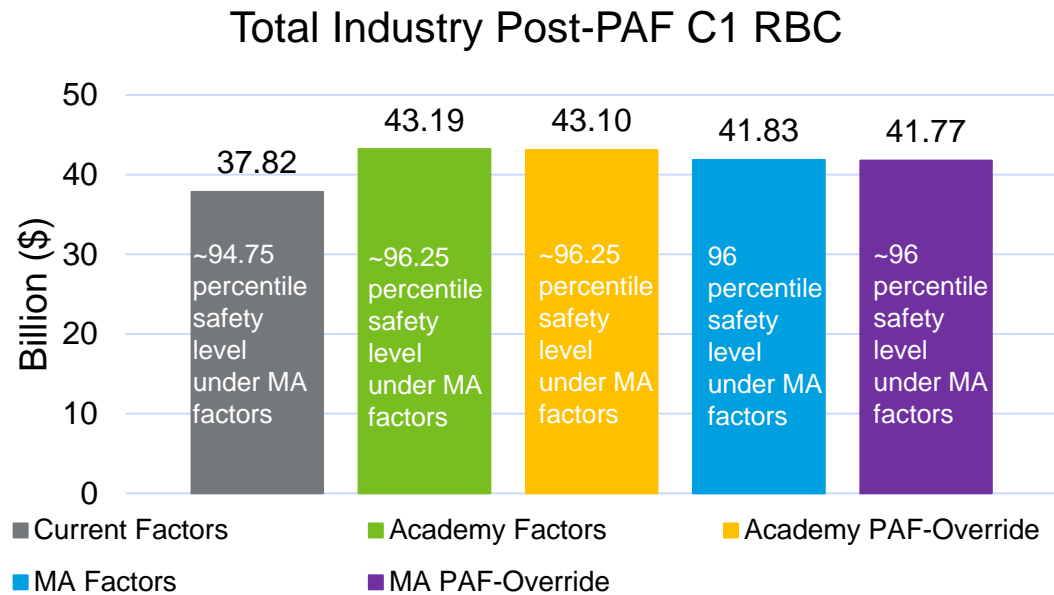
Note 2: For visual ease, the right-hand graph excludes portfolios with less than \$100K post-PAF RBC under the current formula.



# Impact of PAF-Override for Portfolios with fewer than 50 Issuers

While keeping MA's Risk Premium set at expected loss plus 0.5 standard deviation

- » PAF-override decreases Post-PAF RBC for 106 portfolios with fewer than 50 issuers; Book Adjusted Carrying Values ranges from \$79K to \$877M
- » Total industry PAF-override post-PAF C1 RBC impact is limited under the MA and Academy factors
- » MA PAF-override post-PAF C1 RBC is, in general, higher than under the current formula; the increase continues to be relatively evenly distributed across life companies of different sizes
- » To facilitate comparison of the two proposals, the Academy's PAF-override post-PAF C1 RBC is analyzed and found to be, in general, higher than under the current formula; the analysis continues to show the disproportionate increase for small and medium sized life portfolios

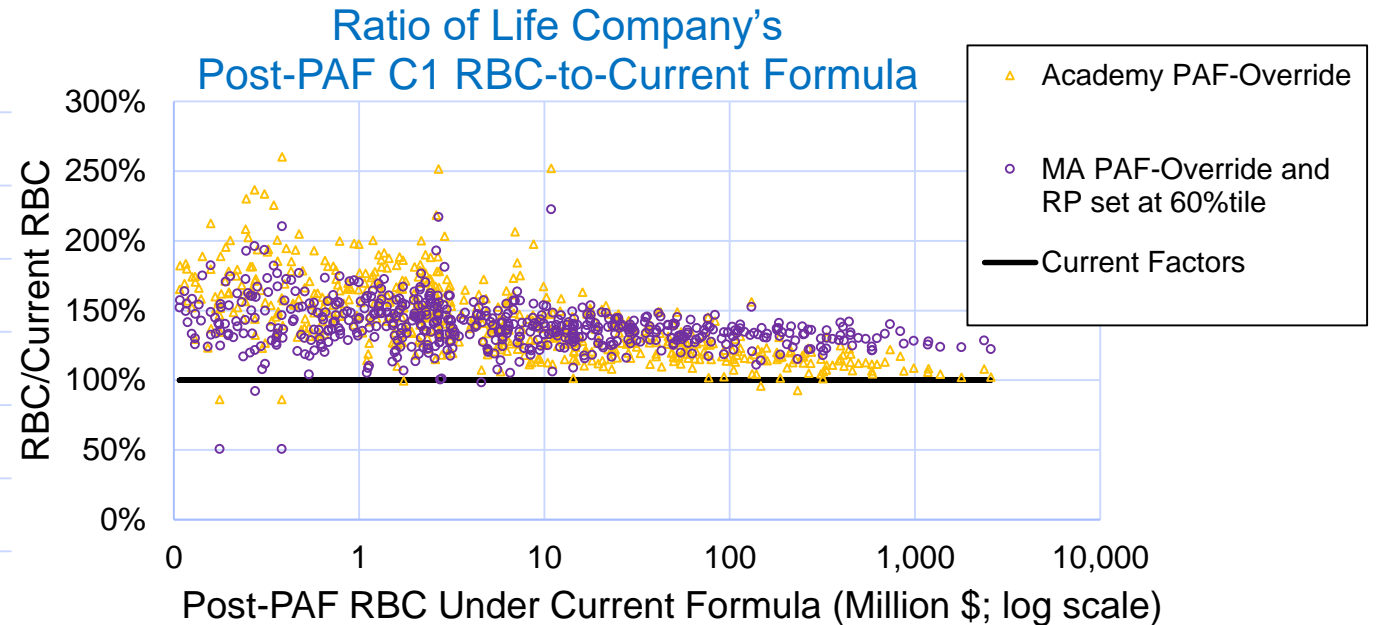
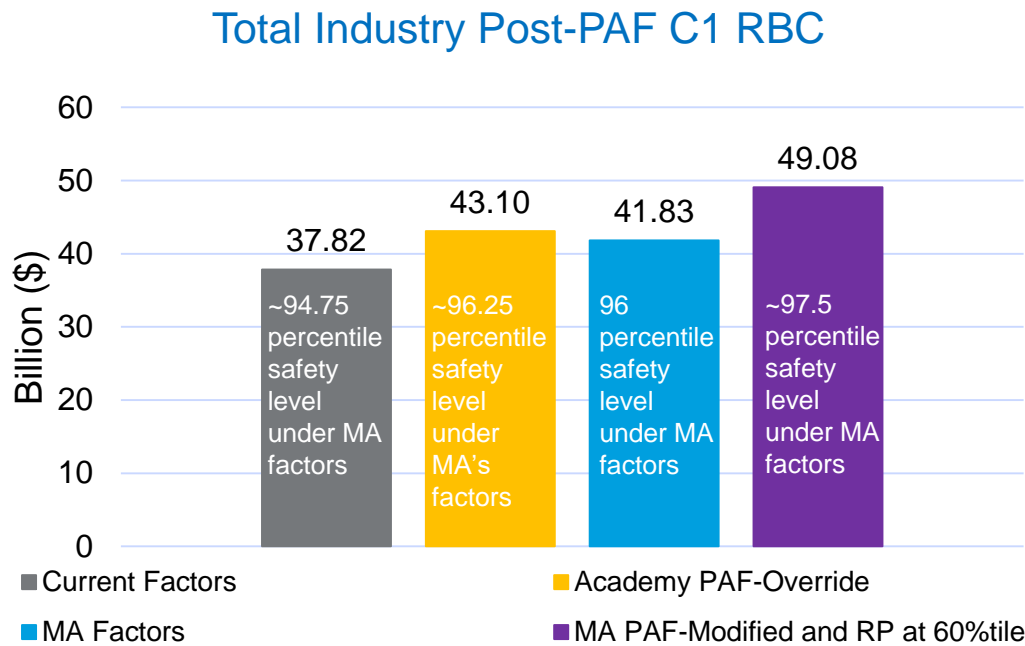


Note 1: Holdings includes all exposures on Schedule D Part 1 excluding US government bonds.  
 Note 2: For visual ease, the right-hand graph excludes portfolios with less than \$100K post-PAF RBC under the current formula.

# Combined Impact

With Risk Premium set at the 60<sup>th</sup> percentile and PAF-override

- » MA formula with Risk Premium and PAF-override set at the 60<sup>th</sup> percentile results in post-PAF C1 RBC that is, in general, meaningfully higher than under the current formula, and relatively evenly distributed across life companies of different sizes
- » To facilitate comparison of the two proposals, the Academy’s PAF-override post-PAF C1 RBC is analyzed and found to be higher than under the current formula and the increase remains disproportionately larger for small and medium sized life portfolios



Note 1: Holdings includes all exposures on Schedule D Part 1 excluding US government bonds.

Note 2: For visual ease, the right-hand graph excludes portfolios with less than \$100K post-PAF RBC under the current formula.

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