

## **LIFE ACTUARIAL (A) TASK FORCE**

Life Actuarial (A) Task Force's March 20-21, 2023, Minutes

Life Actuarial (A) Task Force's March 2, 2023, Minutes (Attachment One)

Valuation of Securities (E) Task Force First Referral Letter (Attachment One-A)

Valuation of Securities (E) Task Force Second Referral Letter (Attachment One-B)

VM-20/VM-21 ESG Technical Drafting Group Topics, Timing, and Decision Points (Attachment One-C)

APF 2022-09 (Attachment One-D)

APF 2023-04 (Attachment One-E)

Life Actuarial (A) Task Force's Feb. 23, 2023, Minutes (Attachment Two)

Proposed Charges for the Proposed Economic Scenarios (E/A) Subgroup (Attachment Two-A)

American Council of Life Insurers (ACLI) Comment Letter (Attachment Two-B)

APF 2022-10 (Attachment Two-C)

APF 2023-02 (Attachment Two-D)

APF 2023-01 (Attachment Two-E)

Life Actuarial (A) Task Force's Feb. 2, 2023, Minutes (Attachment Three)

APF 2022-09 (Attachment Three-A)

APF 2022-10 (Attachment Three-B)

APF 2023-02 (Attachment Three-C)

APF 2023-03 (Attachment Three-D)

Life Actuarial (A) Task Force's Jan. 26, 2023, Minutes (Attachment Four)

Presentation on Practitioner Considerations for Guideline Excess Spread Under AG 53 (Attachment Four-A)

NAIC Memorandum (Attachment Four-B)

APF 2022-07 (Attachment Four-C)

APF 2022-08 (Attachment Four-D)

Report of the Longevity Risk (E/A) Subgroup (Attachment Five)

Report of the Variable Annuities Capital and Reserves (E/A) Subgroup (Attachment Six)

Report of the Indexed Universal Life (IUL) Illustration (A) Subgroup (Attachment Seven)

Report of the Index-Linked Variable Annuity (A) Subgroup (Attachment Eight)

Report of the VM-22 (A) Subgroup (Attachment Nine)

VM-22 (A) Subgroup March 1, 2023, Minutes (Attachment Ten)

Update on the VM-22 Project Plan (Attachment Ten-A)

Andersen Presentation on the Impact of a Rising Interest Rate Environment (Attachment Eleven)

Hall Presentation on the Impact of a Rising Interest Rate Environment (Attachment Twelve)

NAIC Presentation on VM-50 (Attachment Thirteen)

APF 2021-08 (Attachment Fourteen)

NAIC Presentation on the VM-21/C3 Phase II Economic Scenario Generator Field Test Results (Attachment Fifteen)

APF 2023-05 (Attachment Sixteen)

Update from the Academy's Life Practice Council (Attachment Seventeen)

Update on S-OA Research and Education (Attachment Eighteen)

Update on Mortality Improvement (Attachment Nineteen)

ACLI Comment Letter (Attachment Twenty)

APF 2023-03 (Attachment Twenty-One)

APF 2023-01 (Attachment Twenty-Two)

## Draft Pending Adoption

Draft: 4/10/23

Life Actuarial (A) Task Force  
Louisville, Kentucky  
March 20–21, 2023

The Life Actuarial (A) Task Force met in Louisville, KY, March 20–21, 2023. The following Task Force members participated: Cassie Brown, Chair, represented by Rachel Hemphill (TX); Scott A. White, Vice Chair, represented by Craig Chupp (VA); Lori K. Wing-Heier represented by Sharon Comstock (AK); Mark Fowler represented by Sanjeev Chaudhuri (AL); Ricardo Lara represented by Ahmad Kamil and Ted Chang (CA); Andrew N. Mais represented by Wanchin Chou (CT); Doug Ommen represented by Mike Yanacheak (IA); Dana Popish Severinghaus represented by Vincent Tsang and Bruce Sartain (IL); Amy L. Beard represented by Scott Shover (IN); Vicki Schmidt represented by Nicole Boyd (KS); Timothy N. Schott represented by Marti Hooper (ME); Grace Arnold represented by Fred Andersen and Ben Slutsker (MN); Chlora Lindley-Myers represented by William Leung (MO); Eric Dunning represented by Michael Muldoon (NE); Marlene Caride represented by Seong-min Eom (NJ); Adrienne A. Harris represented by Bill Carmello (NY); Judith L. French represented by Peter Weber (OH); Glen Mulready represented by Andrew Schallhorn (OK); Michael Humphreys represented by Steve Boston (PA); and Jon Pike represented by Tomasz Serbinowski (UT).

1. Adopted its March 2, Feb. 23, Feb. 2, and Jan. 26 Minutes and the Reports of the Variable Annuities Capital and Reserve (E/A) Subgroup, the Longevity Risk (E/A) Subgroup, the Indexed Universal Life (IUL) Illustration (A) Subgroup, and the Index-Linked Variable Annuity (A) Subgroup.

The Task Force met March 2, Feb. 23, Feb. 2, and Jan. 26. During these meetings, the Task Force took the following action: 1) exposed referrals received from the Valuation of Securities (E) Task Force; 2) exposed a Valuation Manual (VM)-20, Requirements for Principle-Based Reserves for Life Products/VM-21, Requirements for Principle-Based Reserves for Variable Annuities, Economic Scenario Generator Technical Drafting Group topics, timing, and decision points document; 3) adopted amendment proposal form (APF) 2022-09, which addresses reporting issues in VM-31, PBR Actuarial Report Requirements for Business Subject to a Principle-Based Valuation; 4) exposed APF 2023-04, which clarifies VM-31 reporting requirements that support company experience mortality rates; 5) reported that it met Feb. 9 in regulator-to-regulator session, pursuant to paragraph 6 (consultations with NAIC staff members related to NAIC technical guidance) of the NAIC Policy Statement on Open Meetings, to discuss the economic scenario generator corporate model; 6) adopted its 2022 Fall National Meeting minutes; 7) exposed proposed charges for the proposed Economic Scenarios (E/A) Subgroup; 8) adopted APF 2022-10, which clarifies VM-20 requirements for universal life policies with non-material secondary guarantees; 9) adopted APF 2023-02, which adds disclosure requirements to VM-31 to explain any reporting discrepancies between the annual statement and the principle-based reserving (PBR) actuarial report; 10) exposed APF 2023-01, a non-substantive amendment to clarify the value of starting assets in VM-21; 11) exposed APF 2023-03, which addresses a series of clean-up items in VM-20, VM-21, and VM-31; 12) responded to a referral from the Financial Regulation Standards and Accreditation (F) Committee by conveying the Task Force's recommendation to remove the *Actuarial Opinion and Memorandum Regulation (#822)* as an accreditation standard; 13) adopted APF 2022-07, which clarifies a VM-20 net premium reserve (NPR) mortality adjustment; and 14) adopted APF 2022-08, which clarifies that companies only reporting VM-21 reserves determined using the alternative methodology are subject to limited governance requirements under VM-G, Appendix G — Corporate Governance Guidance for Principle-Based Reserves.

The Task Force reviewed the reports of the Longevity Risk (E/A) Subgroup, the Variable Annuities Capital and Reserve (E/A) Subgroup, the Indexed Universal Life (IUL) Illustration (A) Subgroup, and the Index-Linked Variable Annuity (A) Subgroup.

## Draft Pending Adoption

Chupp made a motion, seconded by Slutsker, to adopt the Task Force’s March 2 (Attachment One), Feb. 23 (Attachment Two), Feb. 2 (Attachment Three), and Jan. 26 (Attachment Four) minutes and the reports of the Longevity Risk (E/A) Subgroup (Attachment Five), the Variable Annuities Capital and Reserve (E/A) Subgroup (Attachment Six), the Indexed Universal Life (IUL) Illustration (A) Subgroup (Attachment Seven), and the Index-Linked Variable Annuity (A) Subgroup (Attachment Eight). The motion passed unanimously.

### 2. Adopted the Report of the VM-22 (A) Subgroup

Slutsker noted that his report would cover an introduction to the VM-22, Requirements for Principle-Based Reserves for Non-Variable Annuities framework (VM-22), a project history, a project plan, a discussion of the Standard Projection Amount, and the relationship between the VM-22 project and the NAIC’s economic scenario generator project. After Slutsker walked through the presentation, Hemphill asked a couple of questions regarding the prospective versus retrospective considerations: 1) Does the Task Force need to consider the exemption differently depending on if VM-22 is ultimately prospective or retrospective?; and 2) Will the VM-22 field test focus only on new business or will in-force business be included? Regarding the field test, Slutsker said that while final decisions have not yet been made, there had been some discussions of testing in-force business. Slutsker also noted that given the likely later implementation of in-force business in VM-22, the Subgroup could consider any impacts to the exemption threshold when in-force business is added.

Brian Bayerle (American Council of Life Insurers—ACLI) asked how the timing of the VM-22 field test would work given the current status of the economic scenario generator project. Slutsker noted that the VM-22 timeline relies on the progress of the economic scenario generator project, and additional timeline delays were possible. Slutsker further stated that it is possible that if the scenarios for the second-round economic scenario generator project are a lot closer to final, the VM-22 field test could be performed simultaneously with the economic scenario generator field test. Bayerle responded that there could be challenges with securing consultant resources for the VM-22 field test if the timeline for the project is indefinite, to which Slutsker agreed.

Boston asked whether a change would need to be made to the *Standard Valuation Law* (#820) if VM-22 was made to be retrospective. Hemphill asked that the NAIC’s legal team looks into the issue of retrospective application of VM-22 and provide an opinion on what would need to occur. Bruce Friedland (Friedland Consulting Services LLC) asked whether there was any consideration of using the current prescribed scenarios for the VM-22 field test. Slutsker noted that had not come up in Subgroup discussions but that his personal view was that it would not be very fruitful to utilize the current prescribed scenarios given the expected large changes to the prescribed scenarios in the future arising from the NAIC economic scenario generator project.

Slutsker made a motion, seconded by Yanacheak, to adopt the report of the VM-22 (A) Subgroup (Attachment Nine), including its March 1 minutes (Attachment Ten). The motion passed unanimously.

### 3. Heard a Presentation on the Impact of a Rising Interest Rate Environment

Andersen introduced the agenda for the discussion of the current rising interest rate environment, which would include his presentation (Attachment Eleven), a presentation (Attachment Twelve) by Dale Hall (Society of Actuaries—SOA), and a roundtable discussion of industry panelists, including Theresa Resnick (Everlake Life), Stephen McNamara (New York Life), and Paul Hance (Pacific Life). After Andersen and Hall concluded their presentations, Slutsker moderated the roundtable discussion of the impact of rising interest rates on insurance organizations. Carmello noted that he was surprised to see the prevalence of annuities without a market value adjustment (MVA) and asked if the companies were seeing different experiences with lapses depending on whether an MVA was present. McNamara noted that his company’s MVAs were limited to the surrender charge period. While they did see some difference in lapse experience before and after the surrender charge period ended, he noted that their lapse experience overall is fairly minimal regardless. Resnick noted that her company

## Draft Pending Adoption

did see different experiences between annuities with an MVA and without, but they also include different lapse assumptions between those groups.

Hemphill asked whether when margins were developed for lapse assumptions, a margin was needed for both the dynamic portion of the lapse formula in addition to the base or if a margin on top of the base assumption could be sufficient. McNamara stated that his organization leans toward a conservative dynamic lapse assumption and that margins were applied to both the base and dynamic portion of the formula. However, McNamara said that his investment team had challenged the conservatism of their dynamic lapse assumptions and would like something more on a best-estimate basis to better manage the assets supporting the business, which is leading the team to reconsider their lapse assumptions. Resnick said that their approach to margin development is to try to keep it simple so that the results can be explained to senior management. However, they do employ more complex sensitivity testing to ensure that the margins are robust.

Muldoon asked what types of metrics companies are reviewing regarding early warning signs for liquidity risk. McNamara replied that they are monitoring their anticipated cash needs, policyholder behavior, general market conditions, and credit spreads. Muldoon then asked how many additional withdrawals the company is expecting to see, given the rising interest rate environment. McNamara said that additional withdrawals are part of their dynamic lapse formulae that varied by product and that they would expect to see more withdrawals, particularly in a prolonged high interest rate environment. Tsang asked if companies were changing their crediting rate strategy to control the level of lapses and reduce the stress on liquidity. Resnick stated that they were increasing credited rates with the rising interest rate environment but that there were challenges due to a lack of data on how policyholders will react with respect to higher credited rates.

#### 4. Heard an Update on the AG 53 Review Plan

Andersen noted that Actuarial Guideline 53 (AG 53) was adopted last year, which added provisions to asset adequacy testing (AAT) to ensure that claims will be paid even if complex assets do not perform as expected. He said that during the development of AG 53, regulators agreed to not add any guard rails into AAT in favor of well-thought-out company disclosures. Andersen said that if companies only include minimal information in their AG 53 disclosures, it may lead the state insurance regulators reviewing the disclosures to conclude that the company does not have a sufficient rationale for the high-yield assumptions on their assets. He further stated that companies with a greater proportion of their assets in the high-yield category without sufficient disclosure could expect to receive greater scrutiny in the form of follow-up questions after regulatory review.

#### 5. Adopted the Report of the Experience Reporting (A) Subgroup and Heard an Update on VM-50/VM-51 Experience Reporting

Andersen said that Pat Allison (NAIC) would be delivering a presentation (Attachment Thirteen) on the NAIC's VM-50, Experience Reporting Requirements, and VM-51, Experience Reporting Formats mortality experience collection progress.

Andersen made a motion, seconded by Chou, to adopt the report of the Experience Reporting (A) Subgroup. The motion passed unanimously.

#### 6. Exposed APF 2021-08

Mary Bahna-Nolan (MBN Advisors Inc.) walked through APF 2021-08, which would reduce the time lag in the VM-50/VM-51 mortality experience collection. Hemphill suggested a friendly amendment to change the years used in the example in APF 2021-08 for clarity. Bahna-Nolan agreed that the clarification was an improvement. Bayerle noted that their comments on APF 2021-08 would likely include suggestions for language changes that are

## Draft Pending Adoption

reflective of how the experience collection deadlines have worked in practice over the NAIC's two years of mortality experience collection and requested that the comment period be longer than 21 days.

Chupp made a motion, seconded by Eom, to expose APF 2021-08 (Attachment Fourteen) for a 30-day public comment period ending April 21, 2023. During the discussion of the motion, Allison noted that the NAIC is supportive of APF 2021-08. The motion passed unanimously.

### 7. Heard a Presentation on the VM-21/C3 Phase II Economic Scenario Generator Field Test Results

Scott O'Neal (NAIC) walked through a presentation (Attachment Fifteen) of the VM-21/C-3 Phase II economic scenario generator field test results. Mark Tenney (Mathematical Finance Company) asked if there was any response bias present due to the companies that had not participated or dropped out during the process. O'Neal responded that although there was a good amount of participation for variable annuity products that would tend to reduce potential bias, the average results of the field test could be highly dependent on a small number of larger players. Chang asked how the baseline comparisons to the field test runs would look if you split the participants that used the Academy Interest Rate Generator (AIRG) in their valuation versus those that used a proprietary economic scenario generator. O'Neal replied that due to the limited participation of companies that used a proprietary economic scenario generator, it would not be possible to detail in a public call. However, O'Neal stated it was likely that the reserve and capital increases for the field test runs would be relatively smaller given the requirement that proprietary economic scenario generators be at least as conservative as the AIRG.

### 8. Exposed APF 2023-05

Bayerle walked through APF 2023-05, which revises hedge modeling language in the *Valuation Manual* to address index hedge modeling. Hemphill noted concerns with "tied directly to the contracts falling under the scope of VM-21 stochastic reserve requirements," language included in Section 4.A.4.a and Section 4.A.4.b, along with additional editorial language corrections. Neither the Task Force nor Bayerle opposed making Hemphill's suggested modifications to the exposure document.

Slutsker made a motion, seconded by Yanacheak, to expose APF 2023-05 (Attachment Sixteen) with the discussed modifications for a 21-day public comment period ending Apr. 12, 2023, with the edits described above. The motion passed unanimously.

### 9. Heard an Update from the Academy's Life Practice Council

Amanda Barry-Moilanen (American Academy of Actuaries—Academy) walked through a presentation (Attachment Seventeen) providing an update from the Academy's Life Practice Council.

### 10. Heard an Update on the Activities of the Economic Scenario Generator Governance Drafting Group, the VM-20/VM-21 Economic Scenario Generator Technical Drafting Group, and the SPA Drafting Group

Hemphill said that she would provide an update on the Economic Scenario Generator Governance Drafting Group, the VM-20/VM-21 Economic Scenario Generator Technical Drafting Group, and the Standard Projection Amount (SPA) Drafting Group in order to promote transparency into each group's activities. She stated the Economic Scenario Generator Governance Drafting Group met several times to determine recommendations for the ongoing governance of the economic scenario generator. As for the activities of the Technical Drafting Group, Hemphill said that it met to discuss VM-20 stochastic exclusion test results from the field test. Hemphill said that the Drafting Group currently has a planned series of topics to discuss a document that has been exposed and that the group will resume calls in early April to cover those topics, with potential modifications based on any comments received. Finally, for the SPA Drafting Group, Hemphill said that the results of a company survey were discussed

## Draft Pending Adoption

at a public meeting and that more details would be discussed at a regulator-only session after the Spring National Meeting.

### 11. Heard an Update on SOA Research and Education

Hall delivered a presentation (Attachment Eighteen) on the SOA's research and education initiatives. Yanacheak asked about how the data breakout groups were chosen for the payout annuity study. Hall said that these were categories that industry participants were using in their financial modeling. Regarding a potential new mortality table for payout annuities, Slutsker asked: 1) if the slope in the latest study would be considered in deciding whether a new mortality table was needed; and 2) how long it would take the SOA to create a new mortality table. Hall stated that the slope is an important consideration in deciding whether to create a new mortality table and that it would take approximately 12–18 months to create a new mortality table.

Andersen asked if the data from 2020 to 2023 that included COVID-19 would make it challenging to decide on the assumptions for a new mortality table. Hall replied that dealing with COVID-19 in the data was the new normal and something everyone would need to adjust to. Carmello asked if the SOA was looking into group annuity mortality and how much representation of the industry was present in the current payout annuity study. Hall replied that the SOA was looking into group annuity mortality and that the payout annuity mortality study represented approximately 75% to 80% of the industry.

### 12. Heard an Update from the Academy Council on Professionalism and Education.

Shawna Ackerman (Actuarial Board for Counseling and Discipline—ABCD) noted that the ABCD received 96 requests for guidance, with 20% of those requests coming from life actuaries.

Rob Damler (Actuarial Standards Board—ASB) said that the ASB was very active, with more than 15 actuarial standards of practice (ASOPs) undergoing review. Damler said that the Task Force may be particularly interested in the current work on ASOP 41, which discusses actuarial communications, and ASOP 12, which deals with risk classification.

### 13. Heard an Update on Mortality Improvement

Marianne Purushotham (SOA) delivered a presentation (Attachment Nineteen) on the work of the joint SOA Mortality and Longevity Oversight Advisory Council (MLOAC) and Mortality Improvements Life Work Group (MILWG). Carmello asked if the Task Force should be considering mortality improvement, given the level of uncertainty present due to the impact of the COVID-19 virus and other mortality drivers that have occurred recently. Hemphill noted that instead of calling it a “mortality improvement” assumption, it should potentially be referred to as a “mortality trend,” given that deterioration is also considered. Hemphill further stated that the mortality trend assumption approved last year included deterioration in the initial years followed by recovery and improvement.

### 14. Adopted Portions of APF 2023-03

Hemphill walked through APF 2023-03, noting that the Task Force would be considering adopting the language associated with the VM-21 portion of section three, along with sections four and five, outlined in the cover sheet. Hemphill stated that a comment letter (Attachment Twenty) from the ACLI in response to the exposure of APF 2023-03.

Slutsker made a motion, seconded by Eom, to adopt the discussed portions of APF 2023-03 (Attachment Twenty-One). During a discussion of the motion, Chupp asked why the VM-20 portion of Section 3 was not going to be

## Draft Pending Adoption

included in the adoption. Hemphill replied that although she felt the VM-20 language in Section 3 would work in its current form, there may be some additional clarifying language that could be added to limit the possibility of misinterpretation. Chupp noted that he would prefer to adopt the VM-20 language now to ensure consistency with the new VM-21 language in Section 3. Slutsker and Eom agreed to modify their motion to adopt to include the VM-20 language from Section 3. The motion passed unanimously.

### 15. Adopted APF 2023-01

Hemphill discussed APF 2023-01, which clarifies the value of starting assets in VM-21.

Weber made a motion, seconded by Chupp, to adopt APF 2023-01 (Attachment Twenty-Two). The motion passed unanimously.

Having no further business, the Life Actuarial (A) Task Force adjourned.

SharePoint/NAIC Support Staff Hub/Member Meetings/A CMTE/LATF/2023-1 Spring/Spring Natl Meeting/Meeting Minutes Packet/LATF Spring National Meeting Minutes.docx

Draft: 3/11/23

Life Actuarial (A) Task Force  
Virtual Meeting  
March 2, 2023

The Life Actuarial (A) Task Force met March 2, 2023. The following Task Force members participated: Cassie Brown, Chair, represented by Rachel Hemphill and Iris Huang (TX); Scott A. White, Vice Chair, represented by Craig Chupp (VA); Lori K. Wing-Heier represented by Sharon Comstock (AK); Mark Fowler represented by Sanjeev Chaudhuri (AL); Ricardo Lara represented by Ahmad Kamil (CA); Andrew N. Mais represented by Wanchin Chou and Manny Hidalgo (CT); Doug Ommen represented by Mike Yanacheak (IA); Dana Popish Severinghaus represented by Vincent Tsang (IL); Amy L. Beard represented by Scott Shover (IN); Vicki Schmidt represented by Nicole Boyd (KS); Timothy N. Schott represented by Marti Hooper (ME); Grace Arnold represented by Fred Andersen and Ben Slutsker (MN); Chlora Lindley-Myers represented by William Leung (MO); Eric Dunning represented by Michael Muldoon (NE); Adrienne A. Harris represented by Bill Carmello (NY); Judith L. French represented by Peter Weber (OH); Glen Mulready represented by Andrew Schallhorn (OK); Michael Humphreys represented by Steve Boston (PA); Jon Pike represented by Tomasz Serbinowski (UT); and Allan L. McVey represented by Tim Sigman (WV).

1. Exposed Referrals Received from the Valuation of Securities (E) Task Force

Charles Therriault (NAIC) walked through the first informational referral from the Valuation of Securities (E) Task Force to the Life Actuarial (A) Task Force proposing that the *Purposes and Procedures Manual of the NAIC Investment Analysis Office* (P&P Manual) be amended to define structured equity and fund investments and exclude these investments from filing exemption eligibility. Nancy Bennett (American Academy of Actuaries—Academy) asked if making these investments ineligible for a filing exemption would have an impact on the calculation of prescribed default costs or other unintended consequences. Therriault responded that any changes to reporting classification would be decided by the other task forces and working groups at the NAIC and that this proposal would strictly be looking at assessing a risk designation that is more consistent with the underlying risk of the investment.

Carmello made a motion, seconded by Tsang, to expose the first informational referral (Attachment One-A) for a 21-day public comment period ending March 22. The motion passed unanimously.

Therriault then walked through the second referral from Valuation of Securities (E) Task Force requesting that the Life Actuarial (A) Task Force respond with ideas on how it could use investment information on a proposed new analytical capability at the NAIC's Securities Valuation Office (SVO), and whether it is supportive of the initiative. Tsang asked if company-determined investment risk measures, such as asset duration, would be consistently reported. Therriault responded that one of the benefits of building out the proposed analytical capability at the SVO would be that these risk measures would be determined consistently by the SVO across all companies. Tsang then asked if the purpose of this capability would be to spot outliers. Therriault said that the initial purpose of the data would be to identify inconsistencies with ratings that were assigned to securities, but that part of the purpose of this referral is to see how other groups could make use of the data. Bennett then asked if this new capability would effectively make the SVO a rating agency. Therriault replied that this new capability would not make the SVO a rating agency in effect, and these additional risk measures that the SVO is seeking to obtain are common throughout the industry and have been for decades.



Leung made a motion, seconded by Hidalgo, to expose the second informational referral (Attachment One-B), with a cover letter added to explain that the Task Force is seeking commentary on the five questions outlined in the referral, for a 42-day public comment period ending April 14. The motion passed unanimously.

2. Exposed a VM-20/VM-21 ESG Technical Drafting Group Topics, Timing, and Decision Points Document

Hemphill walked through a document that outlined the timing for upcoming discussions of the VM-20/VM-21 Economic Scenario Generator (ESG) Technical Drafting Group and decisions that would need to be made.

Chupp made a motion, seconded by Leung, to expose the document (Attachment One-C) for a 21-day public comment period ending March 23. The motion passed unanimously.

3. Adopted APF 2022-09

Hemphill walked through amendment proposal form (APF) 2022-09, noting that one comment letter from the American Council of Life Insurers (ACLI) had been received and was supportive of the APF.

Hidalgo made a motion, seconded by Leung, to adopt APF 2022-09 (Attachment One-D). The motion passed unanimously.

4. Exposed APF 2023-04

Huang walked through APF 2023-04, which clarifies the VM-31 reporting requirements that support that the company experience mortality rates are not lower than what the company actually expects to occur.

Chupp made a motion, seconded by Leung, to expose the APF 2023-04 (Attachment One-E) for a 21-day public comment period ending March 23. The motion passed unanimously.

Having no further business, the Life Actuarial (A) Task Force adjourned.

SharePoint/NAIC Support Staff Hub/Member Meetings/A CMTE/LATF/ 2023-1-Spring/LATF Calls/03 02/Mar 2 Minutes.docx



TO: Elizabeth Kelleher Dwyer, Chair, Financial Conditions (E) Committee  
Marlene Caride, Chair, Financial Stability (E) Task Force  
Bob Kasinow, Chair, Macroprudential (E) Working Group  
Thomas Botsko, Chair, Capital Adequacy (E) Task Force  
Phillip Barlow, Chair, Risk-Based Capital Investment Risk and Evaluation (E) Working Group  
Cassie Brown, Chair, Life Actuarial (A) Task Force  
Judy Weaver, Chair, Financial Analysis (E) Working Group  
Dale Bruggeman, Chair, Statutory Accounting Principles (E) Working Group  
Fred Andersen, Chair, Valuation Analysis (E) Working Group

FROM: Carrie Mears, Chair, Valuation of Securities (E) Task Force

CC: Charles A. Therriault, Director, NAIC Securities Valuation Office (SVO)  
Eric Kolchinsky, Director, NAIC Structured Securities Group (SSG) and Capital Markets Bureau  
Dan Daveline, Director, NAIC Financial Regulatory Services  
Todd Sells, Director, NAIC Financial Regulatory Policy & Data  
Marc Perlman, Managing Investment Counsel, NAIC Securities Valuation Office (SVO)  
Julie Gann, Assistant Director, NAIC Solvency Policy  
Bruce Jenson, Assistant Director, NAIC Solvency Monitoring  
Pat Allison, Managing Life Actuary, NAIC Financial Regulatory Affairs  
Jane Koenigsman, Sr. Manager II, NAIC L/H Financial Analysis  
Andy Daleo, Sr. Manager I, NAIC P/C Domestic and International Analysis  
Dave Fleming, Sr. Life RBC Analyst, NAIC Financial Regulatory Affairs  
Jennifer Frasier, Life Examination Actuary, NAIC Financial Regulatory Affairs  
Scott O'Neal, Life Actuary, NAIC Financial Regulatory Affairs  
Eva Yeung, Sr. P/C RBC Analyst/Technical Lead, NAIC Financial Regulatory Affairs

RE: Referral on Additional Market and Analytical Information for Bond Investments

DATE: February 13, 2023

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**Summary** – The Investment Analysis Office (IAO) staff recommended in its Feb. 25, 2022, memorandum to the Valuation of Securities (E) Task Force (VOSTF) (attached hereto, Blanks Market Data Disclosure v2.pdf) that it would like additional market-data fields added to the annual statement instructions for bond investments. This was, in part, based upon the NAIC's adoption in 2010 of the recommendations of

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the Rating Agency (E) Working Group (RAWG), which was formed following the Great Financial Crisis of 2007-2008 to study the NAIC's reliance on rating agencies, and the IAO staff's recent findings in its Nov. 2021 memo regarding disparities between rating agencies. RAWG recommended that: 1) regulators explore how reliance on rating agencies can be reduced when evaluating new, structured, or alternative asset classes, particularly by introducing additional or alternative ways to measure risk; and 2) consider alternatives for regulators' assessment of insurers' investment risk, including expanding the role of the NAIC Securities Valuation Office ("SVO"); and 3) VOSTF should continue to develop independent analytical processes to assess investment risks. These mechanisms can be tailored to address unique regulatory concerns and should be developed for use either as supplements or alternatives to ratings, depending on the specific regulatory process under consideration.

The NAIC's need for alternative measures of investment risk has only increased since RAWG made its recommendations, as privately issued and rated complex structured finance transactions have become commonplace without adequate ways of identifying them. The SVO recommended the following market data fields to be added to the annual statement instructions: Market Yield, Market Price, Purchase Yield, Weighted Average Life, Spread to Average Life UST, Option Adjusted Spread, Effective Duration, Convexity and VISION Issue ID. Please refer to the attached memo for more detail on each data field.

In comments received from industry there were question as to how the SVO, VOSTF and/or other regulators who would receive the analytic data included in the proposal would utilize that information and why it is of value to them. The SVO was also asked to consider industry's recommendation that the NAIC be responsible for calculating this analytical information by utilizing commercially available data sources and investment models instead of having each individual insurance company incur the costs to implement system changes. The SVO shared their thoughts on the alternatives in the Jul. 14, 2022, memorandum to the VOSTF (attached, Blanks\_Market\_Data\_Options\_v3.pdf).

Capabilities like this within the SVO would permit it to calculate for regulators all the analytic values previously mentioned for any Schedule D investment along with additional measures such as key rate duration (a measure of interest rate sensitivity to maturity points along the yield curve), sensitivity to interest rate volatility, principal and interest cash flow projections for any security or portfolio for any given interest rate projection, loss estimates for any security for any given scenario and many others measures.

**Referral** – VOSTF refers this matter to the above referenced Committees, Task Forces and Working Groups for consideration and requests a response from you by May 15<sup>th</sup> outlining:

1. Indicate if your group is supportive of creating this capability within the SVO.
2. List the investment analytical measures and projections that would be most helpful to support the work performed by your respective group.
3. Describe how your group would utilize the data and why it would be of value.
4. Are there other investment data or projection capabilities that would be useful to your group that could be provided by commercially available data sources or investment models? And if so, please list them.
5. Any other thoughts you may have on this initiative.

Please contact Charles Therriault or Marc Perlman with any questions.

VOSTF\_Referral\_Bond\_Risk\_Measures\_2023-02-13.docx



TO: Thomas Botsko, Chair, Capital Adequacy (E) Task Force  
Rachel Hemphill, Chair, Life Actuarial (A) Task Force  
Philip Barlow, Chair, Risk-Based Capital Investment Risk and Evaluation (E) Working Group

FROM: Carrie Mears, Chair, Valuation of Securities (E) Task Force

CC: Charles A. Therriault, Director, NAIC Securities Valuation Office (SVO)  
Marc Perlman, Managing Investment Counsel, NAIC Securities Valuation Office (SVO)  
Eric Kolchinsky, Director, NAIC Structured Securities Group (SSG) and Capital Markets Bureau  
Dave Fleming, Sr. Life RBC Analyst, NAIC Financial Regulatory Affairs  
Jennifer Frasier, Life Examination Actuary, NAIC Financial Regulatory Affairs  
Scott O'Neal, Life Actuary, NAIC Financial Regulatory Affairs  
Eva Yeung, Sr. P/C RBC Analyst/Technical Lead, NAIC Financial Regulatory Affairs

RE: Referral regarding a Proposed Purposes and Procedures Manual (P&P Manual) Amendment to Define and Add Guidance for Structured Equity and Funds

DATE: February 3, 2023

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**Summary** – The SVO has processed several private letter rating (PLR) filings for investments in notes issued by special purpose vehicles or other legal entities that operate as feeder funds which themselves then invest, directly or indirectly, in one or more funds or other equity investments. The SVO proposes defining these investments as Structured Equity and Fund investments.<sup>1</sup> The SVO proposed at the 2022 Fall National Meeting the removal of Structured Equity and Fund investments from Filing Exemption, the reliance upon a credit rating provider (CRP) ratings for the assignment of NAIC Designations. The SVO is concerned about this general structure for the following reasons:

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<sup>1</sup> Proposed Definition: A Structured Equity and Fund investment is a note issued by, or equity or limited partnership interest in, a special purpose vehicle, trust, limited liability company, limited partnership, or other legal entity type, as issuer, the contractually promised payments of which are wholly dependent, directly or indirectly, upon payments or distributions from one or more underlying equity or fund investments. The inclusion of an intervening legal entity or entities between the Structured Equity and Fund investment issuer and the underlying equity or fund(s), does not change the risk that the insurer investment is ultimately dependent, in whole or in part, upon an investment in equity or one or more funds and its underlying investments. Any design that circumvents this definition, and related examples, through technical means but which in substance achieves the same ends or poses the same risk, shall be deemed a Structured Equity and Fund.

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Capital Markets & Investment Analysis Office | One New York Plaza | Suite 4210 | New York, NY 10004 | (212) 398-9000

[www.naic.com](http://www.naic.com)

- 1) Circumvent Regulatory Guidance - The introduction of an intervening entity as debt issuer, when the underlying investment is in substance an equity investment, circumvents regulatory guidance established by the Valuation of Securities (E) Task Force, the Statutory Accounting Principles (E) Working Group and the Capital Adequacy (E) Task Force for the reporting of equity investments because, according to the P&P Manual (i) equity and fund investments are ineligible to use credit rating provider (CRP) ratings in the assignment of an NAIC Designation and (ii), in the case of funds, only the SVO is tasked with determining whether a fund produces fixed-income like cash flows and is therefore eligible for specific classification.

**All non-SEC registered funds are required to be reported on Schedule BA. Life insurance entities are permitted to file investments in non-SEC registered private equity funds, partnerships, limited liability companies and joint ventures with the SVO for specific classification on Schedule BA;**

- 2) Reliance on Ratings - These investments are being reported as bonds and receiving bond risk-based capital (RBC) factors based upon the mechanical assignment of NAIC Designations that rely upon CRP ratings through the filing exempt process. The use of CRP ratings would not be permitted for the fund or equity investments which underly these notes if the equity or fund investments were held directly;
- 3) RBC / Investment Limit Arbitrage - The structure may permit in-substance equity and fund investments to obtain better RBC treatment than would otherwise be received if the investments had been directly reported. In addition to improved RBC treatment, the structures could permit entities to hold more underlying equity / fund investments than would be permitted under state investment law; and
- 4) Transparency - The structures typically use two or more interconnected private entities through which the privately rated “bond” securities are issued that are backed by investments in non-public assets. The many non-public layers deny regulators, and possibly insurer investors, transparency into the true underlying risks, credit exposure and nature of the investment. The notes issued are described generically as a “senior note” or “term loan” further obscuring their actual structure and complexity. These structures can invest in any asset including affiliate investments, non-fixed income investments, derivatives, borrowings for the purpose of leverage and non-admitted assets.

It is possible that many of the transactions the SVO has processed would not qualify as bonds eligible for Schedule D-1 reporting according to the principles-based bond definition currently being drafted by the Statutory Accounting Principles (E) Working Group, while others likely will qualify. The bond definition requires a review of the substance of the investment to determine whether it has the substance of a bond; significantly, that the ultimate underlying collateral has fixed income cash flows. In either case, however, the use of a fund intermediary has the potential to be abused and requires significant judgment to understand the substance and nature of the ultimate underlying risk. This has already been recognized by the establishment of processes for the SVO to provide NAIC Designations for fixed-income-like funds. It would then follow that debt instruments backed by the types of funds that would ordinarily be required to be filed with the SVO, should follow the same process.

**Informational Referral** – Given the magnitude of the multiple regulatory arbitrage opportunities, the judgment involved in assessing the nature of the ultimate risk, the lack of transparency, circumvention of regulatory guidance and the reliance on CRP ratings to accomplish these ends, the SVO proposed amending the P&P Manual to include a definition for Structured Equity and Fund and to exclude such investments from Filing Exemption eligibility. The proposed amendment would not change how the investment is classified for reporting by the insurer but it would ensure that the NAIC Designation and Category assigned are appropriate for the risk. This is an informational referral and no direct action is required by the Capital Adequacy (E) Task Force, Life Actuarial (A) Task Force or Risk-based Capital Investment Risk and Evaluation (E) Working Group unless those groups wish to comment on the proposal.

Please contact Charles Therriault or Marc Perlman with any questions.

<https://naiconline.sharepoint.com/teams/SVOVOSTaskForce/Shared Documents/Meetings/2023/Referrals/To CATF LATF RBCIRE/VOSTF Referral to CATF LATF RBCIRE - Structured Equity and Funds 2022-02-03.docx>

## Economic Scenario Generator Technical Drafting Group Planned Topics, Tentative Timing, and initial Decision Points

### 1) Stochastic Exclusion Ratio Test

**Timeline:** Initially, 2 more meetings tentatively in March-April, to finish covering field test results and discuss decision points below. Subsequently, two additional meetings after the second round of field testing, to discuss SERT field test results, pick a version of the SERT (if multiple were tested), and to determine SERT cutoff (assuming this form of SERT is selected).

#### **SERT Goals:**

- Practically sort products that may have a constraining SR from those that would not have a constraining SR.
- Give reasonably consistent results over time and in different economic environments.

#### **SERT Decision Points:**

1. **Decision Point:** Should the SERT be removed entirely, given that it is duplicative of what could be provided for the certification method? This could include moving the primary SERT outline to the examples for a broadened certification method. With a QA certifying as to the risks, a more judgment-based evaluation of the variability could be performed rather than having a rough cutoff that does not consider the size of the business or the materiality standard.

**Advantage for removal:** The SERT discourages a holistic assessment and discussion of risk that is more appropriate for PBR. It could potentially be replaced with versions of the certification or demonstration method. One suggested alternative was to run a small, representative scenario set (e.g., 50 scenarios) and show it is not constraining compared to the NPR and DR. This is currently allowable under the stochastic exclusion demonstration test option outlined in 6.A.3.b.iii, except that it is left up to the company to determine “a sufficient number of adverse scenarios”.

**Advantage for retaining:** The SERT is often used because it is simple to implement. Following the same approach but as part of a certification method would require additional reporting and may trigger follow-up questions.

2. **Decision Point:** What products are generally expected to pass the SERT, what products are generally expected to fail, and what percentage of the time should this single test be able to accurately sort these accordingly?



**Proposal:** Pass: most Term with 20 year or shorter level period (non-ROP); Fail: most ULSG (unless minimal guarantees); the current SERT appears to fail roughly 10% of the time.

3. **Decision Point:** Do the SERT scenarios need to be at a moderately adverse level?

**Proposal:** No. The SERT is not a set of scenarios that need to be "passed". They should reasonably assess whether performing an SR and taking a CTE(70) is likely to produce a higher reserve than the DR. Thus, they should assess whether tail scenarios lead to significant increases. They should generally be representative of the tail, but tail results may not be driven by the 85th percentile. Ultimately, the cutoff, which will be calibrated based on the SERT methodology, is what will determine whether products pass or fail the SERT.

4. **Decision Point:** Should the SERT scenarios be derived directly from the stochastic scenario distribution, as Conning has done or modified, or should they be "stylized" scenarios be created that reflect starting conditions and a level of reversion to a mean? Is there an alternative approach?

**Advantages for scenarios based on full scenario set:** Direct relationship for goal #1; avoids disconnect between the test and its effectiveness for the intended purpose of determining whether there would likely be a SR excess over the DR. The intent is for economic scenario generator updates to be more gradual over time now that we have a vendor to maintain the economic scenario generator. Each update would require an evaluation and potential update of the stylized scenarios as well.

**Advantages for scenarios based on stylized set:** Ease of implementation. Being less responsive means being more predictable.

5. **Decision Point:** How do we evaluate the SERT is appropriately calibrated, independent of the additional risk reflected in the new scenarios? That is, what must be included in a subsequent Field Test to calibrate an appropriate cutoff?

**Proposal:** Adequate coverage of different starting conditions, adequate representation of products (Term, ULSG, VULSG, VULnoSG par & non-par WL).

## 2) Deterministic Reserve

**Timeline:** Initially, 2 meetings tentatively in April. Subsequent to the second round of field testing, two meetings to review DR field test results and to select a version of the DR (if multiple were tested) and confirm DR methodology.

### **DR Goal:**

- Provide a moderately adverse deterministic scenario that will be adequate to capture risk for products that do not have significant interest rate and or equity risk.

### DR Decision Points:

1. **Decision Point:** Should this scenario be linked to the stochastic exclusion ratio test or can it be separate?  
**Proposal:** Separate. The DR must primarily be suitable for the DR goal above.
2. **Decision Point:** Do we agree with the format of the current deterministic scenario (adverse for 20 years, followed by reversion to mean)?  
**Proposal:** Generally yes, but should consider whether the reversion to mean after 20 years particularly impacts specific products, giving less than a moderately adverse result. The focus for DR reserve adequacy should be policies passing the SET, but we should be mindful that it can be constraining for those with an SR as well.
3. **Decision Point:** Is the deterministic reserve scenario methodology used for the first field test appropriate?  
**Proposal:** The DR scenario used may be beyond moderately adverse. While re-calibration will impact the DR level, ask Conning to develop a form of DR that is more consistent with the current DR.

### 3) Scenario Picker Tool

**Timeline:** 3 meetings, tentatively in May

#### Scenario Picker Tool Goal:

- Provide scenario subsets that are reasonably representative of the full 10,000 scenario set for policies and/or contracts that are sensitive primarily to interest rates, equities, or both.

#### Scenario Picker Tool Decision Points:

1. **Decision Point:** Should there be a scenario picker that is included as part of the economic scenario generator?  
**Proposal:** Yes.

2. **Decision Point:** Should custom stratifications be allowed, for both VM-20 and VM-21, if the company provides an off-cycle or model office comparison between the subset and full 10,000 to show there is not material understatement or bias?  
**Proposal:** Yes. This may reduce the importance of having a perfect response for items #3-#5 below.
3. **Decision Point:** What size of subsets are needed?  
**Proposal:** 50, 200, 1000, 2000.
4. **Decision Point:** Should there be stratification based on interest rates and/or equity?  
**Proposal:** There should be two or three versions of the scenario picker tool, which stratify scenarios based on interest rate, equity, and/or both.
5. **Decision Point:** For interest rates, what tenor(s) should be used for stratification?  
**Proposal:** This may be a limitation in the current scenario picker tool. Consider multiple metrics based on different tenors.
6. **Decision Point:** What metric should be used for stratification?  
**Proposal:** Evaluate whether the current scenario picker's metric is reasonable, aside from its narrow focus on a specific interest rate tenor.

#### 4) Company-Specific Market Paths (CSMP)

**Timeline:** 1 meeting, tentatively in May

**CSMP Goal:**

- Provide a reasonable alternative to the CTEPA that gives consistent results but is more tractable.

**CSMP Decision Points:**

7. **Decision Point:** Should the CSMP be removed entirely?  
**Proposal:** Not at this time, but we should consider whether a sunset timeline is appropriate depending on current use. The CTEPA is very widely used, provides greater insight into the differences between company and prescribed assumptions, and is more straightforward to implement (although more time-intensive). Note that the NAIC and regulators are looking into obtaining a more exhaustive list of its use, and will recommend to companies using the CSMP that they participate in ACLI and AAA groups related to this effort as well as the Technical DG.

8. **Decision Point:** Should there be any update to the CSMP Market paths?  
**Proposal:** Primarily, updates would be designed to ensure that the 40 scenarios are likely to bracket CTE70(Adj). May need to replace the 1 bps floor on interest rates with a negative [25 bps] floor on interest rates, given the update to the economic scenarios to allow for negative interest rates. No other changes to magnitude of initial equity/interest rate shocks or subsequent equity returns. Interest rate paths (VM requires "all random variables in the generator are set to zero across all time periods" with the intention that "interest rates revert to the same long-term mean") may be determined as Conning has done for SERT scenario #9 from the initial field test (median path), or we can consider whether Conning can more directly calculate the CSMP subsequent interest rate paths.

## 5) Alternative Methodology

**Timeline:** 1 meeting, tentatively in June

### **Alternative Methodology Goal:**

- Provide a reasonable alternative to stochastic modeling that captures the risk of the guarantee for contracts with GMDBs only. Note that for contracts with no guarantees, the Alternative Methodology simply refers to AG33, so the focus of our consideration is on contracts with GMDBs.

### **Alternative Methodology Decision Points:**

1. **Decision Point:** Should the Alternative Methodology be removed entirely?  
**Proposal:** Not at this time, but we should consider whether a sunset timeline is appropriate depending on current use. Note that the NAIC and regulators are looking into obtaining a more exhaustive list of its use, and will recommend to companies using the Alternative Methodology that they participate in ACLI and AAA groups related to this effort as well as the Technical DG. One suggested alternative for maintaining the Alternative Methodology was to revert to AG34 with an increased stress for richer GMDBs. In addition, there was a question of whether LATF would look for companies with a material block of "rich" GMDBs to follow full SR modeling. Consider not allowing **new** use of the Alternative Methodology.
2. **Decision Point:** Should there be a significant update to the Alternative Methodology (updating the table of factors)?  
**Proposal:** No. Based on early input from the AAA, an update of the current factor-based approach would be onerous if not impossible. If the equity scenarios materially differ

from the AIRG, can consider a crude adjustment as was previously done for mortality during VA reform if the impact for the Alternative Methodology is also likely material.

3. **Decision Point:** The Alternative Methodology uses the current AIRG in VM-21 Section 7.C.8 when describing “typical” adjustments to F and G for product design variations. Can Section 7.C.8 be removed, as it only outlines a possible approach, and it will be left to the actuary’s judgment how to adjust results for product design variations? Alternately, can the “prescribed scenarios” be replaced with the option to use either CFT scenarios or the updated prescribed (Conning) scenarios rather than the current AIRG (again, since this is an example)?

**Proposal:** Need input on whether this approach is being relied on. If this is not being used, remove for simplicity since it is not a requirement. If it is being used, update with the option to use CFT scenarios or the updated prescribed (Conning) scenarios.

DRAFT

**Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force  
Amendment Proposal Form\***

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

**Identification:**

PBR Staff of Texas Department of Insurance

**Title of the Issue:**

VM-31 Reporting Issues:

1. Senior Management and Qualified Actuary are distinct, layered reporting roles in VM-G.
  2. Life and VA Reports do not discuss the aggregate impact of approximations and simplifications.
  3. There are three issues in VM-31's scenario generation documentation for VM-21 in 3.F.9:
    - a) In addition to supporting that the number of scenarios is appropriate for the CTE 70 calculation, the company should also support that the number of scenarios is appropriate for the CTE 98 calculation.
    - b) The version of the ESG should be included and the parameters of the scenario generation should be available upon request.
    - c) A section reference needs to be corrected: VM-21 Section 8.G.1 does not exist.
  4. VM-21 is missing consideration of use of a date prior to the valuation date for the SR and the additional standard projection amount, which is inconsistent with the reporting in VM-31 Section 3.F.12.e.
  5. VM-31 should specifically address actual to expected analyses for certain liability assumptions such as expenses, partial withdrawals, annuitizations as well as GMIB/ GMWB utilization.
  6. Refine VM-31 documentation to address mortality improvement requirements in VM-21 Section 11.C and Section 11.D.
  7. The requirement for the projection period in VM-20 Section 7.A.1.d is not correctly reflected in VM-31 Section 3.D.2.f.
2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

VM-21 Section 3.I (new), VM-31 Section 3.D.2.f, VM-31 Section 3.D.5.f (new), VM-31 Section 3.D.11.k (new – renumber current 3.D.11.k and 3.D.11.l), VM-31 Section 3.D.14.c, VM-31 Section 3.F.2.f (new – renumber current 3.F.2.f and 3.F.2.g), VM-31 Section 3.F.3.k (new), VM-31 Section 3.F.3.i.vii, VM-31 Section 3.F.9, VM-31 Section 3.F.12.e (remove – renumber current Sections from 3.F.12.f to 3.F.12.m), VM-31 Section 3.F.13.e (New), VM-31 Section 3.F.16.c

January 1, 2023 NAIC *Valuation Manual*

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)

See attached.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

1. An internal control certification from Senior Management is required by VM-31. It is not appropriate for the qualified actuary to complete the certification for senior management since these two roles have different responsibilities under VM-G, representing distinct layers of reporting and oversight. Senior

management receives reporting from the qualified actuary for principle-based valuation under VM-20 and VM-21.

2. In order to better understand the aggregate impact of approximations and simplifications used by the company, VM-31 Life Report and VA Report should add a new section to discuss it. If regulators were to gain comfortable with documentation of the aggregate impact, then the requirement that each individual approximation or simplification not bias the reserves downward could be revisited. For context, here are the current sections on approximations, simplifications, and modeling efficiency techniques, which only address the individual impacts.

**VM-31 Section 3.D.11.j**

*j. Approximations, Simplifications, and Modeling Efficiency Techniques – A description of each approximation, simplification or modeling efficiency technique used in reserve calculations, and a statement that the required VM-20 Section 2.G demonstration is available upon request and shows that: 1) the use of each approximation, simplification, or modeling efficiency technique does not understate the reserve by a material amount; and 2) the expected value of the reserve is not less than the expected value of the reserve calculated that does not use the approximation, simplification, or modeling efficiency technique.*

**VM-31 Section 3.F.2.e**

*e. Approximations, Simplifications, and Modeling Efficiency Techniques – A description of each approximation, simplification or modeling efficiency technique used in reserve or TAR calculations, and a statement that the required VM-21 Section 3.H demonstration is available upon request and shows that: 1) the use of each approximation, simplification, or modeling efficiency technique does not understate TAR by a material amount; and 2) the expected value of TAR is not less than the expected value of TAR calculated without using the approximation, simplification, or modeling efficiency technique.*

If discussions of the aggregate impact of approximations, simplifications, and modeling efficiency techniques were included, then there could be a future consideration of the removal of the requirement in VM-20 Section 2.G and VM-21 Section 3.H that approximations, simplifications, and modeling efficiency techniques not bias the reserve downward.

3. For VA, support should also be provided for the number of scenarios used for the C-3 RBC calculation based on CTE 98. For VA, the version of ESG should be included. Correct section reference.
4. VM-21 is missing consideration of use of a date prior to the valuation date for the additional standard projection amount, whereas VM-31 Section 3.F.12.e implies that the intent was for VM-21 to have such a consideration or allowance. VM-20 explicitly addresses such a consideration in VM-20 Section 2.E, and we use that language as a starting point for VM-21.

**VM-20 Section 2.E**

*The company may calculate the DR and the SR as of a date no earlier than three months before the valuation date, using relevant company data, provided an appropriate method is used to adjust those reserves to the valuation date. Company data used for experience studies to determine prudent estimate assumptions are not subject to this three-month limitation.*

5. In order for regulator reviewers to be able to better understand and evaluate a company's liability assumptions for expenses, partial withdrawals, annuitizations, as well as GMIB and GMWB utilization, a comparison of actual to expected should specifically be referenced in VM-31. We have used the

language for actual to expected policyholder behavior analysis in VM-31 Section 3.D.4.c (Life Report) as a format for a general A/E request.

**VM-31 Section 3.D.4.c**

*Actual to Expected Policyholder Behavior Analysis – The results of the most recently available actual to expected (without margins) analysis, including:*

- i. Definitions of the expected basis used in all actual-to-expected ratios shown.*
- ii. Comments addressing the conclusions drawn from the analysis.*

6. Adding documentation to confirm that the company has applied historical and future mortality improvement when it would result in an increase in the stochastic reserve as required by VM-21 Section 11.C and Section 11.D.
7. The language in VM-31 should be modified to correctly require reporting on VM-20’s requirement for the projection period. For reference, here is the relative passage of VM-20:

**VM-20 Section 7.A.1.d:**

*Projects cash flows for a period that extends far enough into the future so that no obligations remain.*

\* This form is not intended for minor corrections, such as formatting, grammar, cross-references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

<b>Dates: Received</b>	<b>Reviewed by Staff</b>	<b>Distributed</b>	<b>Considered</b>
11/15/2022, revised 1/30/23	SO		
<b>Notes:</b> APF 2022-09			

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**VM-31 Section 3.D.14.c:**

c. Senior Management on Internal Controls – A certification from senior management, other than the qualified actuary, regarding the effectiveness of internal controls with respect to the principle-based valuation under VM-20, as provided in Section 12B(2) of Model #820.

**VM-31 Section 3.F.16.c:**

c. Senior Management on Internal Controls – A certification from senior management, other than the qualified actuary, regarding the effectiveness of internal controls with respect to the principle-based valuation under VM-21, as provided in Section 12B(2) of Model #820.

**VM-31 Section 3.D.11.k (new – renumber current 3.D.11.k and 3.D.11.l):**

k. Aggregate Impact of Approximations, Simplifications and Modeling Efficiency Techniques – Support that the aggregate impact of approximations and simplifications does not result in a material understatement of the reserve. This should include consideration of not just the magnitude of the sum of the individual impacts when considered in isolation, but also consideration of any potential interaction of approximations, simplifications, and modeling efficiency techniques.

**VM-31 Section 3.F.2.f (new– renumber current 3.F.2.f and 3.F.2.g):**

f. Aggregate Impact of Approximations, Simplifications and Modeling Efficiency Techniques – Support that the aggregate impact of approximations and simplifications does not result in a material understatement of TAR. This should include consideration of not just the magnitude of the sum of the individual impacts when considered in isolation, but also consideration of any potential interaction of approximations, simplifications, and modeling efficiency techniques.

**VM-31 Section 3.F.9:**

9. Scenario Generation – The following information regarding the scenario generation for interest rates and equity returns used by the company in performing a principle-based valuation under VM-21 and in determining the C-3 RBC amount under LR027, as it applies to the calculation of the SR, TAR and CTEPA (if used):

- a. Sources – Identification of the sources or generators used to produce the scenarios.  
Versions should be identified and parameters to the scenario generation shall be available upon request.
- b. Number of Scenarios – Number of scenarios used, rationale for that number, methods used to determine the sampling error of the CTE 70 and CTE 98 statistic when using the selected number of scenarios, and documentation that any resulting understatement in reserve or TAR, as compared with that resulting from running additional scenarios, is not material, as discussed in VM-21 Section 8.F.
- c. Scenario Reduction Techniques – If a scenario reduction technique is used, a description of the technique and documentation of how the company determined that the technique does not lead to a material understatement of results.
- d. Time-Step – Identification of the time-step of the model (e.g., monthly, quarterly, annual), and results of testing performed to determine that use of a more frequent time-step does not materially increase reserves, as discussed in VM-21 Section ~~8.G.14.F.1~~.

**VM-21 Section 3.I (New):**

The company may calculate the SR and the additional standard projection amount as of a date no earlier than three months before the valuation date, using relevant company data, provided an appropriate method is used to adjust

those amounts to the valuation date. Company data used for experience studies to determine prudent estimate assumptions are not subject to this three-month limitation.

**VM-31 Section 3.F.12.e (remove – renumber current Sections from 3.F.12.f to 3.F.12.m):**

Prior Date – If the additional standard projection amount was developed as of a date prior to the valuation date, disclosure of the prior date, the additional standard projection amount of the in force on the prior date, and an explanation of why the use of such a date will not produce a material change in the results compared to if the results were based on the valuation date. Such an explanation shall describe the process that the qualified actuary used to determine the adjustment, the amount of the adjustment, and the rationale for why the adjustment is appropriate.

**VM-31 Section 3.F.13.e (New):**

Calculations as of a Date Preceding the Valuation Date – If the SR and/or the additional standard projection amount were developed as of a date prior to the valuation date, disclosure of the prior date, the SR and the additional standard projection amount of the in force on the prior date, and an explanation of why the use of such a date will not produce a material change in the results compared to if the results were based on the valuation date. Such an explanation shall describe the process that the qualified actuary used to determine the adjustment required by VM-21 Section 3.I, the amount of the adjustment, and the rationale for why the adjustment is appropriate.

**VM-31 Section 3.D.5.f (New):**

5. Expenses – The following information regarding the expense assumptions used by the company in performing a principle-based valuation under VM-20:

f. Actual to Expected Analysis – The results of the most recently available actual to expected (without margins) analysis, including:

- i. Definitions of the expected basis used in all actual-to-expected ratios shown.
- ii. Comments addressing the conclusions drawn from the analysis.

**VM-31 Section 3.F.3.k (New – renumber current section 3.F.3.k):**

k. Actual to Expected Analysis – Disclosure of the results of the most recently available actual to expected (without margins) analysis for the assumptions including 3.F.3.d Expenses Other than Commissions, 3.F.3.e Partial Withdrawals, 3.F.3.g Annuitization Benefits and 3.F.3.h GMIB and GMWB Utilizations, including:

- i. Definitions of the expected basis used in all actual-to-expected ratios shown.
- ii. Comments addressing the conclusions drawn from the analysis.

**VM-31 Section 3.F.3.i.vii:**

Discussion of any assumptions made on mortality improvements both for applying up to and beyond the valuation date (if applicable), the support for such assumptions, and how such assumptions adjusted the modeled mortality. In a case where mortality improvement as discussed in VM-21 Section 11.C and Section 11.D has not been applied, confirmation that applying such improvement would not result in an increase in the SR.

**VM-31 Section 3.D.2.f:**

Projection Period – Disclosure of the length of projection period and comments addressing the conclusion that ~~no material amount of business remains at the end of the projection period~~ the projection of cash flows extends far enough into the future that no obligations remain for both the deterministic and stochastic models.

**Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force  
 Amendment Proposal Form\***

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

**Identification:**

PBR Staff of Texas Department of Insurance

**Title of the Issue:**

Companies appear unclear how to support the requirement that “company experience mortality rates shall not be lower than the mortality rates the company expects to emerge” in PBR Actuarial Report under VM-31 Section 3.D.3.1.iv.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

VM-31 Section 3.D.3.1.iv

January 1, 2023 NAIC *Valuation Manual*

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

See attached.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

We have observed a consistent issue, where there is not adequate support showing compliance with the requirement that “the company experience mortality rates shall not be lower than the mortality rates the company expects to emerge”. The most commonly provided support is a retrospective quantitative analysis (e.g., the actual to expected analysis), without any further discussion of the mortality rates that the company expects to emerge. The intention of this requirement is to discuss any forward-looking qualitative analysis, rather than just a historical quantitative analysis. The disclosure shall include, but is not limited to, the discussion of underwriting standard changes (or the lack thereof), distribution channel changes (or the lack thereof), any pandemic adjustments (or the lack thereof), and the results of ongoing experience monitoring.

\* This form is not intended for minor corrections, such as formatting, grammar, cross-references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
<u>2/24/23</u>	<u>SO</u>		
Notes: <u>APF 2023-04</u>			

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**VM-31 Section 3.D.3.I.iv**

Description and justification of the mortality rates the company actually expects to emerge, and a demonstration that the anticipated experience assumptions are no lower than the mortality rates that are actually expected to emerge. The description and demonstration should include the level of granularity at which the comparison is made (e.g., ordinary life, term only, preferred term, etc.). For the mortality rates that are actually expected to emerge, the description should include a forward-looking qualitative analysis which includes, but is not limited to, the discussion of any underwriting standard changes (or lack thereof), distribution channel changes (or lack thereof), any pandemic adjustments (or lack thereof), and the results of ongoing experience monitoring.

Draft: 3/7/23

Life Actuarial (A) Task Force  
Virtual Meeting  
February 23, 2023

The Life Actuarial (A) Task Force met Feb. 23, 2023. The following Task Force members participated: Cassie Brown, Chair, represented by Rachel Hemphill and Chonlada Pongpipattanachai (TX); Scott A. White, Vice Chair, represented by Craig Chupp (VA); Lori K. Wing-Heier represented by Sharon Comstock (AK); Ricardo Lara represented by Ahmad Kamil and Elaine Lam (CA); Andrew N. Mais represented by Wanchin Chou (CT); Doug Ommen represented by Mike Yanacheak (IA); Dana Popish Severinghaus represented by Vincent Tsang (IL); Vicki Schmidt represented by Nicole Boyd (KS); Timothy N. Schott represented by Marti Hooper (ME); Grace Arnold represented by Fred Andersen and Ben Slutsker (MN); Chlora Lindley-Myers represented by William Leung (MO); Eric Dunning represented by Michael Muldoon (NE); Marlene Caride represented by Seong-min Eom (NJ); Adrienne A. Harris represented by Bill Carmello (NY); Judith L. French represented by Peter Weber (OH); Michael Humphreys represented by Steve Boston (PA); Jon Pike represented by Tomasz Serbinowski (UT); and Allan L. McVey represented by Tim Sigman (WV).

1. Reported it Met Feb. 9 in Regulator-to-Regulator Session

Hemphill said that the Task Force met Feb. 9 in regulator-to-regulator session, pursuant to paragraph 6 (consultations with NAIC staff members related to NAIC technical guidance) of the NAIC Policy Statement on Open Meetings. Hemphill stated that Scott O'Neal (NAIC) provided the Task Force with technical guidance related to the economic scenario generator (ESG) corporate model and that state insurance regulators had a robust discussion of the American Academy of Actuaries' (Academy's) simplified corporate model and proposed acceptance criteria. Hemphill further said that regulators have two takeaways from the meeting: 1) they would like to understand the materiality of the difference between the results of the Academy's simplified corporate model and the Conning corporate model; and 2) they want to know more about any issues with incomplete documentation and/or lack of transparency for both the Academy and Conning corporate models.

2. Adopted its 2022 Fall National Meeting Minutes

Chupp made a motion, seconded by Yanacheak, to adopt the Task Force's Dec. 11–12, 2022, (*see NAIC Proceedings – Fall 2022, Life Actuarial (A) Task Force*) minutes. The motion passed unanimously.

3. Exposed the Proposed Charges for the Proposed Economic Scenarios (E/A) Subgroup

Hemphill said that the Economic Scenario Generator Governance Drafting Group held discussions where it became clear that there was a need for a joint subgroup of the Task Force and the Life Risk-Based Capital (E) Working Group to support the implementation of the ESG and take on a governance role. Hemphill then walked through the proposed charges for the Economic Scenarios (E/A) Subgroup.

Yanacheak made a motion, seconded by Slutsker, to expose the proposed charges (Attachment Two-A) for the Economic Scenarios (E/A) Subgroup for a 21-day public comment period ending Mar 15. The motion passed unanimously.

4. Adopted APF 2022-10

Hemphill noted that the Task Force received a comment letter (Attachment Two-B) from the American Council of Life Insurers (ACLI) that noted support for both amendment proposal form (APF) 2022-10 and APF 2023-02.

Slutsker made a motion, seconded by Chupp to adopt APF 2022-10 (Attachment Two-C). The motion passed unanimously.

5. Adopted APF 2023-02

Lam made a motion, seconded by Chupp, to adopt APF 2023-02 (Attachment Two-D). The motion passed unanimously.

6. Exposed APF 2023-01

Slutsker made a motion, seconded by Leung, to deem APF 2023-01 (Attachment Two-E) non-substantive and expose it for a seven-day public comment period ending Mar 9. The motion passed unanimously.

Having no further business, the Life Actuarial (A) Task Force adjourned.

SharePoint/NAIC Support Staff Hub/Member Meetings/A CMTE/LATF/ 2023-1-Spring/LATF Calls/02 23/Feb 23 Minutes.docx

The **Economic Scenarios (E/A) Subgroup** of the Life Risk-Based Capital (E) Working Group and the Life Actuarial (A) Task Force will:

- A. Monitor that the economic scenario governance framework is being appropriately followed by all relevant stakeholders involved in scenario delivery.
- B. Review material economic scenario generator updates, either driven by periodic model maintenance or changes to the economic environment and provide recommendations.
- C. Regularly review key economic conditions and metrics to evaluate the need for off-cycle or significant economic scenario generator updates and maintain a public timeline for economic scenario generator updates.
- D. Support the implementation of an economic scenario generator for use in statutory reserve and capital calculations.

**Brian Bayerle**  
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Policy Analyst  
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February 22, 2023

Rachel Hemphill  
Chair, NAIC Life Actuarial (A) Task Force (LATF)

Re: Exposed APFs from the February 2, 2023, LATF Meeting

Dear Ms. Hemphill:

The American Council of Life Insurers (ACLI) is appreciative of the opportunity to comment on several of the APFs that were exposed by LATF during their meeting on February 2, 2023. This includes APF 2022-09 (VM-31 Reporting Issues), APF 2022-10 (UL with Non-material Secondary Guarantee and IUL NPR), and APF 2023-02 (Supplement Reporting and Reconciliation).

ACLI is supportive of the changes proposed within these APFs and would welcome their adoption at a future LATF meeting.

We will need additional time for our comments on APF 2023-03 but will aim to have responses on items 3 and 4 in that APF by the NAIC Spring Meeting materials cutoff. Additional feedback on items 1 and 2 will be provided as soon as feasible.

We look forward to the discussion at a future LATF meeting. Thank you.



cc: Scott O'Neal, NAIC

American Council of Life Insurers | 101 Constitution Ave, NW, Suite 700 | Washington, DC 20001-2133

The American Council of Life Insurers (ACLI) is the leading trade association driving public policy and advocacy on behalf of the life insurance industry. 90 million American families rely on the life insurance industry for financial protection and retirement security. ACLI's member companies are dedicated to protecting consumers' financial wellbeing through life insurance, annuities, retirement plans, long-term care insurance, disability income insurance, reinsurance, and dental, vision and other supplemental benefits. ACLI's 280 member companies represent 94 percent of industry assets in the United States.

[accli.com](http://accli.com)



## Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force Amendment Proposal Form\*

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

Ben Slutsker, Minnesota Department of Commerce  
 Elaine Lam and Thomas Reedy, California Department of Insurance

Some policies in the ULSG Reserving Category may have a non-material secondary guarantee. This makes them eligible to be excluded from both DR and SR calculations if they pass both the DET and the SET. Currently, the language in VM-20 Section 2.A.2 does not address this possibility, and thus does not clearly state the requirement for those policies. Furthermore, aspects of the NPR calculation may have been unclear for certain indexed universal life policies that pass exclusion tests.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

Valuation Manual (January 1, 2023 edition), VM-20 Section 2.A.2, Section 3.B.5, and Section 3.B.6

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

See attached.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

The purpose of this APF is to add language to address the possibility of policies in the ULSG Reserving Category having a non-material secondary guarantee, and thus becoming excluded from both DR and SR calculations if they pass both the DET and the SET. The new proposed subsection within VM-20 Section 2.A.2 clarifies the total minimum reserve calculation for these policies. The new proposed Guidance Note immediately following the new proposed subsection clarifies when the subsection applies, which is only in cases of UL policies with non-material SGs. In addition, edits are proposed to Section 3.B.5 and 3.B.6 of VM-20 to have the NPR on indexed universal life policies that pass both exclusion tests follow VM-A and VM-C calculations.

\* This form is not intended for minor corrections, such as formatting, grammar, cross-references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

**NAIC Staff Comments:**

Dates: Received	Reviewed by Staff	Distributed	Considered
12/1/2022	SO		
<b>Notes:</b> APF 2022-10			

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New proposed language is in redline below:

**VM-20 Section 2.A.2**

2. ULSG Reserving Category — All policies and riders belonging to the ULSG Reserving Category are to be included in Section 2.A.2.c~~b~~ unless the company has elected to exclude a group of them from the SR calculation or both the DR and SR calculations and has applied the ~~SET~~applicable exclusion test(s) defined in Section 6, passed the test(s) and documented the results.

- a. For the group of policies and riders for which the company did not compute the DR nor the SR: the sum of the policy minimum NPRs for those policies.

**Guidance Note:** This may be applicable for a group of ULSG policies that meet the definition of a “non-material secondary guarantee” and passes both the DET and the SET.

- a-b. For the group of policies and riders for which the company did not compute the SR: the sum of the policy minimum NPRs for those policies plus the excess, if any, of the DR for those policies determined pursuant to Section 4 over the quantity (A-B), where A = the sum of the policy minimum NPRs for those policies, and B = any due and deferred premium asset held on account of those policies.

- b-c. For the group of policies and riders for which the company computes all three reserve calculations: the sum of the policy minimum NPRs for those policies plus the excess, if any, of the greater of the DR for those policies determined pursuant to Section 4 and the SR for those policies determined pursuant to Section 5 over the quantity (A-B), where A = the sum of the policy minimum NPRs for those policies, and B = any due and deferred premium asset held on account of those policies.

- e-d. The due and deferred premium asset, if any, shall be based on the valuation net premiums computed in accordance with Section 3.B.5.d, for the base policy, determined without regard to any NPR floor amount from Section 3.D.2.

**VM-20 Section 3.B.5**

5. For all policies and riders within the ULSG Reserving Category, other than indexed universal life policies for which the company did not compute the DR nor the SR, the NPR shall be determined as follows:

- a. If the policy duration on the valuation date is prior to the point when all secondary guarantee periods have expired, the NPR shall be the greater of the reserve amount determined in Section 3.B.5.c and the reserve amount determined in Section 3.B.5.d, subject to the floors specified in Section 3.D.2.

...

**VM-20 Section 3.B.6**

6. For all policies and riders within the All Other VM-20 Reserving Category, as well as indexed universal life policies for which the company did not compute the DR nor the SR, the NPR shall be determined pursuant to applicable methods in VM-A and VM-C for the basic reserve. The mortality tables to be used are those defined in Section 3.C.1 and in VM-M Section 1.H-.

## Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force Amendment Proposal Form\*

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

**Identification:**

Elaine Lam, Office of PBR, California Department of Insurance (CDI)

**Title of Issue:**

Proposal to add disclosure requirements in VM-31, and clarify language in the Annual Statement Instructions related to reporting in the VM-20 Reserves Supplement.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

Valuation Manual (January 1, 2023 edition) – Proposal to add new section as VM-31 Section 3.C.11

2022 Annual Statement Instructions – Proposal to add a sentence to the instructions for “VM-20 Reserves Supplement”, starting on page 807

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

See attached.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

1. Add disclosure requirements in VM-31 for the Company to reconcile reported values and explain differences (if any) between reported values in the VM-31 Report (High-Level Results section), in the VM-20 Reserves Supplement (Parts 1A and 1B), and in the Annual Statement (Exhibit 3 for Separate Account values, Exhibit 5 for General Account values, and any other). Regulators have found inconsistencies in the values reported in the different locations. Moreover, without these disclosures, regulators have had a difficult time reconciling values and checking for misreported values.

2. Make a referral to the Blanks (E) Working Group to update the Annual Statement Instructions for the VM-20 Reserves Supplement to clarify that separate account amounts should be included in the Supplement. There has been inconsistent reporting by companies because the current instructions do not specifically address the treatment of separate account amounts.

\* This form is not intended for minor corrections, such as formatting, grammar, cross-references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
<u>1/29/23</u>	<u>SO</u>		
<b>Notes:</b> <u>APF 2023-02</u>			

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New proposed language in the *Valuation Manual* is in redline below:

**(new section)**

**VM-31 Section 3.C.11**

11. Reconciliation of Reported Values – A reconciliation of reported values and an explanation of differences, if any, between reported values in Section 3.B.5 (High-Level Results), in the VM-20 Reserves Supplement – Part 1A and Part 1B, and in the Annual Statement (Exhibit 3 for Separate Account values, Exhibit 5 for General Account values, and any other).

For referral to the Blanks (E) Working Group, new proposed language in the Annual Statement Instructions is in redline below:

**VM-20 RESERVES SUPPLEMENT**

**Life Insurance Reserves Valued According to VM-20 by Product Type**

This Supplement provides information on the reserves required to be calculated by Section VM-20 of the *Valuation Manual*. This includes the Net Premium Reserve and, as applicable, the Deterministic Reserve and the Stochastic Reserve. Only business issued on or after Jan. 1, 2017, valued by the requirements of VM-20 should be reported in Part 1A and Part 1B. Part 1A and Part 1B are intended to aid regulators in the analysis of reserves as determined under Section VM-20 of the *Valuation Manual* for both the prior and current year.

This Supplement also provides information regarding business where VM-20 of the *Valuation Manual* is not required to be applied. Companies exempted from the requirements of Section VM-20 are not required to complete Part 1A or Part 1B of this Supplement but must complete Part 2 or Part 3 as applicable.

**VM-20 RESERVES SUPPLEMENT – PART 1A**

**Life Insurance Reserves Valued According to VM-20 by Product Type**

Part 1A of this Supplement breaks out, by product type, the prior year and current year reported reserves on a Post-Reinsurance-Ceded and Pre-Reinsurance-Ceded basis as defined in Section 8.D of Section VM-20 of the *Valuation Manual*. The Due and Deferred Premium Asset for the current year is also shown.

Section VM-20 of the *Valuation Manual* requires that the Post-Reinsurance-Ceded Reserve be determined by three VM-20 Reserving Categories: Term Insurance, Universal Life with Secondary Guarantees (ULSG) and all other. Term Insurance should be reported on line 1.1. ULSG, including Variable Universal Life with a secondary guarantee, Indexed life insurance with a secondary guarantee, regular Universal Life with a secondary guarantee, and ULSG policies with a non-material secondary guarantee as defined in Section VM-01 of the *Valuation Manual*, should be reported on line 1.2. Each of the other products reported in lines 1.3 – 1.8 should be determined as the sum of the policy reserves using the policy reserves determined following the allocation process of VM-20 Section 2. A similar process should be used for each of the pre-reinsurance-ceded reserves. Both Post-Reinsurance-Ceded Reserves and Pre-Reinsurance-Ceded Reserves, as defined in VM-20, include separate account amounts where applicable to the policies in scope.

**Columns 1 & 2 – Reported Reserve**

Provide the reported reserve, in whole dollars, for the prior year and current year for each line item. Post-Reinsurance-Ceded is net of reinsurance ceded. Pre-Reinsurance-Ceded should be prior to any reinsurance ceded and include reinsurance assumed. Sections 2 and 8 in the *Valuation Manual* further describe the required reserve and treatment of reinsurance. The reported reserve for the current year should reflect all policies in force as of the end of the current year. The reported reserve for the prior year should reflect all policies in force as of the end of the prior year.

Etc...

## Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force Amendment Proposal Form\*

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

**Identification:**

PBR Staff of Texas Department of Insurance

**Title of the Issue:**

The values of the starting assets defined in the two sentences in VM-21 Section 4.D.1.a are not identical.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

VM-21 Section 4.D.1.a in January 1, 2023 NAIC Valuation Manual

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

1. Starting Asset Amount

a. For the projections of accumulated deficiencies, the value of assets at the start of the projection shall be set equal to the approximate value of statutory reserves at the start of the projection plus the allocated amount of PIMR attributable to the assets selected. Assets shall be valued consistently with their annual statement values. The amount of such asset values shall equal the sum of the following items plus the allocated amount of PIMR attributable to the assets selected, all as of the start of the projection:

- i. All of the separate account assets supporting the contracts;
- ii. Any hedge instruments held in support of the contracts being valued; and
- iii. An amount of assets held in the general account equal to the approximate value of statutory reserves as of the start of the projections less the amount in (i) and (ii).

4. State the reason for the proposed amendment? (You may do this through an attachment.)

The edit is necessary to have the identical value of the assets at the start of the projection as in the first sentence (i.e., For the projections of accumulated deficiencies, the value of assets at the start of the projection shall be set equal to the approximate value of statutory reserves at the start of the projection **plus the allocated amount of PIMR attributable to the assets selected**).

\* This form is not intended for minor corrections, such as formatting, grammar, cross-references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
1/9/23, 2/7/23	SO		
<b>Notes:</b> APF 2023-01			

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Draft: 3/7/23

Life Actuarial (A) Task Force  
Virtual Meeting  
February 2, 2023

The Life Actuarial (A) Task Force met Feb. 2, 2023. The following Task Force members participated: Cassie Brown, Chair, represented by Rachel Hemphill and Iris Huang (TX); Scott A. White, Vice Chair, represented by Craig Chupp (VA); Lori Wing-Heier represented by Sharon Comstock (AK), Ricardo Lara represented by Ahmad Kamil and Elaine Lam (CA); Andrew N. Mais represented by Wanchin Chou (CT); Doug Ommen represented by Mike Yanacheak (IA); Amy L. Beard represented by Scott Shover (IN); Vicki Schmidt represented by Nicole Boyd (KS); Timothy N. Schott represented by Marti Hooper (ME); Grace Arnold represented by Fred Andersen and Ben Slutsker (MN); Chlora Lindley-Myers represented by William Leung (MO); Eric Dunning represented by Michael Muldoon (NE); Marlene Caride represented by Seong-min Eom (NJ); Adrienne A. Harris represented by Bill Carmello (NY); Judith L. French represented by Peter Weber (OH); Glen Mulready represented by Andrew Schallhorn (OK); Michael Humphreys represented by Steve Boston (PA); Jon Pike represented by Tomasz Serbinowski (UT).

1. Exposed APF 2022-09

Huang noted that amendment proposal form (APF) 2022-09 covers a series of VM-31, PBR Actuarial Report Requirements for Business Subject to a Principle-Based Valuation, issues. Chupp asked how the support required in the proposed new VM-31 Section 3.D.11.k would differ from the current requirement for a demonstration available on request that the impact of each approximation and/or simplification does not materially understate the reserves. Hemphill replied that the new VM-31 Section 3.D.11.k would require a holistic discussion of the simplifications, and interactions between simplifications, and why they would not materially understate or bias the reserve downwards in aggregate, whereas the current demonstration for each individual simplification that is available upon request requires a rigorous analysis with quantitative support. Chupp then also mentioned a drafting error he found after reviewing APF 2022-09.

Slutsker made a motion, seconded by Yanacheak, to expose APF 2022-09 with a correction of the drafting error for a 21-day public comment period ending Feb. 22 (Attachment Three-A). The motion passed unanimously.

2. Exposed APF 2022-10

Slutsker introduced APF 2022-10, noting that it clarifies the VM-20, Requirements for Principle-Based Reserves for Life Products, valuation requirements for universal life with secondary guarantee (ULSG) policies with a non-material secondary guarantee and indexed universal life policies that pass exclusion tests.

Slutsker made a motion, seconded by Chupp, to expose APF 2022-10 for a 21-day public comment period ending Feb. 22 (Attachment Three-B). The motion passed unanimously.

3. Exposed APF 2023-02

Lam said that the purpose of APF 2023-02 is to add additional disclosure requirements to VM-31 to reconcile reported values to the Annual Statement and to make a referral to the Blanks (E) Working Group to update the instructions for the VM-20 Reserves Supplement.

Lam made a motion, seconded by Chupp, to expose APF 2023-02 for a 21-day public comment period ending Feb. 22 (Attachment Three-C). The motion passed unanimously.

4. Exposed APF 2023-03

Hemphill walked through the series of clean-up items in APF 2023-03 for VM-20; VM-21, Requirements for Principle-Based Reserves for Variable Annuities; and VM-31. Hemphill noted that the change to the net premium reserve (NPR) formula in VM-20 Section 3.B.5.c.ii.4 would not generally be expected to result in material changes to the NPR calculation.

Slutsker made a motion, seconded by Weber, to expose APF 2023-03 for a 21-day public comment period ending Feb. 22 (Attachment Three-D). The motion passed unanimously.

Having no further business, the Life Actuarial (A) Task Force adjourned.

SharePoint/NAIC Support Staff Hub/Member Meetings/A CMTE/LATF/ 2023-1-Spring/LATF Calls/02 02/Feb 2 Minutes.docx

**Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force  
Amendment Proposal Form\***

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

**Identification:**

PBR Staff of Texas Department of Insurance

**Title of the Issue:**

VM-31 Reporting Issues:

1. Senior Management and Qualified Actuary are distinct, layered reporting roles in VM-G.
  2. Life and VA Reports do not discuss the aggregate impact of approximations and simplifications.
  3. There are three issues in VM-31's scenario generation documentation for VM-21 in 3.F.9:
    - a) In addition to supporting that the number of scenarios is appropriate for the CTE 70 calculation, the company should also support that the number of scenarios is appropriate for the CTE 98 calculation.
    - b) The version of the ESG should be included and the parameters of the scenario generation should be available upon request.
    - c) A section reference needs to be corrected: VM-21 Section 8.G.1 does not exist.
  4. VM-21 is missing consideration of use of a date prior to the valuation date for the SR and the additional standard projection amount, which is inconsistent with the reporting in VM-31 Section 3.F.12.e.
  5. VM-31 should specifically address actual to expected analyses for certain liability assumptions such as expenses, partial withdrawals, annuitizations as well as GMIB/ GMWB utilization.
  6. Refine VM-31 documentation to address mortality improvement requirements in VM-21 Section 11.C and Section 11.D.
  7. The requirement for the projection period in VM-20 Section 7.A.1.d is not correctly reflected in VM-31 Section 3.D.2.f.
2. Identify the document, including the date if the document is "released for comment," and the location in the document where the amendment is proposed:

VM-21 Section 3.I (new), VM-31 Section 3.D.2.f, VM-31 Section 3.D.5.f (new), VM-31 Section 3.D.11.k (new – renumber current 3.D.11.k and 3.D.11.l), VM-31 Section 3.D.14.c, VM-31 Section 3.F.2.f (new – renumber current 3.F.2.f and 3.F.2.g), VM-31 Section 3.F.3.k (new), VM-31 Section 3.F.3.i.vii, VM-31 Section 3.F.9, VM-31 Section 3.F.12.e (remove – renumber current Sections from 3.F.12.f to 3.F.12.m), VM-31 Section 3.F.13.e (New), VM-31 Section 3.F.16.c

January 1, 2023 NAIC *Valuation Manual*

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on "track changes" in Word®) version of the verbiage. (You may do this through an attachment.)  
  
See attached.
4. State the reason for the proposed amendment? (You may do this through an attachment.)
  1. An internal control certification from Senior Management is required by VM-31. It is not appropriate for the qualified actuary to complete the certification for senior management since these two roles have different responsibilities under VM-G, representing distinct layers of reporting and oversight. Senior



management receives reporting from the qualified actuary for principle-based valuation under VM-20 and VM-21.

2. In order to better understand the aggregate impact of approximations and simplifications used by the company, VM-31 Life Report and VA Report should add a new section to discuss it. If regulators were to gain comfortable with documentation of the aggregate impact, then the requirement that each individual approximation or simplification not bias the reserves downward could be revisited. For context, here are the current sections on approximations, simplifications, and modeling efficiency techniques, which only address the individual impacts.

**VM-31 Section 3.D.11.j**

*j. Approximations, Simplifications, and Modeling Efficiency Techniques – A description of each approximation, simplification or modeling efficiency technique used in reserve calculations, and a statement that the required VM-20 Section 2.G demonstration is available upon request and shows that: 1) the use of each approximation, simplification, or modeling efficiency technique does not understate the reserve by a material amount; and 2) the expected value of the reserve is not less than the expected value of the reserve calculated that does not use the approximation, simplification, or modeling efficiency technique.*

**VM-31 Section 3.F.2.e**

*e. Approximations, Simplifications, and Modeling Efficiency Techniques – A description of each approximation, simplification or modeling efficiency technique used in reserve or TAR calculations, and a statement that the required VM-21 Section 3.H demonstration is available upon request and shows that: 1) the use of each approximation, simplification, or modeling efficiency technique does not understate TAR by a material amount; and 2) the expected value of TAR is not less than the expected value of TAR calculated without using the approximation, simplification, or modeling efficiency technique.*

If discussions of the aggregate impact of approximations, simplifications, and modeling efficiency techniques were included, then there could be a future consideration of the removal of the requirement in VM-20 Section 2.G and VM-21 Section 3.H that approximations, simplifications, and modeling efficiency techniques not bias the reserve downward.

3. For VA, support should also be provided for the number of scenarios used for the C-3 RBC calculation based on CTE 98. For VA, the version of ESG should be included. Correct section reference.
4. VM-21 is missing consideration of use of a date prior to the valuation date for the additional standard projection amount, whereas VM-31 Section 3.F.12.e implies that the intent was for VM-21 to have such a consideration or allowance. VM-20 explicitly addresses such a consideration in VM-20 Section 2.E, and we use that language as a starting point for VM-21.

**VM-20 Section 2.E**

*The company may calculate the DR and the SR as of a date no earlier than three months before the valuation date, using relevant company data, provided an appropriate method is used to adjust those reserves to the valuation date. Company data used for experience studies to determine prudent estimate assumptions are not subject to this three-month limitation.*

5. In order for regulator reviewers to be able to better understand and evaluate a company's liability assumptions for expenses, partial withdrawals, annuitizations, as well as GMIB and GMWB utilization, a comparison of actual to expected should specifically be referenced in VM-31. We have used the

language for actual to expected policyholder behavior analysis in VM-31 Section 3.D.4.c (Life Report) as a format for a general A/E request.

**VM-31 Section 3.D.4.c**

*Actual to Expected Policyholder Behavior Analysis – The results of the most recently available actual to expected (without margins) analysis, including:*

- i. Definitions of the expected basis used in all actual-to-expected ratios shown.*
- ii. Comments addressing the conclusions drawn from the analysis.*

- 6. Adding documentation to confirm that the company has applied historical and future mortality improvement when it would result in an increase in the stochastic reserve as required by VM-21 Section 11.C and Section 11.D.
- 7. The language in VM-31 should be modified to correctly require reporting on VM-20’s requirement for the projection period. For reference, here is the relative passage of VM-20:

**VM-20 Section 7.A.1.d:**

*Projects cash flows for a period that extends far enough into the future so that no obligations remain.*

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\* This form is not intended for minor corrections, such as formatting, grammar, cross-references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
11/15/2022, revised 1/30/23	SO		
Notes: <a href="#">APF 2022-09</a>			

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**VM-31 Section 3.D.14.c:**

c. Senior Management on Internal Controls – A certification from senior management, other than the qualified actuary, regarding the effectiveness of internal controls with respect to the principle-based valuation under VM-20, as provided in Section 12B(2) of Model #820.

**VM-31 Section 3.F.16.c:**

c. Senior Management on Internal Controls – A certification from senior management, other than the qualified actuary, regarding the effectiveness of internal controls with respect to the principle-based valuation under VM-21, as provided in Section 12B(2) of Model #820.

**VM-31 Section 3.D.11.k (new – renumber current 3.D.11.k and 3.D.11.l):**

k. Aggregate Impact of Approximations, Simplifications and Modeling Efficiency Techniques – Support that the aggregate impact of approximations and simplifications does not result in a material understatement of the reserve. This should include consideration of not just the magnitude of the sum of the individual impacts when considered in isolation, but also consideration of any potential interaction of approximations, simplifications, and modeling efficiency techniques.

**VM-31 Section 3.F.2.f (new– renumber current 3.F.2.f and 3.F.2.g):**

f. Aggregate Impact of Approximations, Simplifications and Modeling Efficiency Techniques – Support that the aggregate impact of approximations and simplifications does not result in a material understatement of TAR. This should include consideration of not just the magnitude of the sum of the individual impacts when considered in isolation, but also consideration of any potential interaction of approximations, simplifications, and modeling efficiency techniques.

**VM-31 Section 3.F.9:**

9. Scenario Generation – The following information regarding the scenario generation for interest rates and equity returns used by the company in performing a principle-based valuation under VM-21 and in determining the C-3 RBC amount under LR027, as it applies to the calculation of the SR, TAR and CTEPA (if used):

a. Sources – Identification of the sources or generators used to produce the scenarios.

Versions should be identified and parameters to the scenario generation shall be available upon request.

b. Number of Scenarios – Number of scenarios used, rationale for that number, methods used to determine the sampling error of the CTE 70 and CTE 98 statistic when using the selected number of scenarios, and

documentation that any resulting understatement in reserve or TAR, as compared with that resulting from running additional scenarios, is not material, as discussed in VM-21 Section 8.F.

c. Scenario Reduction Techniques – If a scenario reduction technique is used, a description of the technique and documentation of how the company determined that the technique does not lead to a material understatement of results.

d. Time-Step – Identification of the time-step of the model (e.g., monthly, quarterly, annual), and results of testing performed to determine that use of a more frequent time-step does not materially increase reserves, as discussed in VM-21 Section 4.F.1.

Deleted: 8.G.1

**VM-21 Section 3.I (New):**

The company may calculate the SR and the additional standard projection amount as of a date no earlier than three months before the valuation date, using relevant company data, provided an appropriate method is used to adjust

those amounts to the valuation date. Company data used for experience studies to determine prudent estimate assumptions are not subject to this three-month limitation.

**VM-31 Section 3.F.12.e (remove – renumber current Sections from 3.F.12.f to 3.F.12.m):**

**VM-31 Section 3.F.13.e (New):**

Calculations as of a Date Preceding the Valuation Date – If the SR and/or the additional standard projection amount were developed as of a date prior to the valuation date, disclosure of the prior date, the SR and the additional standard projection amount of the in force on the prior date, and an explanation of why the use of such a date will not produce a material change in the results compared to if the results were based on the valuation date. Such an explanation shall describe the process that the qualified actuary used to determine the adjustment required by VM-21 Section 3.I, the amount of the adjustment, and the rationale for why the adjustment is appropriate.

**Deleted: Prior Date** – If the additional standard projection amount was developed as of a date prior to the valuation date, disclosure of the prior date, the additional standard projection amount of the in force on the prior date, and an explanation of why the use of such a date will not produce a material change in the results compared to if the results were based on the valuation date. Such an explanation shall describe the process that the qualified actuary used to determine the adjustment, the amount of the adjustment, and the rationale for why the adjustment is appropriate.¶

**VM-31 Section 3.D.5.f (New):**

5. Expenses – The following information regarding the expense assumptions used by the company in performing a principle-based valuation under VM-20:

f. Actual to Expected Analysis – The results of the most recently available actual to expected (without margins) analysis, including:

- i. Definitions of the expected basis used in all actual-to-expected ratios shown.
- ii. Comments addressing the conclusions drawn from the analysis.

**VM-31 Section 3.F.3.k (New – renumber current section 3.F.3.k):**

k. Actual to Expected Analysis – Disclosure of the results of the most recently available actual to expected (without margins) analysis for the assumptions including 3.F.3.d Expenses Other than Commissions, 3.F.3.e Partial Withdrawals, 3.F.3.g Annuity Benefits and GMIB and 3.F.3.h GMWB Utilizations, including:

- i. Definitions of the expected basis used in all actual-to-expected ratios shown.
- ii. Comments addressing the conclusions drawn from the analysis.

**VM-31 Section 3.F.3.i.viii:**

Discussion of any assumptions made on mortality improvements both for applying up to and beyond the valuation date (if applicable), the support for such assumptions, and how such assumptions adjusted the modeled mortality. In a case where mortality improvement as discussed in VM-21 Section 11.C and Section 11.D has not been applied, confirmation that applying such improvement would not result in an increase in the SR.

**VM-31 Section 3.D.2.f:**

Projection Period – Disclosure of the length of projection period and comments addressing the conclusion that the projection of cash flows extends far enough into the future that no obligations remain for both the deterministic and stochastic models.

**Deleted:** no material amount of business remains at the end of the projection period

**Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force  
Amendment Proposal Form\***

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

Ben Slutsker, Minnesota Department of Commerce  
Elaine Lam and Thomas Reedy, California Department of Insurance

Some policies in the ULSG Reserving Category may have a non-material secondary guarantee. This makes them eligible to be excluded from both DR and SR calculations if they pass both the DET and the SET. Currently, the language in VM-20 Section 2.A.2 does not address this possibility, and thus does not clearly state the requirement for those policies. Furthermore, aspects of the NPR calculation may have been unclear for certain indexed universal life policies that pass exclusion tests.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

Valuation Manual (January 1, 2023 edition), VM-20 Section 2.A.2, Section 3.B.5, and Section 3.B.6

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

See attached.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

The purpose of this APF is to add language to address the possibility of policies in the ULSG Reserving Category having a non-material secondary guarantee, and thus becoming excluded from both DR and SR calculations if they pass both the DET and the SET. The new proposed subsection within VM-20 Section 2.A.2 clarifies the total minimum reserve calculation for these policies. The new proposed Guidance Note immediately following the new proposed subsection clarifies when the subsection applies, which is only in cases of UL policies with non-material SGs. In addition, edits are proposed to Section 3.B.5 and 3.B.6 of VM-20 to have the NPR on indexed universal life policies that pass both exclusion tests follow VM-A and VM-C calculations.

\* This form is not intended for minor corrections, such as formatting, grammar, cross-references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
12/1/2022	SO		
<b>Notes:</b> APF 2022-10			

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New proposed language is in redline below:

**VM-20 Section 2.A.2**

2. ULSG Reserving Category — All policies and riders belonging to the ULSG Reserving Category are to be included in Section 2.A.2.c, unless the company has elected to exclude a group of them from the SR calculation or both the DR and SR calculations and has applied the applicable exclusion test(s) defined in Section 6, passed the test(s) and documented the results.

Deleted: b

Deleted: SET

a. For the group of policies and riders for which the company did not compute the DR nor the SR: the sum of the policy minimum NPRs for those policies.

**Guidance Note:** This may be applicable for a group of ULSG policies that meet the definition of a “non-material secondary guarantee” and passes both the DET and the SET.

- b. For the group of policies and riders for which the company did not compute the SR: the sum of the policy minimum NPRs for those policies plus the excess, if any, of the DR for those policies determined pursuant to Section 4 over the quantity (A–B), where A = the sum of the policy minimum NPRs for those policies, and B = any due and deferred premium asset held on account of those policies.
- c. For the group of policies and riders for which the company computes all three reserve calculations: the sum of the policy minimum NPRs for those policies plus the excess, if any, of the greater of the DR for those policies determined pursuant to Section 4 and the SR for those policies determined pursuant to Section 5 over the quantity (A–B), where A = the sum of the policy minimum NPRs for those policies, and B = any due and deferred premium asset held on account of those policies.
- d. The due and deferred premium asset, if any, shall be based on the valuation net premiums computed in accordance with Section 3.B.5.d, for the base policy, determined without regard to any NPR floor amount from Section 3.D.2.

**VM-20 Section 3.B.5**

5. For all policies and riders within the ULSG Reserving Category, other than indexed universal life policies for which the company did not compute the DR nor the SR, the NPR shall be determined as follows:
- a. If the policy duration on the valuation date is prior to the point when all secondary guarantee periods have expired, the NPR shall be the greater of the reserve amount determined in Section 3.B.5.c and the reserve amount determined in Section 3.B.5.d, subject to the floors specified in Section 3.D.2.
- ...

**VM-20 Section 3.B.6**

6. For all policies and riders within the All Other VM-20 Reserving Category, as well as indexed universal life policies for which the company did not compute the DR nor the SR, the NPR shall be determined pursuant to applicable methods in VM-A and VM-C for the basic reserve. The mortality tables to be used are those defined in Section 3.C.1 and in VM-M Section 1.H.

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## Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force Amendment Proposal Form\*

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

**Identification:**

Elaine Lam, Office of PBR, California Department of Insurance (CDI)

**Title of Issue:**

Proposal to add disclosure requirements in VM-31, and clarify language in the Annual Statement Instructions related to reporting in the VM-20 Reserves Supplement.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

Valuation Manual (January 1, 2023 edition) – Proposal to add new section as VM-31 Section 3.C.11

2022 Annual Statement Instructions – Proposal to add a sentence to the instructions for “VM-20 Reserves Supplement”, starting on page 807

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

See attached.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

1. Add disclosure requirements in VM-31 for the Company to reconcile reported values and explain differences (if any) between reported values in the VM-31 Report (High-Level Results section), in the VM-20 Reserves Supplement (Parts 1A and 1B), and in the Annual Statement (Exhibit 3 for Separate Account values, Exhibit 5 for General Account values, and any other). Regulators have found inconsistencies in the values reported in the different locations. Moreover, without these disclosures, regulators have had a difficult time reconciling values and checking for misreported values.

2. Make a referral to the Blanks (E) Working Group to update the Annual Statement Instructions for the VM-20 Reserves Supplement to clarify that separate account amounts should be included in the Supplement. There has been inconsistent reporting by companies because the current instructions do not specifically address the treatment of separate account amounts.

\* This form is not intended for minor corrections, such as formatting, grammar, cross-references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

<b>Dates:</b> Received	Reviewed by Staff	Distributed	Considered
1/29/23	SO		
<b>Notes:</b> APF 2023-02			

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(new section)

**VM-31 Section 3.C.11**

11. **Reconciliation of Reported Values** – A reconciliation of reported values and an explanation of differences, if any, between reported values in Section 3.B.5 (High-Level Results), in the VM-20 Reserves Supplement – Part 1A and Part 1B, and in the Annual Statement (Exhibit 3 for Separate Account values, Exhibit 5 for General Account values, and any other).

For referral to the Blanks (E) Working Group, new proposed language in the Annual Statement Instructions is in redline below:

**VM-20 RESERVES SUPPLEMENT**

**Life Insurance Reserves Valued According to VM-20 by Product Type**

This Supplement provides information on the reserves required to be calculated by Section VM-20 of the *Valuation Manual*.

This includes the Net Premium Reserve and, as applicable, the Deterministic Reserve and the Stochastic Reserve. Only

business issued on or after Jan. 1, 2017, valued by the requirements of VM-20 should be reported in Part 1A and Part 1B.

Part 1A and Part 1B are intended to aid regulators in the analysis of reserves as determined under Section VM-20 of the *Valuation Manual* for both the prior and current year.

This Supplement also provides information regarding business where VM-20 of the *Valuation Manual* is not required to be

applied. Companies exempted from the requirements of Section VM-20 are not required to complete Part 1A or Part 1B of

this Supplement but must complete Part 2 or Part 3 as applicable.

**VM-20 RESERVES SUPPLEMENT – PART 1A**

**Life Insurance Reserves Valued According to VM-20 by Product Type**

Part 1A of this Supplement breaks out, by product type, the prior year and current year reported reserves on a Post-

Reinsurance-Ceded and Pre-Reinsurance-Ceded basis as defined in Section 8.D of Section VM-20 of the *Valuation Manual*.

The Due and Deferred Premium Asset for the current year is also shown.

Section VM-20 of the *Valuation Manual* requires that the Post-Reinsurance-Ceded Reserve be determined by three VM-20



Reserving Categories: Term Insurance, Universal Life with Secondary Guarantees (ULSG) and all other. Term Insurance should be reported on line 1.1. ULSG, including Variable Universal Life with a secondary guarantee, Indexed life insurance with a secondary guarantee, regular Universal Life with a secondary guarantee, and ULSG policies with a non-material secondary guarantee as defined in Section VM-01 of the *Valuation Manual*, should be reported on line 1.2. Each of the other products reported in lines 1.3 – 1.8 should be determined as the sum of the policy reserves using the policy reserves determined following the allocation process of VM-20 Section 2. A similar process should be used for each of the pre-reinsurance-ceded reserves. **Both Post-Reinsurance-Ceded Reserves and Pre-Reinsurance-Ceded Reserves, as defined in VM-20, include separate account amounts where applicable to the policies in scope.**

Columns 1 & 2 – Reported Reserve

Provide the reported reserve, in whole dollars, for the prior year and current year for each line item.

Post-Reinsurance-Ceded is net of reinsurance ceded. Pre-Reinsurance-Ceded should be prior to any reinsurance ceded and include reinsurance assumed. Sections 2 and 8 in the *Valuation Manual* further describe the required reserve and treatment of reinsurance. The reported reserve for the current year should reflect all policies in force as of the end of the current year. The reported reserve for the prior year should reflect all policies in force as of the end of the prior year.

Etc...

**Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force  
Amendment Proposal Form\***

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

**Identification:**

PBR Staff of Texas Department of Insurance

**Title of the Issue:**

Address several clean-up items for VM-20, as well as related VM-21 and VM-31 Sections.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

VM- 20 Section 3.B.5.c.ii.4, VM-20 Section 5.B.3, VM-20 Section 7.E.2 and Guidance Note below, VM-21 Section 4.D.4.c, VM-20 Section 7.K.3, VM-31 Section 3.D.6.f, VM-20 Section 9.A.4

January 1, 2023 NAIC Valuation Manual

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

See attached.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

1. The formula for calculating the NPR for ULSG based on the value of the SG in VM-20 Section 3.B.5.c.ii.4 excludes the EA from the scaling of the NPR. This is inconsistent with the formula for calculating the NPR for ULSG disregarding the SG in VM-20 Section 3.B.5.d.iv. The scale is the prefunding ratio of actual SG (denoted ASG) to fully funded SG (denoted FFSG), and it makes intuitive sense that the NPR would be scaled to decrease or increase relative to the level of funding of the SG.
2. The VM-20 Section 5.B.3 stochastic reserve methodology is missing an aggregate cash surrender value (CSV) floor for scenario reserves before calculating CTE70. This allows scenario reserves that exceed the CSV to be dampened or eliminated by being averaged with scenario reserves. A CSV floor in the NPR does not address this concern, because it does not reflect the scenario reserves in the SR that exceed the CSV. In contrast, in VM-21 Section 4.B.1 scenario reserves are floored at the aggregate CSV as appropriate. Scenario reserves, as the asset requirement for specific scenarios, should be held at or above the CSV.
3. Add consideration to VM-20 Section 7.E.2 consistent with VM-21 Section 4.D.4.c’s requirement on the company’s assumed cost of borrowing along with the associated Guidance Note. Editorial clarifications to the existing Guidance Note in VM-21.
4. VM-20 Section 7.K.3 should clarify the requirement to reflect the hedge modeling error or insufficiency. Related to this change, more discussion about the hedging strategy and hedge modeling should be added to the Life Report section of the VM-31 Section 3.D.6.f report.

5. VM-20 Section 9.A.4 implies companies can elect to stochastically model risk factors other than interest rates & equities. Stochastic assumptions are not subject to the requirements of Section 9 relating to prudent estimate assumptions. Nor are any guidance/specific requirements provided if companies elect to stochastically model other risk factors. Add consideration to VM-20 consistent with VM-21 Section 12.B.4's requirement about the risk factors other than interest rates & equities that are stochastically modelled, which was added to VM-21 for this same reasoning.

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NAIC Staff Comments:

<b>Dates:</b> Received	Reviewed by Staff	Distributed	Considered
1/30/23	SO		
<b>Notes:</b> <a href="#">APF 2023-03</a>			

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**VM-20 Section 3.B.5.c.ii.4**

4) The NPR for an insured age x at issue at time t shall be according to the formula below:

$$\frac{\text{Min} [ \text{ASG}_{x+t} / \text{FFSG}_{x+t}, 1 ] \cdot \text{NSP}_{x+t} - E_{x+t}}{\text{Min} [ \text{ASG}_{x+t} / \text{FFSG}_{x+t}, 1 ] \cdot (\text{NSP}_{x+t} - E_{x+t})}$$

**VM-20 Section 5.B.3**

3. Set the scenario reserve equal to the sum of the statement value of the starting assets across all model segments and the maximum of the amounts calculated in Subparagraph 2 above.

The scenario reserve for any given scenario shall not be less than the cash surrender value in aggregate on the valuation date for the group of contracts modeled in the projection.

**VM-20 Section 7.E.2**

2. Model at each projection interval any disinvestment in a manner that is consistent with the company’s investment policy and that reflects the company’s cost of borrowing where applicable, provided that the assumed cost of borrowing is not lower than the rate at which positive cash flows are reinvested in the same time period, taking into account duration, ratings, and other attributes of the borrowing mechanism. Gross asset spreads used in computing market values of assets sold in the model shall be consistent with, but not necessarily the same as, the gross asset spreads in Section 7.E.1.d and Section 7.E.1.f above, recognizing that starting assets may have different characteristics than modeled reinvestment assets.

**Guidance Note:** The simple language above "provided that the assumed cost of borrowing is not lower than the rate at which positive cash flows are reinvested in the same time period" is intended to prevent excessively optimistic borrowing assumptions. If in any case, the assumed cost of borrowing restriction cannot be fully applied or followed precisely, then as with all other simplifications/approximations, the company shall not allow borrowing assumptions to materially reduce the reserve.

**VM-21 Section 4.D.4.c**

**Guidance Note:** The simple language above "provided that the assumed cost of borrowing is not lower than the rate at which positive cash flows are reinvested in the same time period" is intended to prevent excessively optimistic borrowing assumptions. If in any case, the assumed cost of borrowing restriction cannot be fully applied or followed precisely, then as with all other simplifications/approximations, the company shall not allow borrowing assumptions to materially reduce the reserve.

- Deleted:** This limitation is being referred to Life Actuarial (A) Task Force for review.
- Deleted:** not intended to impose a literal requirement. It is
- Deleted:** to reflect a general concept
- Deleted:** It is recognized that borrowing parameters and rules can be complicated, such that modeling limitations may not allow for literal compliance, in every time step, as long as the reserve is not materially affected. However, if
- Deleted:** the company is unable to fully apply this
- Deleted:** prudence dictates that a

**VM-20 Section 7.K.3**

3. In circumstances where one or more material risk factors related to a derivative program are not fully captured within the cash-flow model used to calculate CTE 70, the company shall reflect the approximation, simplification or model limitations in the modeling of such risk factors by increasing the SR as described in Section 5.E. The company shall also be able to justify that the method appropriately reflects the potential error using historical experience, e.g., analysis of historical performance or backtesting.

### **VM-31 Section 3.D.6.f**

- f. Risk Management – Detailed description of model risk management strategies, such as hedging and other derivative programs, including any future hedging strategies supporting the policies and any adjustments to the SR pursuant to VM-20, Section 7.K3 and VM-20, Section 7.K.4, specific to the groups of policies covered in this sub-report and not discussed in the Life Summary Section 3.C.5. Documentation of any future hedging strategies should include documentation addressing each of the CDHS documentation attributes. The following should be included in the documentation:

- i. Descriptions of basis risk, gap risk, price risk and assumption risk.
- ii. Methods and criteria for estimating the a priori effectiveness of the strategy.
- iii. Results of any reviews of actual historical hedging effectiveness.
- iv. Strategy Changes – Discussion of any changes to the hedging strategy during the past 12 months, including identification of the change, reasons for the change, and the implementation date of the change.
- v. Hedge Modeling – Description of how the hedge strategy was incorporated into modeling, including:
  - Differences in timing between model and actual strategy implementation.
  - For a company that does not have a future hedging strategy supporting the contracts, confirmation that currently held hedge assets were included in the starting assets.
  - Evaluations of the appropriateness of the assumptions on future trading, transaction costs, other elements of the model, the strategy, and other items that are likely to result in materially adverse results.
  - Discussion of the projection horizon for the future hedging strategy as modeled and a comparison to the timeline for any anticipated future changes in the company's hedging strategy.
  - If residual risks and frictional costs are assumed to have a value of zero, a demonstration that a value of zero is an appropriate expectation.
  - Any discontinuous hedging strategies modeled, and where such discontinuous hedging strategies contribute materially to a reduction in the SR, any evaluations of the interaction of future trigger definitions and the discontinuous hedging strategy, including any analyses of model assumptions that, when combined with the reliance on the discontinuous hedging strategy, may result in adverse results relative to those modeled.

- The approach and rationale used to reflect the hedge modeling error(s).

#### **VM-20 Section 9.A.4**

4. If the company elects to stochastically model risk factors in addition to those listed in Section 9.A.3 above, the requirements in this section for determining prudent estimate assumptions for these risk factors do not apply.

It is expected that companies will not stochastically model risk factors other than the economic scenarios, such as policyholder behavior or mortality, until VM-20 has more specific guidance and requirements available. Companies shall discuss with domiciliary regulators if they wish to stochastically model other risk factors.

Draft: 2/28/23

Life Actuarial (A) Task Force  
Virtual Meeting  
January 26, 2023

The Life Actuarial (A) Task Force met Jan. 26, 2023. The following Task Force members participated: Cassie Brown, Chair, represented by Rachel Hemphill (TX); Scott A. White, Vice Chair, represented by Craig Chupp (VA); Lori K. Wing-Heier represented by Sharon Comstock (AK); Ricardo Lara represented by Ahmad Kamil (CA); Andrew N. Mais represented by Wanchin Chou (CT); Doug Ommen represented by Mike Yanacheak (IA); Dana Popish Severinghaus represented by Vincent Tsang (IL); Amy L. Beard represented by Scott Shover (IN); Vicki Schmidt represented by Nicole Boyd (KS); Grace Arnold represented by Fred Andersen and Ben Slutsker (MN); Chlora Lindley-Myers represented by William Leung (MO); Eric Dunning represented by Michael Muldoon (NE); Marlene Caride represented by Seong-min Eom (NJ); Adrienne A. Harris represented by Bill Carmello (NY); Judith L. French represented by Peter Weber (OH); Glen Mulready represented by Andrew Schallhorn (OK); Michael Humphreys represented by Steve Boston (PA); and Jon Pike represented by Tomasz Serbinowski (UT).

1. Heard a Presentation on Practitioner Considerations for Guideline Excess Spread Under AG 53

Marc Altschull (Actuarial Risk Management) and Dave Bulin (Actuarial Risk Management) said that they would be delivering a presentation (Attachment Four-A) based on a paper their organization produced for the Society of Actuaries' (SOA's) Financial Research Institute on the guideline excess spread methodology under *Actuarial Guideline LIII—Application of the Valuation Manual for Testing the Adequacy of Life Insurer Reserves* (AG 53). Altschull noted that the AG 53 requirements ask companies for additional documentation, including an excess spread attribution that is the main subject of the presentation. After Altschull and Bulin completed the presentation, Hemphill said that there was no one-size-fits-all approach to spread attribution and that companies would need to reflect their specific asset and risk profiles.

Tsang then asked if appointed actuaries would be able to get spread attribution analyses from their investment departments that they would have performed as part of their normal business functions. Bulin agreed that the appointed actuaries would be unlikely to have the deep investment knowledge required for the attribution analysis, and would likely need to work with investment departments, outside investment managers, and/or consultants. Bulin further stated that there was a lack of research on spread attribution and that it would be a challenge for companies to break out the spread into distinct liquidity, credit, and other risk components. Tsang questioned whether there were a small number of risk factors that would describe the majority of the spread variation. Altschull noted that the risk factors would be dependent on the asset class, to which Hemphill agreed.

2. Discussed a Referral from the Financial Regulation Standards and Accreditation (F) Committee

Dan Schelp (NAIC) said that he prepared a memorandum (Attachment Four-B) in which he compared the significant elements of the *Actuarial Opinion and Memorandum Regulation (#822)* to the requirements laid out in VM-30, Actuarial Opinion and Memorandum Requirements, to assist the Task Force in responding to the referral from the Financial Regulation Standards and Accreditation (F) Committee. Schelp said that it is the opinion of the NAIC Legal Division that state adoption of the *Valuation Manual* should be considered substantially similar to Model #822 for accreditation purposes. Schelp then went through specific sections of both requirements that he had highlighted in the memorandum to support the opinion of the NAIC Legal Division.

Chupp made a motion, seconded by Weber, to recommend that NAIC staff prepare a memorandum conveying the Task Force's recommendation that Model #822 be removed as an accreditation standard. The motion passed unanimously.

3. Adopted APF 2022-07

Brian Bayerle (American Council of Life Insurers—ACLI) summarized amendment proposal form (APF) 2022-07 as a clarification of a previously adopted amendment to the *Valuation Manual* that requires adjustments to the mortality table used in the determination of the net premium reserve if the anticipated experience of the group of policies exceeds the table.

Chupp made a motion, seconded by Chou, to adopt APF 2022-07 (Attachment Four-C). The motion passed unanimously.

4. Adopted APF 2022-08

Bayerle said that the purpose of APF 2022-08 was to clarify that companies that only utilize the Alternative Methodology under VM-21, Requirements for Principle-Based Reserves for Variable Annuities, are subject to limited governance requirements under VM-G, Appendix G — Corporate Guidance for Principle-Based Reserves.

Chupp made a motion, seconded by Schallhorn, to adopt APF 2022-08 (Attachment Four-D). The motion passed unanimously.

Having no further business, the Life Actuarial (A) Task Force adjourned.

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# Practitioner Considerations for Guideline Excess Spread Attribution Methodology under Actuarial Guideline LIII (AG53)

JANUARY | 2023



# Practitioner Considerations for Guideline Excess Spread Attribution Methodology under Actuarial Guideline LIII (AG53)

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## CONTENTS

<b>Introduction.....</b>	<b>4</b>
<b>Section 1: Actuarial Guideline LIII – The Requirement for Guideline Excess Spread Attribution .....</b>	<b>5</b>
<b>Section 2: Objectives for Developing Principles for Attribution Analysis.....</b>	<b>7</b>
<b>Section 3: Challenges and Limitations .....</b>	<b>8</b>
<b>Section 4: Market Spreads - Overview .....</b>	<b>9</b>
<b>Section 5: Types of Asset Risk and Relationship to Spread .....</b>	<b>11</b>
<b>Section 6: Principles for Attribution Analysis.....</b>	<b>13</b>
<b>Section 7: Ideas for Follow-up Research .....</b>	<b>15</b>
<b>Section 8: Acknowledgments .....</b>	<b>15</b>
<b>Appendix A: Guideline Excess Spread Attribution Templates .....</b>	<b>17</b>
<b>Appendix B: Illustrative Example of Spread Attribution with Negative Guideline Excess Spread Components .....</b>	<b>18</b>
<b>Appendix C: Potential Sources of Information.....</b>	<b>19</b>
<b>Appendix D: Other Practical and Technical Implications.....</b>	<b>21</b>
<b>References.....</b>	<b>22</b>
<b>About The Society of Actuaries Research Institute .....</b>	<b>23</b>

# Practitioner Considerations for Guideline Excess Spread Attribution Methodology under Actuarial Guideline LIII (AG53)

## Introduction

NAIC Actuarial Guideline LIII (“AG 53”), effective for year-end 2022, requires Appointed Actuaries for non-exempted life insurers to disclose detailed information about investment activities and risks, focusing primarily on assets used to support Asset Adequacy Testing. The greater degree of disclosure and transparency will enable regulators to better understand the investment risks included in insurers’ balance sheets. The riskiness of investments has become a topic of increasing concern as insurance investment holdings have become more complex.

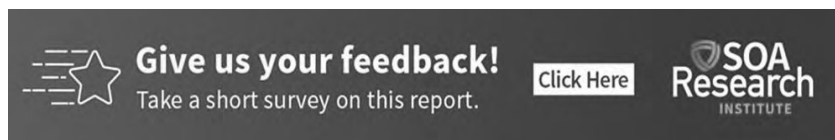
A section of AG 53 (section 5.B.) requires an attribution of Net Market Spreads<sup>1</sup> in excess of an Investment Grade Net Spread Benchmark for many “complex” assets.

While the use of attribution analysis in some areas of investment practice, such as performance attribution, is a long-standing and well-established practice, there currently is no broadly accepted quantitative construct to decompose market spreads into component pieces. Historically there has been no requirement to attribute spreads or changes in spreads to individual risk components. The introduction of AG 53 necessitates the development of a methodology to conduct spread attribution.

The Society of Actuaries engaged Actuarial Risk Management to produce this resource for practitioners. The report describes general principles to inform the development of a methodology to attribute spread to different investment risks. This paper will list and define a number of risks that are inherent in fixed income investments. Many of these risks could serve as the components of an attribution. **Please note we are using the term “general principles” to convey considerations that can aid a practitioner. This paper is in no way intending these general principles to be perceived as any type of standard or requirements related to AG 53.**

**The paper is also not intended to create a specific methodology to attribute Guideline Excess Spread<sup>2</sup> nor does it develop a “safe harbor” approach.**

The documentation requirements for AG 53 can be found at <https://content.naic.org/sites/default/files/inline-files/AG%2053.pdf>. The principles will build on financial industry research and analytics where practical.



<sup>1</sup> Net Market Spread: For each asset grouping, shall mean the spread over comparable Treasury bonds that equates the fair value as of the valuation date with modeled cash flows, less the default assumption used in asset adequacy analysis. (Definition directly from AG 53)

<sup>2</sup> Guideline Excess Spread: The net spread derived by subtracting the Investment Grade Net Spread Benchmark from the Net Market Spread for non-equity-like instruments. Investment expenses shall be excluded from this calculation. (Definition directly from AG 53)

## Section 1: Background on Actuarial Guideline LIII (“AG 53”) and the Requirement for Guideline Excess Spread Attribution

AG 53, adopted by the NAIC Life Insurance and Annuities (A) Committee on July 20, 2022 and effective for year-end 2022, is “intended to provide uniform guidance and clarification of requirements for the appropriate support of certain assumptions for asset adequacy analysis performed by life insurers”<sup>3</sup>.

One key focus of AG 53 is on “Projected High Net Yield” (PHNY) assets, defined in Section 4.F. of the guideline as follows:

- F. Projected High Net Yield Assets.** Currently held or reinvestment assets that are either:
- i. An Equity-like Instrument assumed to have higher value at projection year 10 or later than under an assumption of annual total returns, before the deduction of investment expenses, of 4% for the first 10 projection years after the valuation date followed by 5% for projection year 11 and after. Aggregation shall be done at a level of granularity that is consistent with or more granular than how the assets are grouped, i.e., compressed, in the asset adequacy analysis model, or
  - ii. Assets other than Equity-like Instruments where the assumed Guideline Excess Spread is higher than zero. In addition:
    - (a) Aggregation of the comparison between the assumed Net Market Spread from each asset and the Investment Grade Net Spread Benchmark shall be done at a level of granularity that is consistent with or more granular than how the assets are grouped, i.e., compressed, in the asset adequacy analysis model.
    - (b) For applicable assets that do not have an explicit WAL or term to maturity, the Appointed Actuary shall disclose the method used to determine the appropriate WAL used for comparing to the Investment Grade Net Spread Benchmark.
    - (c) For purposes of the comparison between the assumed Net Market Spread from each asset and the Investment Grade Net Spread Benchmark, investment expenses shall be excluded.

*Note: “WAL” is Weighted Average Life, weighted average time to receipt of principal from an investment.*

Under AG 53, non-equity (fixed income) investments with a Net Market Spread greater than that of the Investment Grade Net Spread Benchmark are subject to a greater degree of scrutiny. The expected performance of such investments is of particular interest and as such requires disclosure of an attribution by source of the Net Market Spread over the Investment Grade Net Spread Benchmark. Note that the Guideline Excess Spread attribution is required for both existing assets and assumed reinvestment asset purchases.

It is noted in Section 3.F.iii. of AG 53 that cash or equivalents, Treasuries, and agency bonds as well as Public non-convertible, fixed-rate corporate bonds with no or immaterial callability are excluded from the Guideline Excess Spread attribution requirement.

This Guideline Excess Spread attribution is focused on understanding the sources of risk and return. Many of these sources of risk (see Section 5) have increased in magnitude on insurer balance sheets greatly over the past few decades. There is increased complexity, breadth, and magnitude of insurer investments, and disclosure is required in Section 5.B. under AG 53:

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<sup>3</sup> National Association of Insurance Commissioners. Actuarial Guideline LIII — Application of the Valuation Manual for Testing the Adequacy of Life Insurer Reserves. naic.org, October 6, 2022, [AG 53.pdf \(naic.org\)](#) (accessed October 6, 2022).

- B. For projected high net yield assets for non-equity-like instruments, either currently held or in assumed reinvestments, perform and disclose the following attribution analysis steps at the asset type level associated with the templates in Section 6:
- i. State the assumed Guideline Excess Spread.
  - ii. Estimate the proportion of the Guideline Excess Spread attributable to the following factors:
    - (a) Credit risk
    - (b) Illiquidity risk
    - (c) Deviations of current spreads from long-term spreads defined in Appendix 1
    - (d) Volatility and other risks (identify and describe these risks in detail)

AG53-6

Appendix C

AG LIII

- iii. Provide commentary on the results of Section 5.B.ii. Also, where judgment is applied, provide supporting rationale of how the expected return in excess of the Investment Grade Net Spread Benchmark is estimated.

**Guidance Note:** A best-efforts approach is expected for the year-end 2022 attribution analysis.

## Section 2: Objectives for Developing Principles for Attribution Analysis

Guideline Excess Spread attribution analysis requires an Appointed Actuary to develop an appropriate methodology. The authors used the following objectives to develop general principles to aid Appointed Actuaries in this analysis.

1. The principles can be universally and consistently applied to all life insurers and all types of fixed income investments.
2. The principles are expected to remain valid for any stage of the economic cycle and be applicable to any new fixed income investment classes that insurers may hold in their general account.
3. The principles are to be as objective and unbiased as possible notwithstanding areas of subjectivity and professional judgment that recognizes spread attribution analysis continues to mature.
4. The principles are likely to evolve as lessons are learned over time with meeting the requirement.
5. The principles are consistent with statutory valuation rules and companies' investment valuation frameworks.
6. The principles are consistent with other applications of quantifying investment risk utilized in other financial reporting activities (e.g., ASC 326 Current Expected Credit Losses or "CECL").

### Section 3: Challenges and Limitations

There are a number of challenges and limitations to developing and implementing an attribution methodology. The following are key challenges and limitations:

**Lack of Previous Research:** We are not aware of any research on fully decomposing market spreads into component pieces. The limited available research is driven at least in part by a lack of demand for spread attribution – there has been very limited demand for understanding spread decomposition from investors. While many investors utilize certain market benchmarks to understand marginal compensation for marginal risk taking, research on spread attribution has to date been very limited. Many analyses utilized to understand risks are more focused on what happens if a risk becomes realized (e.g., stress tests, VaR) and less so on what compensation is being received for the risk being assumed.

**Lack of Data:** While there is an increasing amount of market spread data that is available, it is largely focused on the more liquid sectors of the investment markets. AG 53 – while not excluding more liquid parts of the fixed income market – is more focused on increasingly complex assets. Therefore, AG 53’s focus is on the less liquid parts of the fixed income markets and thus areas with less available data.

**Non-Comparability of Data:** Due to insurers employing different methodologies and market practices to determine spreads, the spreads and resulting spread attribution analyses may not be comparable across life insurance companies.

**Lack of/Inconsistent Understanding:** There is a wide range of views of market participants. Because of the wide range of knowledge, expertise, and perspectives, efforts to increase the consistency and comparability of analyses across the industry may be beneficial.

**Granularity of Attribution:** In developing a methodology, there are likely to be tradeoffs between the number of attribution buckets, the complexity of the attribution analysis and the usefulness of the analysis. The choice of risk(s) that each bucket covers will drive some of the complexity of the spread attribution analysis. There is the potential that chosen buckets will overlap, adding complexity to the analysis to account for such redundancies. Additionally, when spread attributions are aggregated, for example from the CUSIP level to the rows shown in the AG 53 template, there may be some degree of useful information lost. An example of this may be positive attributions offsetting negative attributions.

**Variety of Asset Classes and Types of Risk:** There are a wide range of both asset types and types of risk that must be considered in the spread attribution. Many of these asset types are fairly new and may have an increasing level of complexity which leads to not all risks being known or fully understood.



## Section 4: Market Spreads - Overview

In order to perform spread attribution, it is first important to understand what market spreads are and how they are related to other key market metrics and analytics. The objective of this section is to provide a common base of understanding for practitioners.

### 4.1 RELATIONSHIP BETWEEN PRICE, RISK-FREE RATE, AND SPREAD

There is a direct, formulaic relationship between the price, assumed cash flows, underlying risk-free rate, and market spread of a fixed income investment:

$$\text{Price} = \sum_{t=1}^T \frac{\text{Coupon}_t}{(1 + \text{Risk-Free Rate} + \text{Spread})^t} + \frac{\text{Principal}_t}{(1 + \text{Risk-Free Rate} + \text{Spread})^t}$$

Companies determine price, cash flows, and risk-free rates for each investment, then calibrate the spread that replicates the price. Each company has their own processes around each of these inputs (price, cash flows, and risk-free rates), and the resulting input variation may lead to variation of market spreads across the industry for identical investment holdings:

- **Price:** In many cases, especially for publicly traded assets, prices are provided by various pricing services. For publicly traded assets, there should be a high degree of consistency of the price assumed among investors for any individual holding. In other cases where there is a limited market (e.g., private placements), the investor may determine the price based upon a model (“mark-to-model”) with various inputs.
- **Cash flows:** For certain fixed income investments without embedded options, cash flows are contractually fixed. For structured assets (e.g., asset-backed securities, structured credit) and other assets with embedded options, cash flows will be more difficult to project and are heavily model- and assumption-dependent. For these types of assets, there may be a wider range of assumed cash flows among investors. Modeled cash flows used in asset pricing utilizing the formula above are expected to be best-estimate, single-path deterministic, and before any considerations of default risk. Investment expenses are not included in asset level cash flows for this purpose.
- **Risk-free rate:** This is the market yield on a Treasury security with the same or similar weighted average life (WAL) as the fixed income investment being considered. To be consistent, the risk-free yield must be determined as of the same date and time as the asset price.
- **Spread:** This is the addition to the risk-free rate that results in a discount rate equating the present value of cash flows to the price of the investment.

#### 4.2 VALUATION FRAMEWORK

A formalized valuation framework provides structure and guidance on how fair values (prices) for investments are determined. Related, ASC 820-10 for US GAAP categorizes and requires disclosure on securities based on how their fair values are determined. There are three categories of fair value inputs under ASC 820-10<sup>4</sup>:

- **Level 1:** Quoted prices (unadjusted) in active markets for identical assets or liabilities that the reporting entity can access at the measurement date.
- **Level 2:** Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly.
- **Level 3:** Unobservable inputs for the asset or liability.

Prices based upon Level 1 inputs are most common for Treasuries, common stocks, mutual funds and ETFs. Prices including Level 2 inputs are the most common pricing approach for insurance company investments and it is applicable to most publicly traded securities. Prices including Level 3 inputs are more common for privately issued investments which are becoming a larger proportion of insurer balance sheets.

Consistency is an important consideration between a company's valuation framework and the spread attribution. This is of particular note for assets that are mark-to-model<sup>5</sup> and are heavily dependent upon company-provided assumptions (e.g., US GAAP Level 3 assets). The derivation of the market spreads used to determine fair values are consistent with the spread attribution disclosed for AG 53.

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<sup>4</sup> Financial Accounting Standards Board. Fair Value Measurement (Topic 820). Fasb.org, June 30, 2022, [820-10 Overall \(fasb.org\)](https://www.fasb.org/820-10-Overall) (accessed November 25, 2022).

<sup>5</sup> Mark-to-model: The practice of pricing an asset using a financial model instead of utilizing a market price.

## Section 5: Types of Asset Risk and Relationship to Spread

While it is not plausible to identify all of the risks in an insurer's investment portfolio, there are a number of common risks in life insurer fixed income portfolios. A risk spread, that is incremental to the risk-free rate, compensates investors for known and some unknown risks. Generally, the more of a specific risk that an asset contains, the larger the spread that will be attributed to that specific risk for that asset.

### 5.1 TYPES OF RISKS THAT CAN LEAD TO ASSET LOSS

Below is a comprehensive, but not exhaustive, list and definitions of different types of fixed income investment risks that may impact spreads. Not all risks are mutually exclusive, so there may be overlap between different risks. The first two risks listed below are specifically identified in the AG 53 templates. The risks that follow the first two are listed alphabetically.

- **Credit risk:** Risk that an asset defaults, experiences a reduction in expected recovery amount or is downgraded by a credit rating organization
- **Illiquidity risk:** Risk that an investor can only sell an asset at less than its true value or cannot be sold at all; generally driven by a wider bid-ask spread
- **Call / prepayment risk:** Risk that an asset is called or prepaid by the issuer or borrower and the investor must reinvest proceeds in a lower rate environment than the original investment was purchased
- **Complexity risk:** Risk that an asset is more difficult to analyze and model, requiring more time and expense to understand the asset and limiting the pool of investors interested in investing in the asset, thus decreasing demand and lowering the price that an asset could otherwise receive in an open market
- **Event risk:** Risk that asset values are adversely impacted by a single event such as a natural disaster, industrial accident or corporate takeover
- **Exchange-rate / currency risk:** Risk that a non-US dollar denominated asset declines in value due to adverse currency rate movements
- **Inflation / purchasing power risk:** Risk that higher than expected inflation erodes the purchasing power of a fixed income asset's cash flows
- **Interest rate risk:** Risk that interest rates increase and the value of the asset declines
- **Political / legal risk:** Risk that actions of a government adversely affect the value of an asset
- **Sector risk:** Risk of an adverse differential movement of all assets in one sector relative to another
- **Structure risk:** Risk that timing of cash flows differs from expected
- **Volatility risk:** Risk that the value of an asset with an embedded option declines due to changes in implied volatility

### 5.2 OTHER FACTORS THAT MAY AFFECT PRICE AND SPREAD

There are other factors that may impact the price and spread of an asset. While these may not be considered risks per se, they may impact asset valuation.

**Private origination:** If assets are privately originated, there is generally a limited or exclusive market and therefore pricing may be more favorable to the originator than in an efficient market. This means that assets may be acquired for a lower value and therefore with a higher spread.

**Newer asset class:** Early adopters of investing in certain asset classes often enjoy higher spread and/or returns before other investors become more comfortable with the asset class. Newer asset classes do not always ultimately end with lower spreads as sometimes the riskiness of an asset class is underappreciated, and as risks are better

understood, the market reprices spreads to the better understood levels of risk. In other cases, risks are less than originally thought, and subsequently as demand increases, prices rise and market spreads narrow.

**Information asymmetry:** This occurs when there is an imbalance of knowledge and/or expertise between buyers and sellers of an asset. The asymmetry can favor either the buyer or the seller.

## Section 6: Principles for Attribution Analysis

While this whitepaper does not propose any specific methodology, this section describes a set of principles that an Appointed Actuary can utilize to help in developing a methodology and performing the Guideline Excess Spread attribution as required by AG 53. As stated earlier in the document, the following are not intended as standards or specific requirements for conducting the analysis. All of the general principles have been developed by the authors and are not requirements of AG 53.

### 6.1 PRINCIPLES

#### GENERAL / BACKGROUND

1. Overall general consistency with conducting other analyses under Actuarial Standards of Practice set the framework for performing the Guideline Excess Spread attribution.
2. Professional actuarial judgment (as per ASOP No. 1, Section 2.9) is an aspect of this analysis because this is an emerging area with limited historical practice within investment management.
3. Subject matter experts are an important resource for an Appointed Actuary to consult with, as necessary, because of their special knowledge and the nature of the analysis.

#### RISK IDENTIFICATION

4. Consistency of risks identified in a company's AG 53 report with risks identified in ORSA, investment policy, risk appetite, and other related company documents is an important objective.
5. It is useful to identify risks for each asset class prior to quantifying Net Market Spread risk components.
6. Asset classes do not necessarily all have the same risks, so the Guideline Excess Spread attribution components may vary by asset class.
7. It is very unlikely that any single risk will constitute the entirety of a single investment's risks.
8. Each identified risk may not need to be a separate attribution category. It may be more useful for related risks to be grouped together into a single attribution category for the spread attribution analysis.

#### RISK QUANTIFICATION

9. The amount of Net Market Spread attributed to a particular risk may cover both the best-estimate "cost" of that risk as well as any adjustments for uncertainty related to that risk.
10. All Net Market Spreads are measured relative to risk-free rates, so all risks are evaluated relative to risk-free assets.
11. Certain risks may be evaluated for exclusion in the Guideline Excess Spread attribution, as they either have been accounted for before spreads are determined or are risks that do not impact market spreads. Examples:
  - a. Interest rate risk, as defined in Section 5.1, may be considered for exclusion as a spread attribution category as this risk is compensated for as part of the underlying risk-free yield and not as part of the Net Market Spread.
  - b. Asset-liability management (ALM) risk may be considered for exclusion as a spread attribution category as it is the result of mismatches between assets and liabilities and will be unique to each company. The market value and spread of an asset are independent of an investor's ALM position.
12. Given that many risks are correlated, correlations are a component of the attribution analysis to consider.
13. Guideline Excess Spread attribution components may be negative. This would imply that a particular risk of an asset or asset class (as represented by the spread attribution of an asset) is less than that of the Investment Grade Net Spread Benchmark. An illustrative example is included in Appendix B.
14. A material amount of the Guideline Excess Spread may be attributed to identified risks including the impact of any correlation among risks. Minimizing the amount of Guideline Excess Spread not attributed to specific identified risks is an overall objective

15. When looking to history to develop assumptions, it is important to recognize that historical metrics may not be predictive.

#### **AGGREGATION AND PRESENTATION**

16. Presentation of Guideline Excess Spread attribution at the asset class level in the provided templates should reasonably reflect the risks included in the holdings for each asset class. The methodology used in determining and/or aggregating spread attribution across the individual investments underlying each row in the template should be reasonable and not biased by the choice of presentation or aggregation.

#### **FUTURE CONSIDERATIONS**

17. Spread attribution methodologies may evolve as new asset classes are added to insurers' investment portfolios and also as characteristics of asset classes evolve through time.
18. Spread attributions may not be static through time. The spread attributed to a specific risk can vary as economic and market conditions change.

#### **6.2 OTHER CONSIDERATIONS**

Below is a list of other considerations for the Appointed Actuary in performing the Guideline Excess Spread attribution analysis:

- Degree of granularity: While this attribution analysis can be performed at the individual asset level, there is no requirement to perform this analysis (nor disclose it) at the individual asset level. There are likely approaches where reasonably similar investments will be grouped together for this exercise.
- Number of attribution categories chosen: The template includes Credit and Illiquidity risks, leaving additional attribution categories to the judgment of the Appointed Actuary.
- Degree of judgment: For asset types with less available information, the attribution will be more challenging and require a greater degree of professional actuarial judgment.
- Additional analysis: An Appointed Actuary may want to perform additional scenario projections depending on the results of the Guideline Excess Spread attribution analysis. For example, if an Appointed Actuary identifies a significant amount of spread being attributed to illiquidity, they may want to perform some sensitivity or stress tests around liquidity risk. This can be with higher or lower spreads or other factors depending upon the risks and conditions of additional scenarios tested.

## Section 7: Ideas for Follow-up Research

While this research paper can provide useful information to an Appointed Actuary in complying with AG 53, there are many areas of additional research that are not covered by this paper and may be useful in the future. A partial list of ideas for follow-up research are below:

- Covenants in assets with credit risk vary in their specific elements and strength
- Impact of credit ratings issued by various rating agencies
- Correlations among different risk factors
- Additional ways to leverage the spread attribution analysis beyond the requirement in AG 53 (e.g., asset allocation analysis, investment portfolio construction)
- Specific methodological approaches to spread attribution and development of an accepted industry methodology as a “safe harbor”
- Survey of current practices resulting in publication of a practice note



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## Section 8: Acknowledgments

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### Appendix A: Guideline Excess Spread Attribution Templates

Below is a link to the templates as provided by the NAIC. Part of the template focused on Guideline Excess Spread attribution is illustrated below.

TEMPLATES – link: [AAT AG Templates - 090822.xlsx](#)

Section 5b: Attribution for Asset Adequacy Testing Guideline Excess Spreads - Reinvestments											Check
Asset Type	Net Market Spread	IG Net Spread Benchmark <sup>1</sup>	Guideline Excess Spread	Credit Risk	Illiquidity Risk	Excess Spread Components Related to Each Risk					
						[Other Risk Component #1]	[Other Risk Component #2]	[Other Risk Component #3]	[Other Risk Component #4]	[Other Risk Component #5]	
Treasuries and Agencies	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Public Corporate Bonds	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Convertible Bonds	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	TRUE
Floating Rate Notes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	TRUE
Municipal Bonds	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	TRUE
Other Private Bonds	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	TRUE
Preferred Stock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	TRUE
Agency Mortgage Backed Securities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	TRUE
Non-Agency Commercial Mortgage Backed Securities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	TRUE
Non-Agency Residential Mortgage Backed Securities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	TRUE
Collateralized Loan Obligations	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	TRUE
Other Asset Backed Securities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	TRUE
Equities or Equity-Like Instruments	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Real Estate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Mortgage Loans	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	TRUE
Schedule BA Assets	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Derivative Instruments linked to Equity-Like Instrumen	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Other Derivative Instruments	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Other - Not Covered Above	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	TRUE

(1) "IG Net Spread Benchmark" = Investment Grade Net Spread Benchmark

Additional Commentary

Appendix B: Illustrative Example of Spread Attribution with Negative Guideline Excess Spread Components

				<i>Spread Components Related to Each Risk</i>				
Asset Type	Net Market Spread			Risk Factor A	Risk Factor B	Risk Factor C	Risk Factor D	Other Risk Factors / Unallocated
Asset Class XYZ	2.5%			0.3%	0.7%	0.5%	0.8%	0.2%
IG Net Spread Benchmark	1.5%			1.0%	0.5%	0.0%	0.0%	0.0%
				<i>Excess Spread Components Related to Each Risk</i>				
Asset Type	Net Market Spread	IG Net Spread Benchmark <sup>1</sup>	Guideline Excess Spread	Risk Factor A	Risk Factor B	Risk Factor C	Risk Factor D	Other Risk Factors / Unallocated
Asset Class XYZ	2.5%	1.5%	1.0%	-0.7%	0.2%	0.5%	0.8%	0.2%

Risk Factor A has a negative Excess Spread Component in this illustrative example as Asset Class XYZ has less net Market Spread attributed to it (0.3%) than the Investment Grade Net Spread Benchmark (1.0%).

## Appendix C: Potential Sources of Information

There are a number of sources of information – both subject matter experts and vendor systems – as well as market analytics which may be useful in performing this analysis.

### POTENTIAL RESOURCES

There are a number of resources that an Appointed Actuary can utilize in performing the Guideline Excess Spread attribution. First, as this is a fairly technical analysis, subject matter experts are an important resource for conducting the analysis. Subject matter experts can be internal (e.g., portfolio managers, investment traders, asset class specialists, asset pricing specialists) and/or external (e.g., consultants). Additionally, investment analytical systems may have useful analytics that may be utilized in the attribution.

### MARKET ANALYTICS

There are a number of existing and widely accepted market metrics that may be useful in the attribution analysis. While there is likely no single system or set of metrics that would directly allow the Appointed Actuary to perform the entire attribution, the metrics below may be useful for pieces of the attribution analysis:

### CREDIT-RELATED

- **VM-20 Table A** (Baseline Annual Default Costs) ([pbr-2021-table-a-baseline-annual-default-costs.xlsx](#) ([live.com](#))): NAIC-derived annual default costs used by many companies in Principles-Based Reserves (and related) work. Derived from Moody's Corporate Bond Default Study data.
- **Probability of Default (PD)**: This is a quantitatively derived likelihood that a bond will default over a specified time horizon, based upon companies with similar characteristics at similar points in the economic and credit cycles. Many PDs are for a 1-year horizon. Others are through-the-cycle, intended to reflect an entire economic cycle. There are a number of PD models, the most well-known is the Merton model.
- **Loss Given Default (LGD)**: This is the loss, expressed as a percent of par, for a bond that defaults. It is equivalent to (100% - recovery rate).
- **Credit Default Swap (CDS)**: A financial derivative that provides default protection against a bond issuer. CDS can either be bought (buying protection) or sold (selling protection, which is equivalent to adding credit risk). Most CDS are originally contracted for 5-year tenors. Prices on most CDS are generally expressed in bps per year per dollar of notional value that the buyer pays to the seller.

Note: Since the majority of pure credit risk on life insurer balance sheets (e.g., public corporates) is out of scope for the Guideline Excess Spread attribution, and the CDS market is primarily on public corporates, there may be limited direct applicable information for CDS on assets that are the focus of AG 53. However, there are takeaways and learnings that could be applied when comparing CDS vs. asset spreads. Additionally, CDS can help inform any attribution of the Investment Grade Net Spread Benchmark.

### VOLATILITY / CALL / PREPAYMENT-RELATED

- **Option-adjusted spread (OAS)**: market spread based on a stochastic analysis, as opposed to a single deterministic path; as the name states, adjusts for embedded optionality in an asset; historically has been performed using swap rates
- **Zero-volatility spread (ZVS or Z-spread)**: a special case of OAS where volatility is zero and all paths collapse into a single spot rate curve; similar to nominal spread except cash flows discounted using spot rates instead of a single risk-free yield – also uses swap rates instead of Treasuries

**LIQUIDITY-RELATED**

- **Liquidity Credit Score (LCS):** a quantitative framework developed by Barclays ([BARCLAYS RESEARCH](#) ([barcap.com](#))) that quantifies hypothetical transactions costs
  - There is a very strong correlation between a bond's market spread and LCS
  - LCS is not a spread but could be used to develop a quantitative relationship that converts it into a spread component

## Appendix D: Other Practical and Technical Implications

There are a number of practical and fairly technical issues that an Appointed Actuary may come across in performing this analysis. Below is a partial list of some of these issues:

- Different market conventions on quoting yield and spread
  - Day count differences
    - Treasury: ACT/ACT
    - Corporates: 30/360
  - Spreads quoted off underlying Treasury
    - Corporates: maturity or WAL
    - ABS: closest on-the-run Treasury
- Periodicity of payments
  - Treasury / US Corporates: semi-annual
  - Structured assets: primarily monthly or quarterly
- Mixing different yield curves, option pricing models, etc. that are inputs to spread
  - Example: using OAS and ZVS (based off swaps curve) is not directly comparable to a nominal spread to Treasuries

These are likely rounding errors relative to broader attribution assumptions that a company must make but are worth considering and incorporating into the initial analysis.

## References

Fabozzi, Frank J (edited by). *Handbook of Fixed Income Securities, Ninth Edition*.

Konstantinovsky, Vadim. Barclays Liquidity Cost Scores (LCS®): A Brief Introduction. April 27, 2020, [https://live.barcap.com/publiccp/RSR/nyfipubs/barcap-email-mkting/qps/LCS\\_In-brief.pdf](https://live.barcap.com/publiccp/RSR/nyfipubs/barcap-email-mkting/qps/LCS_In-brief.pdf), (accessed October 20, 2022).

National Association of Insurance Commissioners. Actuarial Guideline LIII — Application of the Valuation Manual for Testing the Adequacy of Life Insurer Reserves. October 6, 2022, <https://content.naic.org/sites/default/files/inline-files/AG%2053.pdf>, (accessed October 6, 2022).

## About The Society of Actuaries Research Institute

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**MEMORANDUM**

TO: Life Actuarial (A) Task Force

FROM: NAIC Legal Division  
Daniel Schelp—Chief Counsel, Regulatory Affairs

RE: Comparison of Model #822 to VM-30 for Accreditation Purposes

DATE: January 18, 2023

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Both the *Standard Valuation Law* (#820) and the *Actuarial Opinion and Memorandum Regulation* (#822) are currently part of the NAIC’s *Liabilities and Reserves Accreditation Standard*. Model #820 provides that the *Valuation Manual* should be adopted uniformly by the states. It came to the attention of the Financial Regulation Standards and Accreditation (F) Committee that there is substantial overlap between the significant elements of Model #822 and the *Valuation Manual* with respect to actuarial opinions; i.e., VM-01 “Definitions for Terms in Requirements” and VM-30 “Actuarial Opinion and Memorandum Requirements.” The Committee requested that the Life Actuarial (A) Task Force review the accreditation standard for Model #822 to determine whether VM-01 and VM-30 meet the necessary actuarial opinion requirements of Model #822. This would permit Model #822 to be removed from the accreditation standards, with the *Valuation Manual* standing alone as the accreditation standard for actuarial opinions.

To help facilitate this discussion by the Task Force, the NAIC Legal Division has prepared the following comparison of the significant accreditation elements of Model #822 with VM-01 & VM-30 to determine whether state adoption of the *Valuation Manual* is substantially similar to Model #822 for accreditation purposes:

***Actuarial Opinion and Memorandum Regulation (#822)***

**v. Scope provisions similar to those in Section 3?**

Section 1A(1) “Scope” of VM-30 provides, as follows: “The following provisions contain the requirements for the actuarial opinion of reserves and for supporting actuarial memoranda in accordance with Section 3 of Model #820, and are collectively referred to as Actuarial Opinion and Memorandum (AOM) requirements.” In addition, Section 3B of Model #820 is applicable to all actuarial opinions filed after the operative date of the *Valuation Manual*. Section III of the Introduction to the *Valuation Manual* provides:

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Washington, DC 444 North Capitol Street NW, Suite 700, Washington, DC 20001-1509 p | 202 471 3990 f | 816 460 7493

Kansas City 1100 Walnut Street NW, Suite 1500, Kansas City, MO 64106-2197 p | 816 842 3600 f | 816 783 8175

New York One New York Plaza, Suite 4210, New York, NY 20004 p | 212 398 9000 f | 212 382 4207



### III. Actuarial Opinion and Report Requirements

Requirements regarding the annual actuarial opinion and memorandum pursuant to Section 3 of Model #820 are provided in VM-30, Actuarial Opinion and Memorandum Requirements. The requirements in VM-30 are applicable to all annual statements with a year-ending date on or after the operative date of the Valuation Manual. Existing actuarial opinion and memorandum requirements continue to apply to all annual statements with a year-ending date before the operative date of the Valuation Manual.

Unlike the reserving requirements under VM-20, there is no small company exemption applicable to the actuarial opinion and memorandum requirements. Therefore, VM-30 should apply to all applicable actuarial opinions filed after the operative date of the *Valuation Manual*. It is the opinion of the NAIC Legal Division that VM-30 meets the requirements of this significant element.

#### w. Definitions similar to Section 4?

Section 1A(1) of VM-30 provides for the definition of “Actuarial Opinion”, while VM-01 contains the definitions of “Actuarial Standards Board” and “Annual Statement.” VM-01 also provides for the definition of “Appointed Actuary” that is similar to Section 5C of Model #822, and the definition of “Qualified Actuary” that is similar to Section 5B. Section 2B of VM-30 then provides for the definition of “Asset Adequacy Analysis” that meets the standards of Section 5D of Model #822. It is the opinion of the NAIC Legal Division that VM-01 and VM-30 meet the requirements of this significant element.

#### x. General Requirements similar to Section 5?

Section 2 of VM-30 provides general requirements under Model #822 for Section 5A “Submission of Statement of Actuarial Opinion”; Section 5C “Appointed Actuary”; Section 5D “Standards for Asset Adequacy Analysis”; and Section 5E “Liabilities Covered” of Model #822. VM-01 then provides for the general requirements for the definition of “Qualified Actuary” under Section 5B of Model #822. However, it should be noted that Section 2A(1) of VM-30 does not provide that the commissioner may grant an extension for submission of the statement of actuarial opinion similar to Section 5A(2) of Model #822. It is the opinion of the NAIC Legal Division that VM-01 and VM-30 meet the requirements of this significant element.

#### y. Provisions for statement of actuarial opinion based on an asset adequacy analysis similar to Section 6?

Section 2A(1) of VM-30 provides for the General Requirements for Submission of Statement of a Life Actuarial Opinion, while Section 3A of VM-30 provides for Statement of Actuarial Opinion Based on an Asset Adequacy Analysis similar to Section 6 of Model #822. It should be noted that the Alternate Option(s) to the requirements of Section 6B(6)(c) set forth in Section 6F of Model #822 permitting the commissioner to accept the valuation of a foreign insurer are not fully addressed in VM-30. However,

Section 3A(7)(c) of VM-30 does provide alternative language for use in such situations. It is the opinion of the NAIC Legal Division that VM-30 meets the requirements of this significant element.

**z. Provisions for description of an actuarial memorandum including an asset adequacy analysis similar to Section 7?**

Section 3B of VM-30 provides for a Description of the Actuarial Memorandum, Including an Asset Adequacy Analysis similar to Section 7 of Model #822. It is the opinion of the NAIC Legal Division that VM-30 meets the requirements of this significant element.

**aa. Provisions for regulatory asset adequacy issues summary similar to Section 7?**

Section 3B(13) of VM-30 provides for a Regulatory Asset Adequacy Issues Summary similar to Section 7C of Model #822. It is the opinion of the NAIC Legal Division that VM-30 meets the requirements of this significant element.

Dates: Received	Reviewed by Staff	Distributed	Considered
11/18/22, updated 12/14	SO		
APF 2022-07			

Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force  
**Amendment Proposal Form**

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

Brian Bayerle, ACLI – Clarification of adjustments to mortality for policies subject to the NPR and for policies that pass the Life PBR Exemption when anticipated experience exceeds the prescribed CSO table.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

Valuation Manual (January 1, 2022 edition), VM-20 Section 3.C.1.g, VM-20 Section 6.B.5.d.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

See attached.

**12/14/22 Update:** The redline indicates changes from the Valuation Manual. Redline sections that are highlighted indicate changes from the previous 9/8/22 exposure. Some deletions of text that was added in the 9/8/22 version but deleted in the 12/14/22 exposure were not included in the redline below, including the removal of mortality rate capping language from sections 3.C.1.g.i and 3.C.1.g.ii and replacement into section 3.C.1.g.ii.a and the deletion of references to “FUW” policies in the guidance note.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

The purpose of this proposed amendment is to clarify the intent and calculation of the mortality adjustments to the CSO table when anticipated mortality exceeds the prescribed CSO table. The current wording of Section 3.C.1.g has led to confusion by many and a lack of consistent interpretations. The APF does not change the current requirements of VM-20, it only provides clarification. This APF revises the edits made by APF 2018-57.

There are five questions the APF is trying to answer:

1. **What policies are intended to be addressed by Section 3.C.1.g?**

The primary intent of Section 3.C.1.g is to address the higher anticipated mortality for policies that are not subject to full underwriting (FUW), such as simplified issue policies and final expense policies. It is typical for these types of policies to have mortality experience worse than the CSO table, and thus, an adjustment is necessary.

The intent of Section 3.C.1.g is not to test every possible FUW subset (e.g., attained age blocks, individual underwriting classes with lower credibility, etc.) to determine if its mortality experience is higher than the CSO table even though more aggregate mortality experience is lower than the CSO table. However, if a large, credible block or subset of FUW policies (e.g., a block of FUW business assumed from another company that has significantly different mortality experience than the rest of the assuming company’s FUW business, or a large block of business from an era when the company had significantly more permissive underwriting, etc.) is expected to have worse experience than the CSO table, then the adjustments in 3.C.1.g should be made.

A guidance note has been added following Section 3.C.1.g. to provide this clarification.

**2. What is meant by the current language in Section 3.C.1.g that the “adjustments should be consistent with the adjustments made for the DET Net Premium test” in Section 6.B.5.d?**

This wording has led to a lot of confusion. Some have interpreted this wording to mean that the adjustment factors should be the same as those defined in Section 6.B.5.d. Others have concluded that this means the form of the adjustments should be the same. Others have concluded that this means the same methodology should be used to determine the adjustments. And if the company does not elect to use the DET, there are no adjustment factors to be consistent with.

This APF clarifies that for the group of policies where the DET has been elected, the methodology to test whether adjustments are needed should be consistent with Section 6.B.5.d (that is, using a comparison of the PV of future death claims) and a reasonably consistent approach should be used to determine the adjustment factors). For groups of policies where the DET has not been elected, a reasonably consistent approach should be used.

**3. Are the adjustments to the CSO table in Section 3.C.1.g determined on a seriatim basis or can policies be grouped to determine the adjustments?**

The current wording is not clear as to whether the adjustments are determined on a seriatim basis or grouped basis, resulting in inconsistent interpretations. This APF clarifies that the adjustments to the CSO table for the NPR calculation are to be determined using a group of policies (consistent with the approach used in Section 6.B.5.d), not on a seriatim basis. Since the NPR is calculated on a policy-by-policy basis, the application of the adjustments must be applied to each policy on a seriatim basis, but the factors themselves can be determined using a group of policies.

Determining the adjustment factors on a seriatim basis is inconsistent with determining mortality experience for any other purpose. When data is not credible, the resulting mortality rates may not be smooth or consistent. For example, if the anticipated experience for male age 50 results in an adjustment factor of 1.3, but the adjustment factor for male age 48 is 2.1 (based on limited non-credible data), this results in the mortality rate for male 48 being higher than the rate for male 50.

This APF clarifies that the determination of the adjustment factors in Section 3.C.1.g. is to be done on a grouped basis. However, similar to the DET requirement, a company may not group together policies with significantly different risk profiles.

**4. How do the requirements of Section 3.C.1.g apply to policies that pass the Life PBR Exemption?**

Policies that pass the Life PBR Exemption are still subject to the requirements of Section 3.C.1 (per Section II.G.4 of the Valuation Manual). But Section 3.C.1.g includes references to the NPR and the DET which do not apply to these policies. To clarify, section 3.C.1.g. has been split into two sections: 1) policies that pass the Life PBR Exemption and 2) policies that are not utilizing the Life PBR Exemption and are subject to the NPR requirements. For policies that pass the Life PBR Exemption, all references to the NPR and DET have been removed.

**5. How do the requirements in Section 3.C.1.g. apply when calculating deficiency reserves?**

Policies that pass the Life PBR Exemption still must determine deficiency reserves, which has led to confusion on how the requirements of section 3.C.1.g apply when determining deficiency reserves. Section 3.C.1 is based on the basic reserve calculation (Section 3.B.6). Once the valuation mortality rates have been adjusted (if needed) by Section 3.C.1.g for the basic reserve, then the calculation of X-factors for the deficiency reserve follows the normal approach as described in VM-A and VM-C. This APF clarifies that the mortality adjustment in 3.C.1.g only applies to the basic reserve for policies that pass the Life PBR Exemption, and not the deficiency reserve.

Deficiency reserves are not needed for policies that are not utilizing the Life PBR Exemption. The NPR for policies other than term and ULSG equals the basic reserve defined in VM-A and VM-C, the NPR for term and ULSG follow the requirements of Section 3.4 and 3.5, and the DR and SR calculations already reflect the circumstances that give rise for the need for a deficiency reserve.

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### Section 3: Net Premium Reserve

#### C. Net Premium Reserves Assumptions

- 1.g For a group of policies where the anticipated mortality experience ~~materially~~ exceeds the prescribed CSO mortality rates determined in Section 3.C.1.a through 3.C.1.d~~f~~ above, the company shall adjust the CSO mortality rates as follows:
- i. For policies that pass the Life PBR Exemption, the CSO mortality rates used to determine the basic reserve for each policy shall be adjusted in a manner commensurate with the anticipated mortality experience for the policies. The methodology used to test whether adjustments are needed can be performed on an aggregate basis for the group of policies using a reasonable method to compare the respective mortality rates, such as comparing the present value of future death claims discounted at the valuation interest rate used for VM-A and VM-C. However, for the purposes of this comparison, a company may not group together policies with significantly different risk profiles. If an adjustment is needed, the determination of the adjustment factors should use a reasonable methodology, subject to a cap that ensures that mortality rates do not exceed 1,000 per 1,000.
  - ii. For policies where the Life PBR Exemption is not utilized, the CSO mortality rates used in the NPR calculation shall be adjusted in a manner commensurate with the anticipated mortality experience for the policies.
    - a) When the company elects to use the DET in Section 6.B for a group of policies, the methodology used to test whether adjustments are needed should be consistent with the methodology used in Section 6.B.5.d (that is, using a comparison of the PV of future death claims discounted at the valuation rate used for the NPR) . For the purposes of this comparison, a company may not group together policies with significantly different risk profiles. If an adjustment is needed, the determination of the adjustment factors should use a reasonably consistent methodology to the one used in Section 6.B.5.d., subject to a cap that ensures that the mortality rates do not exceed 1,000 per 1,000.
    - b) For the group of policies where the DET is not used, the company should use a reasonably consistent approach to the one described in paragraph a) above to test whether adjustments are needed and to determine the adjustment factors. The resulting adjustment factors are not required to be identical to the adjustment factors determined in paragraph a) above.

The resulting NPR must not be lower than the NPR calculated without adjustments to the CSO mortality rates.

**Guidance Note:** It is anticipated that the 3.C.1.g adjustments are generally applicable but not limited to policies with limited underwriting, such as simplified issue or final expense. The intent of Section 3.C.1.g. is not to test every possible group of policies (e.g., attained age blocks, individual underwriting classes with lower credibility, etc.) to determine if its mortality experience is higher than the CSO table even though more aggregate mortality experience is lower than the CSO table. However, if a large, credible block or group of policies (e.g., a block of business assumed from another company that has significantly different mortality experience than the rest of the assuming company's business, or a large

block of business from an era when the company had significantly more permissive underwriting, etc.) is expected to have worse experience than the CSO table, then the adjustments in 3.C.1.g should be made.

## **Section 6: Stochastic and Deterministic Exclusion Tests**

### **B. Deterministic Exclusion Test (DET)**

- 5.d. If the anticipated mortality for the group of policies exceeds the prescribed CSO mortality rates for the NPR determined in Section 3.C.1.a through 3.C.1.g, then the company shall use anticipated mortality to determine the valuation net premium. For this purpose, mortality shall be measured as the present value of future death claims as of the valuation date discounted at the valuation interest rate used for the NPR.

## Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force Amendment Proposal Form\*

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

Brian Bayerle, ACLI – Clarify requirements on groups of contracts that use the Alternative Method/AG33 in VM-21 and are not subject to a principles-based valuation. Such contracts should not be not subject to VM-G but still require a sub-report under VM-31.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

Valuation Manual Jan. 1, 2023 Edition; VM-21 Section 3.E, VM-31 Section 2.A, VM-G Section 1 and Section 4.A.3.

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

See attached.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

There is some ambiguity about the governance requirements if a principles-based valuation is not performed.

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\* This form is not intended for minor corrections, such as formatting, grammar, cross-references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

<b>Dates:</b> Received	Reviewed by Staff	Distributed	Considered
11/4/22	SO		
<b>Notes:</b> APF 2022-08			



## VM-21

### Section 3: Reserve Methodology

#### E. Alternative Methodology

For a group of variable deferred annuity contracts that contain either no guaranteed benefits or only GMDBs—i.e., no VAGLBs—the reserve may be determined using the Alternative Methodology described in Section 7 rather than using the approach described in Section 3.C and Section 3.D. However, in the event that the approach described in Section 3.C and Section 3.D has been used in prior valuations for that group of contracts, the Alternative Methodology may not be used without approval from the domiciliary commissioner.

The reserve for the group of contracts to which the Alternative Methodology is applied shall not be less than the aggregate cash surrender value of those contracts.

Groups of contracts to which the Alternative Methodology is applied are only subject to the applicable requirements for the Alternative Methodology in VM-21. Groups of contracts to which the Alternative Methodology is applied are subject to the applicable sub-report requirements outlined in VM-31 Sections 3.E and 3.F. Groups of contracts to which the Alternative Methodology is applied are not subject to the requirements of VM-G Sections 2 and 3.

## VM-31

### Section 2: General Requirements

- A. Each year a company shall prepare, under the direction of one or more qualified actuaries, as assigned by the company under the provisions of VM-G, a PBR Actuarial Report if the company computes a deterministic reserve or stochastic reserve or performs an exclusion test for any policy as defined in VM-20, or computes an aggregate reserve for any contract as defined in VM-21.

A company that does not compute any deterministic or stochastic reserves under VM-20 for a group of policies as a result of the policies in that group passing the exclusion tests as defined in VM-20 Section 6 must still develop a sub-report for that group of policies that addresses the relevant requirements of Section 3.

A company that computes reserves under the Alternative Methodology defined in VM-21 must still develop a sub-report with the applicable requirements to the Alternative Methodology for that group of policies that addresses the relevant requirements of Section 3.

## VM-G

### Section 1: Introduction, Definition and Scope

- A. The corporate governance guidance provided in VM-G is applicable only to a principle-based valuation calculated according to methods defined in VM-20 and VM-21, **except for the following condition:**

For a company that does not compute any deterministic or SR under VM-20 as a result of passing the exclusion tests as defined in VM-20 Section 6, and ~~it does not calculate any~~ all contracts subject to reserves under VM-21 are determined by application of the **Alternative Methodology**, VM-G Sections 2 and 3 below are generally not applicable; the requirements of Section 4 are still applicable. However, if the company calculated the SERT using the DR method outlined in VM-20 Section 6.A.2.b.i.a, or the Stochastic Exclusion Demonstration Test outlined in VM-20 Section 6.A.3, then VM-G Sections 2 and 3 are applicable.

#### Section 4: Responsibilities of Qualified Actuaries

- A.3 The responsibility for providing a summary report to the board and to senior management on the valuation processes used to determine and test PBR, the principle-based valuation results, the general level of conservatism incorporated into the company's PBR, the materiality of PBR in relationship to the overall liabilities of the company, and significant and unusual issues and/or findings.

If Sections 2 and 3 are not applicable because the company met the requirements to be exempt from Section 2 and Section 3 as outlined in Section 1.A, this particular reporting to board and senior management is limited to:

- a. For VM-20, notifying senior management if the company is at risk of failing either exclusion test, and if so, reporting on the company's readiness to calculate deterministic and SR-; and
- b. For VM-21, notifying senior management if the company may not be able to use the Alternative Methodology for all business subject to VM-21, and if so, reporting on the company's readiness to calculate a SR.

March 20<sup>th</sup>, 2023

**From:** Seong-min Eom, Chair  
The Longevity Risk (E/A) Subgroup

**To:** Rachel Hemphill, Chair  
The Life Actuarial (A) Task Force

**Subject:** The Report of the Longevity Risk (E/A) Subgroup to the Life Actuarial (A) Task Force

The Longevity Risk (E/A) Subgroup has not met since the Fall National Meeting. The subgroup will resume the meetings once the currently exposed VM-22 PBR methodology is finalized and adopted to develop and recommend longevity risk factor(s) for the product(s) that were excluded from the application of the current longevity risk factors.

March 20, 2023

**From:** Pete Weber, Chair  
The Variable Annuities Capital and Reserve (E/A) Subgroup

**To:** Rachel Hemphill, Chair  
The Life Actuarial (A) Task Force

**Subject:** The Report of the Variable Annuities Capital and Reserve (E/A) Subgroup (VACR SG) to the Life Actuarial (A) Task Force

The VACR SG has not met since the Fall National Meeting. At the request of LATF, the Chair has made a request to the Society of Actuaries to expand the work they are currently carrying out for the VM-22 Standard Projection Amount Mortality DG to include variable annuities. More specifically, to develop mortality rates to be used as prescribed assumptions within the VM-21 Standard Projection Amount. Work continues on this project and a report and recommendations are still several weeks away.

March 20, 2023

**From:** Fred Andersen, Chair  
Indexed Universal Life (IUL) Illustration (A) Subgroup

**To:** Rachel Hemphill, Chair  
The Life Actuarial (A) Task Force

**Subject:** The Report of the Indexed Universal Life (IUL) Illustration (A) Subgroup (IUL Illustration SG) to the Life Actuarial (A) Task Force

The IUL Illustration SG has not met since the adoption of group's main work product, revisions to Actuarial Guideline 49A, by the Life Actuarial (A) Task Force on December 11, 2022. The revisions to Actuarial Guideline 49A were subsequently adopted by the Life Insurance and Annuities (A) Committee and will be considered by the NAIC's Executive (EX) Committee and Plenary at the upcoming Spring National Meeting on March 25. The IUL Illustration SG will continue to meet after the Spring NAIC National Meeting to consider broader measures for improving IUL illustrations.

March 20, 2023

**From:** Pete Weber, Chair  
Index-Linked Variable Annuity (A) Subgroup

**To:** Rachel Hemphill, Chair  
The Life Actuarial (A) Task Force

**Subject:** The Report of the Index-Linked Variable Annuity (A) Subgroup (ILVA SG) to the Life Actuarial (A) Task Force

The ILVA SG has not met since the adoption of group's main work product, Actuarial Guideline 54 (ILVA), by the Life Actuarial (A) Task Force on December 11, 2022. Actuarial Guideline 54 was subsequently adopted by the Life Insurance and Annuities (A) Committee and will be considered by the NAIC's Executive (EX) Committee and Plenary at the upcoming Spring National Meeting on March 25. After full adoption of Actuarial Guideline 54, the Life Actuarial (A) Task Force will consider next steps for the ILVA SG, which could include folding any relevant remaining charges into those of the Task Force and/or disbanding the ILVA SG.



The slide features the Minnesota Commerce Department logo in the top right corner. The background is a light gray with a repeating pattern of the department's logo. The main title 'VM-22 Project Overview' is centered in a large, bold, black font. Below the title, a dark gray horizontal bar contains the text 'Ben Slutsker, Chair, NAIC VM-22 Subgroup' in white. At the bottom, a light gray bar contains the date '3/20/2023', the website 'mn.gov/commerce', and the page number '1'.

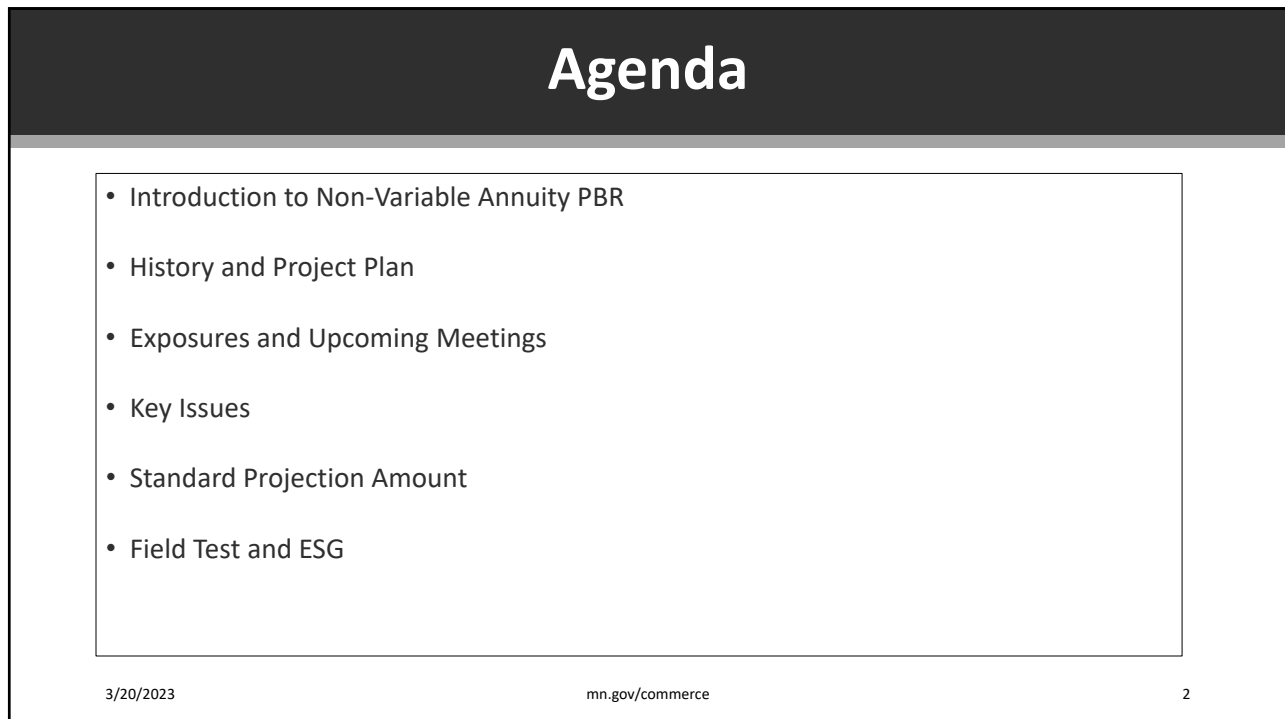
**mn** COMMERCE DEPARTMENT

# VM-22 Project Overview

Ben Slutsker, Chair, NAIC VM-22 Subgroup

3/20/2023 mn.gov/commerce 1

1



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# Agenda

- Introduction to Non-Variable Annuity PBR
- History and Project Plan
- Exposures and Upcoming Meetings
- Key Issues
- Standard Projection Amount
- Field Test and ESG

3/20/2023 mn.gov/commerce 2

2

## What is Non-Variable Annuity PBR?

- **Principle-Based Reserving (PBR)**
  - Statutory reserve framework that uses company-specific assumptions
  - Multiple economic scenarios through stochastic reserving (CTE70)
  - Applicable to all fixed annuity contracts, except GICs and stable value contracts<sup>1</sup>
- **Contrast to current reserve framework**
  - Formulaic methodology: Actuarial Guideline 33
  - Highest present value of future guaranteed benefits less considerations across all possible product options and scenarios using prescribed assumptions
- **Requirements contained in NAIC Valuation Manual**
  - Process for adopting amendments to valuation manual permits streamlined updates

(1) RILAs and Contingent Deferred Annuities to follow VM-21 in latest draft

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3

3

## Why Non-Variable Annuity PBR?

- **PBR exists in life insurance and variable annuities**
  - All variable annuity contracts and only life contracts issued in 2020+ (or implementation date if earlier)
- **Advantage of PBR is addressing product complexity**
  - More guaranteed living benefits, index options, and other features
  - Contracts that are hybrid variable, indexed, and fixed annuities
- **One challenge is that additional resources are required to review and audit**
  - Two companies may have identical products and populations, but different views on future assumptions
  - More calculation detail: asset modeling, dynamic lapses, and rider utilization

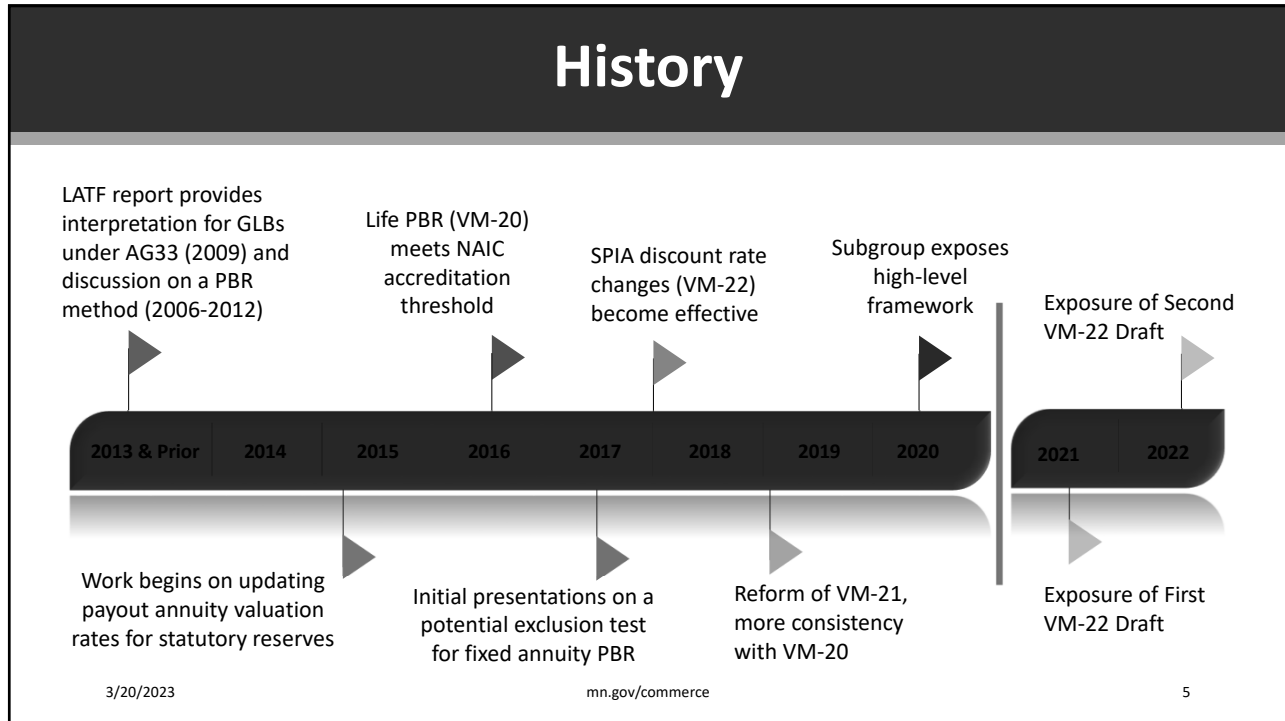
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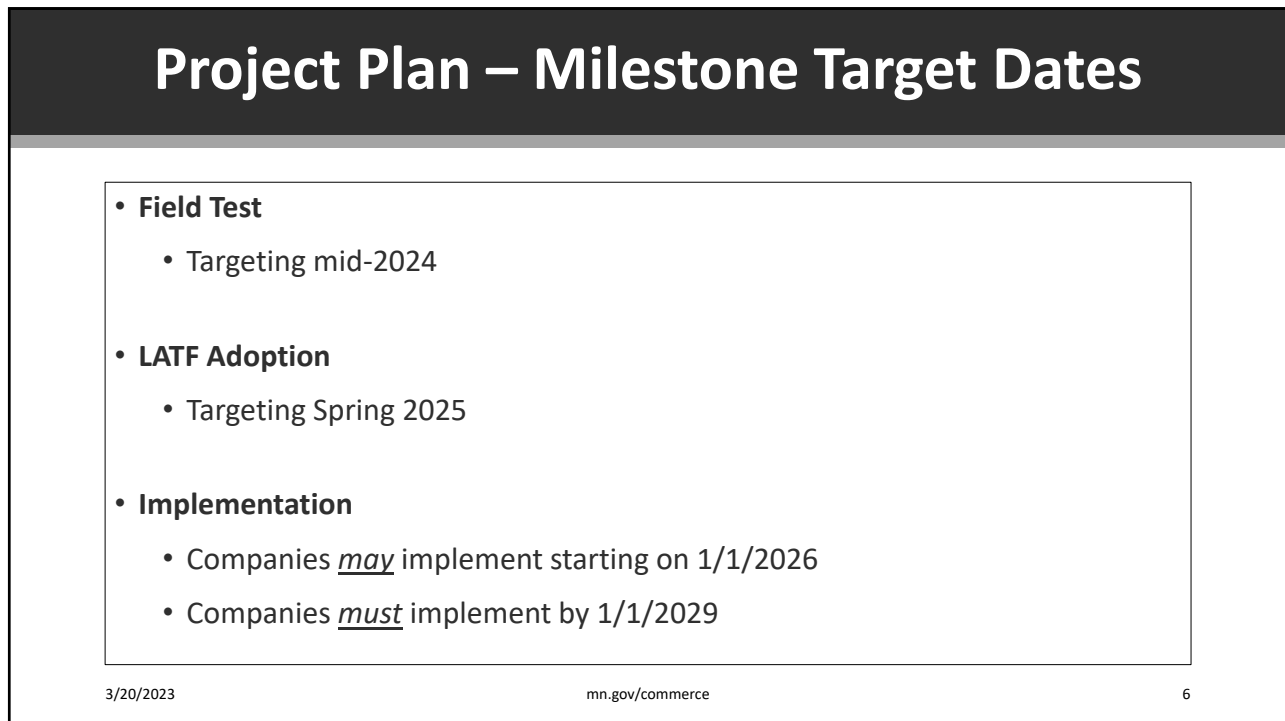
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6

## Project Plan – 2022 (past)

DRAFT TIMELINE	12 21	1 22	2 22	3 22	4 22	5 22	6 22	7 22	8 22	9 22	10 22	11 22	12 22
SPA DG - develop assumptions/methodology	█	█	█	█	█	█	█	█	█	█			
VM22 SG calls - Address comment letters and edits					█	█	█	█	█	█	█		
ESG Field Test #1							█	█	█	█	█		
Second VM-22 exposure											█	█	█
NAIC National Meeting December 12 - 15, Tampa FL												█	█
ESG Field Test #1 Analysis											█	█	█
SPA Discussions at VM-22 Subgroup											█	█	█

3/20/2023

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7

7

## Project Plan – 2023 (present)

DRAFT TIMELINE	1 23	2 23	3 23	4 23	5 23	6 23	7 23	8 23	9 23	10 23	11 23	12 23
ESG Field Test #1 Analysis	█	█	█									
SPA Discussions at VM-22 Subgroup	█	█	█									
Discuss comments from Fall VM-22 draft exposure			█	█	█	█						
SPA Structure Exposure				█	█	█	█					
VM-31 DG meetings to prepare recommendation						█	█	█	█			
VM-31 Exposure									█	█	█	
Discuss Comments on SPA Structure Exposure									█	█	█	
ESG Field Test #2 (timeline estimate)										█	█	█

3/20/2023

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8

8

# Project Plan – 2024 (future)

DRAFT TIMELINE	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
	24	24	24	24	24	24	24	24	24	24	24	24	24	24	25	25	25	25	25	25
ESG Field Test #2 Analysis	█	█	█	█	█	█														
VM-22 and C3P1 Field Test				█	█	█	█													
Compile/analyze Field Test results							█	█	█											
Discuss field test results on public calls									█	█	█									
Resolve outstanding items and changes from field test												█	█	█						
LATF exposure and discussion														█	█	█				
LATF Adoption																█				
A Committee Adoption																				█
NAIC Exec & Plenary Adoption																				█

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9

9

# Upcoming Meetings

- **Scheduled to meet on a bi-weekly basis in 2023**
  - First meeting held on 3/1; next to be held on 4/12 (due to NAIC National Meeting)
- **Focus on comments for VM-22 Exposure**
  - Review on comment-by-comment basis
- **Firm up standard methodology mechanics**
  - Assumptions and Methodology

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10

10

## First Exposure Comments

- **Initial exposure in July 2021**
  - Academy proposal
  - NAIC VM-22 Subgroup aggregation categories
- **Eleven comment letters**
  - Nearly 400 comments
- **Categorized each comment into one of four tiers**
  - Based on priority
  - Determined order of discussion in NAIC VM-22 Subgroup

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11

11

## Second Exposure Comments

- **Exposure in October 2022**
  - Included revisions based on 2022 discussions
  - Reflects Subgroup decisions on how to address each comment in first exposure
- **Three comment letters**
  - Nearly 200 comments
- **Process to discuss comments will mirror the first exposure**
  - Categorized each comment into one of four tiers
  - For the fourth tier (less substantive or non-controversial), initial edits will be shared by the Subgroup and will be taken up on public calls upon request from interested parties

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12

12

## Key Issues Preliminarily Determined

- **Aggregation**
  - Payout vs. Accumulation vs. Longevity Reinsurance Reserving Categories
- **Exclusion test: applicability and concept**
  - Pass = option to use pre-PBR; fail = must use PBR
  - Stochastic exclusion ratio test, demonstration test, or certification method
- **Use of PBR Exemption**
  - Companies with volume of business below a threshold may be exempt
- **Different treatment for index credit hedging programs**
  - Reflect a hedge margin and, unlike other programs, no requirement to model without hedges

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13

13

## Key Issues in midst of Being Determined

- **Longevity reinsurance**
  - Currently discussing a “k-factor” methodology similar to CRVM
- **Exclusion test carveout for payout annuities**
  - Certain types of payout annuity contracts that can automatically pass exclusion testing?
- **Allocation of reserves to each contract**
  - Narrowed down to one proposed methodology based on an actuarial present value calculation
- **PBR Exemption level**
  - Decide the appropriate threshold to permit exemption eligibility
- **SPA mechanics**
  - Upcoming exposure and placeholder assumptions

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14

14

## Key Issues Yet to Be Determined

- **Reinvestment guardrail**
  - Use current VM-20/VM-21 or Academy proposal or something else?
- **Exclusion test threshold**
  - Passing level for the stochastic exclusion ratio text
- **Level of minimum index credit hedge margin**
  - To be determined based on future field test results
- **Standard Projection Amount treatment**
  - Minimum reserve floor or disclosure-only?

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15

15

## Standard Projection Amount

- **VM-22 Subgroup is recommending to develop calculation**
  - No recommendation on whether to use as a disclosure or floor
- **LATF to address how to use the standard projection amount**
  - Targeting consistency with VM-21
- **Drafting groups have presented initial mortality, policyholder behavior, and other liability assumptions**
  - Society of Actuaries have developed mortality factors upon drafting group requests
  - Willis Towers Watson and Academy presented proposed expense assumptions

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16

16

## Field Test

- **Jointly run by NAIC, Academy, ACLI**
  - Selecting consultant to manage field test
  - Targeting mid-2024
- **Will test both principle-based capital and reserves**
  - Comparison to today's standards (CARVM vs. C-3 Phase I)
  - Sensitivities and impact of margins
  - To inform decisions around exclusion ratio test and reinvestment mix
- **Applies to recently issued inforce business**
  - Will help approximate the impact to future written contracts

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17

17

## Relationship to Economic Scenario Generator

- **NAIC Economic Scenario Generator provides scenarios**
  - Generates assumptions for treasuries, equities, and bond funds
- **Currently under development**
  - Forming acceptance criteria
  - Already one field test and planning for a second field test
- **Dependency**
  - Field testing an economic scenario generator materially different than the one ultimately adopted could lead to results different than future reserve levels

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18

18

# Prospective vs Retrospective

- **Initially prospective**
  - For ease of project management and regulation changes
  - Start to review impact and work through mechanics
- **To explore retrospective implementation**
  - After initial prospective implementation
  - Consider the development of principle-based capital
- **Applicability of additional contracts out-of-scope**
  - GICs, funding agreements, and stable value contracts

3/20/2023

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19

19



# Questions?

3/20/2023

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20

20



Draft: 3/11/23

Valuation Manual (VM)-22 (A) Subgroup  
Virtual Meeting  
March 1, 2023

The Valuation Manual (VM)-22 (A) Subgroup met Mar. 1, 2023. The following Subgroup members participated: Ben Slutsker, Chair (MN); Elaine Lam and Thomas Reedy (CA); Lei Rao-Knight (CT); Mike Yanacheak (IA); Vincent Tsang (IL); Nicole Boyd (KS); William Leung (MO); Bill Carmello and Amanda Fenwick (NY); Rachel Hemphill and Iris Huang (TX); Tomasz Serbinowski (UT); and Craig Chupp (VA).

1. Heard an Update on the VM-22 Project Plan

Slutsker walked through an updated project plan (Attachment Ten-A), including noting that a VM-22, Requirements for Principle-Based Reserves for Non-Variable Annuities, field test would not occur in 2023 due to dependencies on the economic scenario generator (ESG) project. Slutsker said that the latest target for adoption of VM-22 was 2025.

2. Discussed the VM-22 Exemption

Slutsker said that the Subgroup had voted last year to include an exemption for small companies in the draft VM-22 requirements and that now the Subgroup would need to decide on how the threshold would be defined. Chupp commented that for VM-20, Requirements for Principle-Based Reserves for Life Products, one of the goals was to right size reserves so that some companies would see increases and others would see decreases to reserves. Chupp then asked if one would expect reserves to be lower for the new VM-22 methodology compared to the current methodology. Slutsker noted that while there were no field test results to point to, there was a general expectation that reserves would be lower for the new VM-22 methodology for many, though not all, products. Chris Conrad (American Academy of Actuaries—Academy) noted that the Academy supports basing the exemption on gross of reinsurance values, to which a number of regulators agreed.

Carmello made a motion, seconded by Tsang, to use gross of reinsurance values to define the threshold. The motion passed unanimously.

Slutsker then stated that the next part of the exemption discussion to define was the level of the threshold. Conrad said the Academy supports level of \$1 billion dollars of reserves based on comparisons made to the Life PBR Exemption. Brian Bayerle (American Council of Life Insurers—ACLI) said that the ACLI could be supportive of \$1 billion to \$2 billion dollars as the exemption threshold.

A roll call vote was then conducted on the threshold amount for an individual company, with Yanacheak and Carmello voting for a \$3 billion statutory reserve exemption level and the remaining, and large majority of, Subgroup members present voting for a \$1 billion exemption threshold.

Having no further business, the Subgroup adjourned.

SharePoint/NAIC Support Staff Hub/Member Meetings/A CMTE/LATF/ 2023-1-Spring/VM-22 Calls/03 01/Mar 1 Minutes.docx

**PBR VM-22 Project Draft Timeline**

**EFFECTIVE DATE GOALS**

1/1/2026 1/1/2029 PBR VM-22 mandatory prospectively

#	DRAFT TIMELINE	3/23	4/23	5/23	6/23	7/23	8/23	9/23	10/23	11/23	12/23	1/24	2/24	3/24	4/24	5/24	6/24	7/24	8/24	9/24	10/24	11/24	12/24	1/25	2/25	3/25	4/25	5/25	6/25	7/25	8/25	
8	Discuss comments from Fall VM-22 draft exposure	█	█	█	█	█																										
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22	NAIC Exec & Plenary Adoption																															

**NAIC VM-22 Drafting Discussion Log - 2022 Exposure**

#	Topic	Description	Date	Tier	Outcome
1	Exemption Threshold Level	Discuss potential reserve thresholds, below which companies can apply for VM-22 exemption	3/1/2023	1	
2	Exemption Reinsurance Treatment	Are the reserves for the exemption levels gross or net of reinsurance?	3/1/2023	1	
3	Longevity Reinsurance k-factor Approach	Consider principles-based methods for longevity reinsurance requirements?	3/1/2023	1	
4	GLB Exemption Eligibility	Allow GLBs to be eligible for the exemption? Only if in payout status? What if only the GLB piece is reinsured?	TBD	2	
5	VM-21 vs. VM-22 Applicability	For principles in Section II, say "shall follow" or "generally expected to follow"?	TBD	2	
6	Combo Product Valuation	Should nursing riders and combo products be valued under PBR or prior formulaic reserves?	TBD	2	
7	Reserving Category for GLB with Depleted AV	Use principle-based categorization or require a specific reserving category?	TBD	2	
8	Frequency of Reviewing PBR Assumptions	Current text specifies reviewing experience annually, but assumptions periodically - align the two? Every 3 years?	TBD	2	
9	Rider Valuation	Add "After issuance" for determining whether a rider's reference to base policy results in valuing them together?	TBD	3	
10	Two Benefits in a Contract	"May" or "should" assume the more valuable of two benefits in a contract?	TBD	3	
11	Longevity Reinsurance Premium Frequency	Remove the statement specifying that premiums are paid over the life of the annuitant?	TBD	3	
12	Separate Account References	Remove references to the Separate Account in VM-22?	TBD	3	
13	Guidance Note in Section 3.A	Make guidance note part of formal text?	TBD	3	
14	Aggregation within each Reserving Category	Clarifying guidance on aggregation within reserving categories	TBD	3	
15	Revisiting Aggregation	View expressed that a more principles-based approach for aggregation	TBD	3	
17	Annuitization from Other Host Contracts	VM-21 vs. VM-22 treatment for annuitizations from host contracts	TBD	3	
18	Supplementary Contracts	Need a definition for supplementary contracts?	TBD	3	
16	Pre-determined Reinsurance Premiums	If premiums are pre-determined for longevity reinsurance, how does the k-factor approach apply?	TBD	3	
19	Index Credit Hedge Margin	Determine prescribed minimum margins	TBD	3	

NAIC VM-22 Drafting Discussion Log - 2022 Exposure

#	Topic	Description	Date	Tier	Outcome
20	Projection Period	No obligations or not <i>material</i> obligations at the end of the projection period?	TBD	3	
21	MVA Threshold	Should there be a percentage threshold of market value assets in a portfolio to determine MVA treatment?	TBD	3	
22	Longevity Reinsurance Guidance Note	Clarify guidance note saying that deterministic assumptions are not appropriate for longevity reinsurance	TBD	3	
23	Term Certain in SPIA SET exemption	Include "Annuities Certain" and "Supplementary Contracts" from Exhibit 7 in SPIA threshold definition?	TBD	3	
24	PRT Exclusion Testing treatment	Keep ineligibility for PRT and longevity reinsurance to automatically pass exclusion test through SPIA carveout?	TBD	3	
25	SPIAs with increasing benefits & optionality	Allow SPIA exclusion test treatment to include fixed COLA, 50% joint, non-elective changes) rather than 5% standard	TBD	3	
26	Payout Annuity Exemption Definition	Remove group annuities from payout exemption reserve definition if excluding PRT/reinsurance from carveout?	TBD	3	
27	Index vs. Non-Index Hedging Bifurcation	What if a company does not clearly separate hedging strategies for index vs. non-index hedge programs?	TBD	3	
28	E Factor Examples	Clarify examples listed for the E-factor for hedging purposes is non-exhaustive?	TBD	3	
29	Sensitivity Test Immateriality	Should sensitivity testing include assumptions that are deemed to be immaterial? (e.g., account transfers, etc.)	TBD	3	
30	Less Conservative Than Experience	Allow immaterial risk factors or low/no credibility to not be bound by less conservative than experience limit?	TBD	3	

NAIC VM-22 Drafting Discussion Log - 2021 Exposure

#	Topic	Description	Date	Tier	Outcome
1	VM-22 Scope and Definitions	Keep current definitions for what is in-scope or focus only on non-variable annuities out of scope	4/13/2022, 10/4/2022	1	Exposed principles in Section II of the Valuation Manual, moved definitions to VM-01, and removed references to product names in VM-22 section 2
2	Reserving categories and aggregation	Determine Option 1 or Option 2 from exposed reserve category definitions	4/13/2022	1	Preliminary vote to pursue Option 1
3	Small Company Exemption	Fixed Annuity PBR exemption, similar to life PBR exemption for smaller carriers?	4/13/2022, 10/4/2022	1	Voted to pursue a "Fixed Annuity PBR Exemption"; Exposed ACLI proposed threshold based on prior year reserves, with some modifications
4	Reinvestment Guardrail	Keep VM-20/VM-21 mix, Academy mix, TX mix, or other? Wait until field test for final decision?	4/27/2022	1	Wait until observing impact in field testing results before voting on a reinvestment mix guardrail
5	Principles & Risks Across VM Chapters	Build one section in the Valuation Manual for principles that apply to VM-20, VM-21, and VM-22	4/27/2022	2	Openness to interested party proposals for a common "principles" section, but will focus on working through other VM-22 decisions before exploring
6	General Assumptions Section	Add a section to the VM-22 draft on general considerations and requirements for assumption	4/27/2022	2	Will include a proposed general assumptions section ("Section 13") from Texas, to be consistent with a recent APF adoption on VM-21
7	Transition Period	Permit 1) early adoption and 2) retrospective adoption to the start of the 3-year transition period?	4/27/2022	2	Decided to not pursue early adoption; VM-22 will say silent on retrospective adoption to start of transition period, similar to VM-20
8	Minimum Error for Index Credit Hedges	What should be the minimum breakage expense (i.e., error) for modeling hedges supporting index credits?	5/11/2022	2	Will wait until seeing field testing results before minimum threshold
9	Longevity Reinsurance	How should longevity reinsurance be defined and treat negative reserves/recurring premiums?	5/11/2022	2	Academy presented on longevity reinsurance and will provide a refined definition; New Jersey proposal is exposed for reserving requirements
10	Categories for VM-31 Disclosures	What level of granularity should be required for disclosing PBR reserves for product groups in VM-31?	5/11/2022	2	Will wait until seeing field testing results before determining granularity of disclosures
11	Exclusion Test: SPIA contracts	Allow SPIAs to have the option of PBR vs. pre-PBR valuation without an exclusion test?	6/1/2022	2	Voted to allow SPIAs automatically pass exclusion testing, subject to criteria around optionality and a liability duration threshold (TBD)
12	Exclusion Test: PRT Certification Method	Allow PRT contracts to use the Certification Method for exclusion testing?	6/1/2022	2	Do not allow PRT to undergo the Certification Method
13	Exclusion Test: Grouping	Group between products with significantly different risk profiles?	6/1/2022	2	Do not allow grouping between products with significantly different risk profiles, consistent with VM-20 and TD's proposal
14	Exclusion Test: Future Premiums	For the stochastic exclusion ratio test, determine whether to include future premiums	6/1/2022	2	Include future premiums in the numerator, but only benefits and expenses in the denominator, consistent with VM-20.
15	Exclusion Test: Deterministic Reserve	To pass the deterministic test, does the company need to pass or disclose 16 scenarios with baseline mortality?	6/1/2022	2	Require passing the ratio test for 16 economic scenarios under 100% of the anticipated experience mortality assumption
17	Import Reinsurance Wording from VM-20	Import VM-20 wording on incorporating contractual or additional characteristics for modeling reinsurance?	6/14/2022	2	Include proposed wording from VM-20
18	Fair Value Certification	Include fair value certification, similar to existing VM-21 requirement?	6/14/2022	2	Include fair value certification disclosure for non-index credit hedging programs
16	PRT Mortality	Permit PRT mortality with limited credibility to follow a third-party provider instead of an industry table?	6/14/2022	2	Voted in favor of using a prescribed table; do not permit a third party table upon limited credibility
19	Allocation Method	Determine Option 1 or Option 2? Wait until observing field test results before deciding?	9/21/2022	2	Using an ACLI proposal based on Option 2 for the VM-22 exposure, which addresses a tax issue for non-life contingent annuities

**NAIC VM-22 Drafting Discussion Log - 2021 Exposure**

#	Topic	Description	Date	Tier	Outcome
20	Working Reserve	Use a working reserve concept to serve as a floor for contracts without cash surrender value?	6/29/2022	2	Academy will work on a working reserve concept for contracts without cash surrender value, though may be little impact due to reserving categories
21	Grouping for Fund Value Depletion	Appropriate reserving category for deferred annuities with GMWBs/GMIBs that have depleted fund value	6/29/2022	2	Decided to leave these contracts in the "Payout Reserving Category" for now, but will add a drafting note to solicit feedback an optional approach
22	RBC Guidance Note	Retain the guidance note in VM-21 that discusses the relationship between reserves and RBC?	8/17/2022	3	ACLI will provide the full text for the Subgroup to consider
23	Principle 1	Should the edits to Principle 1 for VM-22 be incorporated into VM-21 as well?	8/17/2022	3	For now, will plan to focus only on VM-22, as LATF can explore the other VM chapters upon the Subgroup's recommendation of the VM-22 draft to LATF
24	Principle 2	Does setting an SR to be reasonably conservative over a span of economic cycles contradict other principles?	7/13/2022	3	ACLI will provide the full text for the Subgroup to consider
25	Aggregation Limits	Guidance note stating aggregation may not be possible for experience rated group and reinsurance treaties	7/13/2022	3	Will include this text in the VM-22 draft
26	Principle 3	Delete "Generally, assumptions are to be based on the conservative end of the confidence interval"?	7/13/2022	3	Retain this language
27	Principle 5	Delete sentence about the principle to not reduce the reserve unless reducing the risk?	7/13/2022	3	Retain this language
28	Risks not reflected	Retain or remove the list of "Risks not reflected" in VM-22?	7/13/2022	3	Remove subsection 3, but keep section 4 and update title to include "risks not reflected"
29	Separate Account References	Recommendation to delete all references to "separate accounts" in VM-22	7/13/2022	3	For now, will keep references to "separate accounts" and will add a drafting note to solicit feedback
30	Combination Risks	Proposal to delete "Risks modeled in the company's risk assessment processes that are related to the contracts"	7/13/2022	3	Retain this language
31	Immaterial Risks	Recommendation to delete sentence about not reflecting risks that do not materially affect the reserves	7/13/2022	3	Remove this language
32	Liquidity Risk	Refer to liquidity risks for "run on bank" or "sudden and significant levels of withdrawals and surrenders"	7/13/2022	3	Use the "run on bank" description
33	Significant Future Reserve Increases	Strike this item from the list of risks not reflected?	7/13/2022	3	Retain this language
34	Fixed Annuity Definition	Need to define a "fixed annuity"?	7/13/2022	3	Will replace all references to "fixed annuity" with "non-variable annuity"
35	Longevity Swaps	Are these contracts included in the definition of PRT?	7/13/2022	3	As a follow-up, Academy will include reviewing the definition of PRT when revisiting the definition of longevity risk
36	CSV and GMDB definitions	Retain VM-21 definitions for "cash surrender value" and "guaranteed minimum death benefits"?	7/13/2022	3	Will not retain the definition for "cash surrender value" and will move the "guaranteed minimum death benefits" to VM-01
37	Assumed reserve level for RBC	Question whether CTE70 was the assumed level for reserves upon determining RBC	7/19/2022	3	Question relates to RBC, and therefore did not discuss as part of the VM-22 Subgroup
38	VM-23	Consider reinstating "VM-23" to avoid confusion around the where exemptions/exclusions point to vs. PBR?	7/19/2022, 10/4/2022	3	Exposed moving the current VM-22 requirements (previously Section 14 in the VM-22 draft) to a separate "VM-V" section in the Valuation Manual.

**NAIC VM-22 Drafting Discussion Log - 2021 Exposure**

#	Topic	Description	Date	Tier	Outcome
39	Pre-Reinsurance	Request to develop further guidance around pre-reinsurance	7/19/2022	3	ACLI will consider whether to provide suggested language to clarify pre-reinsurance cash flow requirements in response to the next exposure
40	Deterministic Reserve	Use this term for the single scenario reserve calculated upon passing the deterministic exclusion test?	7/19/2022	3	Will replace "scenario reserve" with "deterministic reserve". Also added "aggregate minimum reserve" as the term for the final reserve
41	Deterministic Certification Option	Keep this terminology or change?	7/19/2022	3	Given that the term "deterministic reserve" will not be used, decided to keep this terminology
42	Stochastic Exclusion Test	Change Section 3.E to "Stochastic Exclusion Test" header?	7/19/2022	3	Accepted comment and made change to update header
43	Guidance Note for Exclusion Test	Remove the guidance note that clarifies that AG33/AG35 may be used upon passing the exclusion test	7/19/2022	3	Decided to remove this guidance note
44	Prudent Estimate Assumptions	Move Section 3.G to Section 4 of the document?	7/19/2022	3	Subgroup decided to hold off for now
45	Simplifications	Port over VM-21 Section 3.H on simplifications, approximations, and modeling efficiency techniques?	7/19/2022	3	Subgroup agreed to add this wording for simplifications, to be consistency with VM-21
46	Review experience every three years?	Make this a requirement for the qualified actuary?	7/19/2022	3	Subgroup agreed to include a requirement to review experience every three years
47	Simplification example for the SPA	Add an example of a simplification for the SPA upon development	7/19/2022	3	Delete for now and revisit upon development of the SPA
48	Stochastic Mortality	Consider including stochastic mortality in the stochastic reserve for longevity reinsurance?	7/19/2022	3	Subgroup agreed to port over VM-20 language on stochastic modeling when static prudent estimates are not appropriate for liability assumptions
49	MVA Guidance Note	Is the market value adjustment guidance note from VM-21 still appropriate for VM-22?	8/17/2022	3	Subgroup decided to remove guidance note
50	Hedging Reorganization	Move parts of Section 4.A.4 to Section 9, which covers hedging	8/17/2022	3	Open to comments on restructuring this section during the next exposure
51	Future Hedging Programs	Align VM-22 draft to be consistent with APF 2020-12 adopted edits for VM-21?	8/17/2022	3	Subgroup decided to be consistent with APF 2020-12 language
52	Index Credit Hedge Margin	Does this reflect both model risk and real-world error? How does stress testing justify the error?	8/17/2022	3	Wording is added to state that both sources of error are reflected in the margin; in addition the reference to stress testing will be removed
53	Margin on Hedging Paragraph	Remove this paragraph if included in another section, even upon edits from TDI/OPBR?	8/17/2022	3	Open to comments on restructuring this section during the next exposure
54	Revenue Sharing	Is the section of revenue sharing applicable to non-variable products?	8/17/2022	3	Decided to retain this section
55	Projection Period	Use consistent language with VM-20?	8/17/2022	3	Kept the first sentence to be consistent with VM-20, but removed the second proposed sentence, since now the approximation section has been added
56	PIMR	Include pre-tax IMR in VM-22?	8/17/2022	3	Refer to LATF
57	MVA on CSV Floor	Apply the market value adjustment factor to the cash surrender value reserve floor for applicable products?	9/7/2022	3	Will not add language applying the MVA to the CSV floor; instead new language states the MVA shall only apply when assets are held at market value

**NAIC VM-22 Drafting Discussion Log - 2021 Exposure**

#	Topic	Description	Date	Tier	Outcome
58	Consistency with Managed Business	Modify NAER requirement to have assets modeled in a manner consistent with how business is managed?	8/24/2022	3	ACLI will consider whether to recommend specific edits related to this comments
59	Limits on NAER	Define a specific cap or floor for the NAER instead of saying it should not be "unreasonably high"?	8/24/2022	3	Subgroup decided to modify language to change "unreasonably high" to "extremely positive or negative", which covers both directions
60	Reserve Floor	NY comment on using CARVM as a reserve floor	8/24/2022	3	Will hold off on discussing the standard projection amount until after the other sections of VM-22 are re-exposed, in Fall of 2022
61	Longevity Reinsurance & SPA	Require the k-factor approach to address negative reserve issue for longevity reinsurance in SPA?	8/24/2022	3	Will hold off on discussing the standard projection amount until after the other sections of VM-22 are re-exposed, in Fall of 2022
62	Standard Projection Amount	Equitable comment on supporting SPA with company assumptions insignificant risk factors	8/24/2022	3	Will hold off on discussing the standard projection amount until after the other sections of VM-22 are re-exposed, in Fall of 2022
63	Exclusion Testing & SPA	Modify exclusion test to address the standard projection amount?	8/24/2022	3	Will hold off on discussing the standard projection amount until after the other sections of VM-22 are re-exposed, in Fall of 2022
64	Hedging eligibility for exclusion testing	Refine wording around the restriction for not allowing blocks with hedging programs to use exclusion testing?	8/24/2022	3	Academy will suggest possible disclosures to better identify "hedging programs solely supporting index credits"
65	Mortality Stress Tests	If using the NY7 for the Certification Method, add mortality stress scenarios?	8/24/2022	3	Added language for mortality stress scenarios if using the NY7 Certification Method
66	Mortality Shock	Include the mortality shock for the ratio test based on the company materiality standard if more restrictive?	8/24/2022	3	No objections to modifying the stochastic exclusion ratio test to use the company materiality standard if more restrictive
67	Baseline Mortality Test	Include the baseline mortality test in determining the exclusion test?	6/1/2022	3	Subgroup agreed to include the baseline mortality scenario for the stochastic exclusion ratio test
68	Permutations	Include note on number of exclusion test permutations for clarity?	6/1/2022	3	Updated guidance note to include the number of permutations, inclusive of testing economic scenarios under the mortality baseline
69	Non-Proportional Reinsurance	Add definition for non-proportional reinsurance	8/24/2022	3	Decided to add a guidance note that references the APPM for clarification on the non-proportional reinsurance
70	SERT if Other Tests Fail	Prohibit passing the SERT if the demonstration test fails?	8/24/2022	3	Added language to prohibit passing the stochastic exclusion ratio test if the demonstration test fails
71	Demonstration Test	Remove options in 1.a and 2.a?	8/24/2022	3	ACLI will take back and decide whether to recommend removing the demonstration test altogether, or only certain components/language
72	Deterministic Exclusion for SPA	Consider SPA for the deterministic exclusion test	8/24/2022	3	Will hold off on discussing the standard projection amount until after the other sections of VM-22 are re-exposed, in Fall of 2022
73	Deterministic Exclusion Scenario	Is the deterministic certification intended not be applicable for blocks with index credit hedging?	9/7/2022	3	Intent is for the deterministic certification option to not apply to also not apply to hedging programs supporting index credits; no changes made
74	SPIA Guidance Note	Remove guidance note specifying that the deterministic exclusion test applies to SPIAs?	9/7/2022	3	No objections to removing guidance note
75	Delta Hedging	Replace or remove example about delta hedging for VM-22?	9/7/2022	3	Remove example referring to delta hedging
76	Non-Elective Benefits	Remove guidance note to limit modeling non-elective benefits after CSV is depleted if reducing reserves?	9/7/2022	3	No objections to language, but removed guidance note because the similar wording already existed in the paragraph above

**NAIC VM-22 Drafting Discussion Log - 2021 Exposure**

#	Topic	Description	Date	Tier	Outcome
77	100% Policyholder Efficiency	Assuming 100% policyholder inefficiency contradicts VM Section II 6.H.2, so revise VM Section II?	9/21/2022	3	Replace VM Section II language with the principle that efficiency increases over time
78	NGE Board of Directors	Comment that only allowing NGE exclusion if approved by the Board does not necessarily seem reasonable	9/21/2022	3	Removed this language from the draft, but added a drafting note to inquire on why potential language may be appropriate
79	Unsupported Judgement	Comment to remove the reference to using "unsupported actuarial judgement" from Section 11	9/21/2022	3	No objections to removing this language
80	Mortality and Reinsurance	Does Section 11.A require evaluation of a plus vs. minus segment differently for pre- vs. post reinsurance?	9/21/2022	3	This language is not included in VM-21 and was removed from the VM-22 draft
81	Mortality Improvement	Is the mortality improvement requirement intended to apply to all mortality assumptions in VM-22?	9/21/2022	3	Addressed by clarifying that this section only applies to industry mortality assumptions
82	Option 1 DR vs SR	Require separate allocation for DR vs. SR for allocation Option 1 (Section 13)?	9/21/2022	3	Agreed to add wording to clarify the allocation between the DR and SR should be separate
83	Option 2 for Direct Iteration Method	Option 2 is not designed to work for the Direct Iteration Method	9/21/2022	3	ACLI will consider adding language to address the direct iteration method
84	Option 2 Single Scenario	Could produce unstable allocation when products with different risk profiles are aggregated for PBR	9/21/2022	3	Reserving categories will require separate allocation for payouts and accumulation-based annuities
85	Index-linked annuity	This term is used in the proposed Section II, Subsection 2 draft, but is not defined	10/4/2022	3	Implicitly addressed through the proposed set of principles for scope of VM-21 vs. VM-22 in Section II of the Valuation Manual
86	Modified Guaranteed Annuities (MGAs)	VM-21 has language that exempts contracts falling under scope of MDL-255; does this contradict Section II edits?	10/4/2022	3	Implicitly addressed through the proposed set of principles for scope of VM-21 vs. VM-22 in Section II of the Valuation Manual

# RISING INTEREST RATE ISSUES

March 2023

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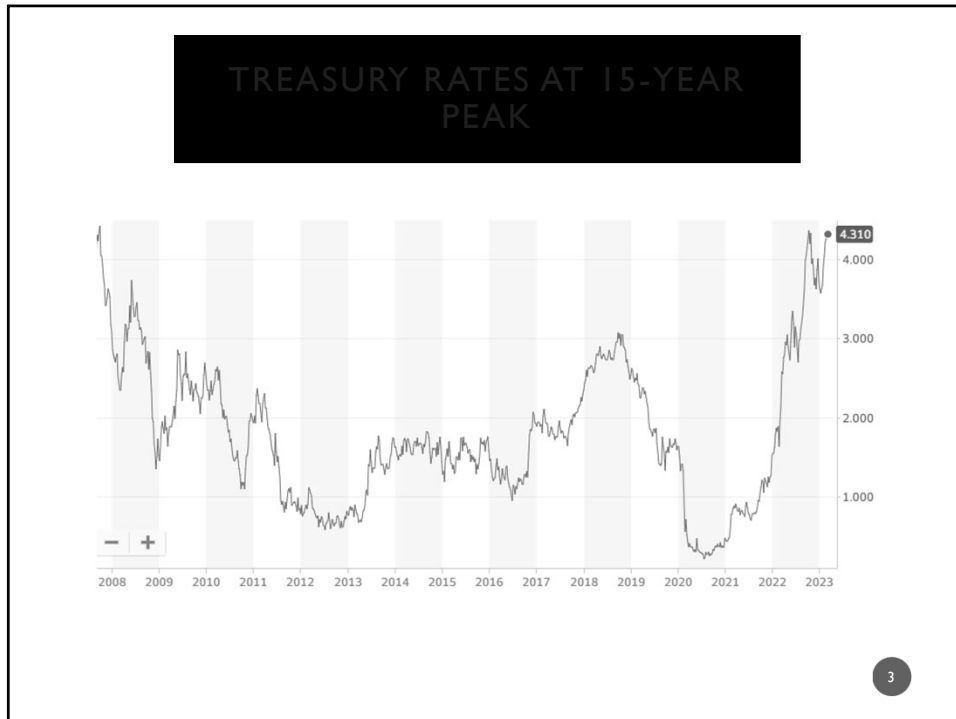
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## AGENDA

- Overview of Rising Interest Rate topic
  - Fred Andersen, Minnesota Department
- Dynamic Lapse and Other Relevant Experience
  - Dale Hall, Society of Actuaries
- Appointed Actuary Roundtable on Rising Interest Rate Impact
  - Ben Slutsker, Minnesota Department (Moderator)
  - Theresa Resnick, Everlake Life
  - Stephen McNamara, New York Life
  - Robert Egan, Global Atlantic

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### PAST 15 YEARS

- Annuities with high long-term guaranteed credited rates on the books of many life insurers
- Declining portfolio yields due to lower reinvestment rates
  - Due to declining Treasury rates and steady spreads
- With high guarantees, annuity liabilities thought of as “sticky”
- Increased illiquidity in supporting assets
  - Little perceived risk of people surrendering their rich-guarantee annuities

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## 2022 – RISING INTEREST RATES

- Insurers with deferred annuities model up interest rate scenarios
  - Disintermediation risk
    - Rising rates -> declining bond market values (higher discounting of bond coupons and par)
      - A particular concern with illiquid assets
    - Declining asset market values only matter if asset is sold
    - A company investing long may not be able to reinvest to take advantage of rising rates
    - A competitor may be positioned to offer favorable credited rates
    - Surprise surrenders may occur, triggering sale of “underwater” assets
      - Losses for the insurer

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## DYNAMIC LAPSES – A:E

- Life insurers with deferred annuities have assumed dynamic lapses
- Question: how will dynamic lapse experience compare to assumptions?
  - Dale Hall will provide information from the Society of Actuaries and other research

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## OTHER RISING RATE ISSUES

- **Accuracy of asset market values**
  - Most assets have a deep secondary market – straightforward valuation
  - Some complex assets are valued internally
    - AG 53 contains a question on this issue – step-by-step description required
- **Most issues should have been captured in past cash-flow testing**
  - A reason for multiple interest rate scenario testing
- **Some issues – wait and see**
  - Appointed Actuary roundtable will provide perspectives

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# CHANGING INTEREST RATES: RESEARCH UPDATE

March 2023


R. DALE HALL, FSA, MAAA, CERA, CFA  
Managing Director of Research



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## Presentation Disclaimer

*The material and information contained in this presentation is for general information only. It does not replace independent professional judgment and should not be used as the basis for making any business, legal or other decisions. The Society of Actuaries assumes no responsibility for the content, accuracy or completeness of the information presented.*



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## Fixed Rate Deferred Annuity Surrenders

- Last large SOA/LIMRA study released in 2006 with large focus on fixed deferred annuities; approximately 70% were book value products with no market value adjustment or equity index component
- Looking to initiate update to study this year
- Key factors impacting surrender activity
  - Time remaining in surrender charge period
  - Age of policyholder
  - Distribution method
  - Difference between Credited Rate and New Market Rate
- Factors reaffirmed by other industry studies in recent years
- Surrender functions commonly modeled using level and time remaining of surrender charges, current credited rates and proxy for potential new money rate from competing products



<https://www.soa.org/resources/experience-studies/2005-2009/deferred-annuity-persist>  
<https://ruark.co/wp-content/uploads/2021/08/COVID-and-annuity-PH-behavior-2021-update.pdf>

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## Product Lines and Considerations

- AAA Asset Adequacy Analysis Practice Note
  - [https://www.actuary.org/sites/default/files/files/Asset\\_Adequacy\\_Practice\\_Note\\_Exposure\\_August2014.pdf](https://www.actuary.org/sites/default/files/files/Asset_Adequacy_Practice_Note_Exposure_August2014.pdf)
  - Increased focus for sensitivity testing include dynamic lapse parameters
  - Base Lapses and Dynamic Lapses both among the most commonly sensitivity-tested assumptions
- Interactions Between Dynamic Lapses and Interest Rates in Stochastic Modeling
  - SOA Product Matters
  - <https://www.soa.org/globalassets/assets/library/newsletters/product-development-news/2010/june/pro-2010-iss77-xue.pdf>



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## Product Lines and Considerations

- The Impact of a Rising Interest Rate Environment on Life Insurance
  - <https://www.soa.org/sections/reinsurance/reinsurance-newsletter/2021/october/rsn-2021-10-tall/>
- The Impact of a Rising Interest Rate Environment on GAAP and Statutory Financial Reporting
  - <https://www.soa.org/sections/financial-reporting/financial-reporting-newsletter/2021/july/fr-2021-07-su/>



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## Product Lines and Considerations

- Market Trends and Product Designs in a Rising Interest Rate Environment
  - <https://www.soa.org/sections/product-dev/product-dev-newsletter/2021/november/pm-2021-11-sun-moench-strother-ruscito-lee-mu/>
- Mechanics of Dividends
  - <https://www.soa.org/resources/research-reports/2022/mechanics-dividends/>



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**NAIC**  
NATIONAL  
MEETING  
SPRING 2023  
**LOUISVILLE**

## Update on Mortality Experience Data Collection

Pat Allison, FSA, MAAA  
March 20, 2023

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**NAIC** NATIONAL MEETING SPRING 2023

## Update on 2021 Data Collection

- NAIC actuarial staff has calculated Actual to Expected mortality ratios for each company based on their submitted data for observation years 2018 and 2019.
- We have asked companies to review their A/E's and let us know if they are in line with their expectations.
- During their review, some companies have identified corrections that needed to be made to their data. So far, 11 companies have resubmitted their 2018 and 2019 data and another 6 companies have indicated that they plan to do so.

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## Update on 2021 Data Collection

Status on company A/E approvals for observation years 2018 and 2019:

Companies that have approved their A/E	88
Companies that have resubmitted 2018 and 2019 and have been provided revised A/E ratios to review	4
Companies that have indicated they plan to resubmit 2018 and 2019 data	6
Companies that have not yet approved their A/E. NAIC staff is meeting with these companies to discuss further.	9
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NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS	107

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## Update on 2021 Data Collection

- NAIC staff is working with the SOA to verify the consistency and integrity of the data, initially focusing on analysis of data from companies that have approved their A/E ratios.
- Data analysis includes:
  - Comparison of 2018 and 2019 data collected by the NAIC vs. data collected prior to the 2018 observation year
  - Review of consistency of companies/data from year to year
  - Comparisons to population data
  - Statistical analysis

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## Update on 2022 Data Collection

- We have received initial data submissions from 105 companies (all companies selected for observation year 2020).
- This year we had 69 resubmissions compared to 125 last year. The reduction in resubmissions is a result of the data files being much cleaner this time.
- Many companies have communicated to the NAIC that they have implemented process improvements in order to provide better data.
- Approximately 25 companies have requested an extension in order to submit corrected data files and/or respond to NAIC feedback.

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## Update on 2022 Data Collection

- For the 2022 data collection, we asked companies to voluntarily use a new “Death due to Covid-19” cause of termination (this becomes mandatory in 2023). Many companies have done so.
- Similarly, we asked companies to voluntarily use new plan codes for Paid-Up Additions and One Year Term coverages purchased with dividends. Many companies have done this as well.
- The NAIC has hired 2 data scientists to assist with validations and data analysis.

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<b>Dates:</b> Received	Reviewed by Staff	Distributed	Considered
Notes:			

**Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force  
 Amendment Proposal Form\***

1. Identify yourself, your affiliation and a very brief description (title) of the issue.  
 Society of Actuaries Valuation Basic Table Team – Chair Larry Bruning  
 Revisions to VM-51 to allow for the data experience reporting observation calendar year to be one year prior to the reporting calendar year.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

January 1, ~~2023~~, version of the Valuation Manual – VM-51 Section 2.D.

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3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

**Section 2: Statistical Plan for Mortality**

D. Process for Submitting Experience Data Under This Statistical Plan

Data for this statistical plan for mortality shall be submitted on an annual basis. Each company required to submit this data shall submit the data using the Regulatory Data Collection (RDC) online software submission application developed by the Experience Reporting Agent. For each data file submitted by a company, the Experience Reporting Agent will perform reasonability and completeness checks, as defined in Section 4 of VM-50, on the data. The Experience Reporting Agent will notify the company within 30 days following the data submission of any possible errors that need to be corrected. The Experience Reporting Agent will compile and send a report listing potential errors that need correction to the company.

Data for this statistical plan for mortality will be compiled using a calendar year method. The reporting calendar year is the calendar year that the company submits the experience data. The observation calendar year is the calendar year of the experience data that is reported. The observation calendar year will be one year prior to the reporting calendar year. For example, if the current calendar year is 2022 and that is the reporting calendar year, the company is to report the experience data that was in-force or issued in calendar year 2021, which is the observation calendar year. For the 2024 reporting calendar year, companies who are required to submit data for this statistical plan for mortality will be required to submit two observation calendar years of data, namely observation calendar year 2022 and observation calendar year 2023. For reporting calendar years after 2024, companies who are required to submit data for this statistical plan for mortality will be required to submit one observation calendar year of data.

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Given an observation calendar year of 20XX, the calendar year method requires reporting of experience data as follows:

- i. Report policies in force during or issued during calendar year 20XX.



Dates: Received	Reviewed by Staff	Distributed	Considered
<b>Notes:</b>			

- ii. Report terminations that were incurred in calendar year 20XX and reported before July 1, 20XX+1. However, exclude rescinded policies (e.g., 10-day free look exercises) from the data submission.

For any reporting calendar year, the data call will occur during the second quarter, and the data is to be submitted according to the requirements of the *Valuation Manual* in effect during that calendar year. Data submissions must be made by Sept. 30 of the reporting calendar year. Corrections of data submissions must be completed by Dec. 31 of the reporting calendar year. State the reason for the proposed amendment? (You may do this through an attachment.)


This APF is needed for the following reasons:

1. There is a need to shorten the time period between data observation and data collection to facilitate more timely analysis and reporting of mortality experience.
2. Under a Principle Based Reserving methodology, valuation basic tables should reflect recent and current mortality experience.

**Deleted:** For any reporting calendar year, the data call will occur during the second quarter, and data is to be submitted according to the requirements of the Valuation Manual in effect during that calendar year. Data submissions must be made by Sept. 30 of the reporting calendar year. Corrections of data submissions must be completed by Dec. 31 of the reporting calendar year.

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**NAIC**  
NATIONAL  
MEETING  
SPRING 2023

**LOUISVILLE**

**NAIC Economic Scenario  
Generator Field Test:  
VM-21 and C3 Phase II  
Quantitative Results**

Scott O'Neal, FSA, MAAA  
soneal@naic.org

March 20, 2023

NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

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**NAIC** NATIONAL MEETING SPRING 2023



**Agenda**

1. Background and Purpose
2. Limitations
3. Field Test Run Descriptions
4. Field Test Participation
5. High-Level Results, Observations, and Drivers of Results
6. Next Steps
7. Detailed Field Test Results

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2

## Background and Purpose

- The purpose of this presentation is to summarize quantitative information from the VM-21/C3 Phase II field test participants to:
  - Understand the impact on reserves and capital,
  - Evaluate the impact of hedging programs across field test scenario sets,
  - Review the range of results across field test participants,
  - Compare the stability of results over time, and
  - Inform regulator decision-making on model and calibration choices.

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## Limitations


- The NAIC took steps to review the quantitative results for reasonableness, including comparing field test data to annual statement values, reviewing qualitative survey responses, sending questions to participants, and asking participants to confirm that the NAIC compilations matched their intended result submission. However, the accuracy and reliability of the results are ultimately dependent on the quality of participant submissions.
- The field test reserve and/or capital participant analytics (average reserve/ capital impact, range of impacts, etc.) can be strongly dependent on a subset of the participants. Results shown today for the different field test runs will include varying numbers of participants corresponding to the levels of participation for that run. The lack of participation in some of the runs will limit their applicability to the overall variable annuity industry.
- Four legal entities were excluded from the analysis due to results that did not seem reasonable to the NAIC.
- A number of comparisons between company-provided field test or baseline runs are made in the presentation. These comparisons are limited to the participation of whichever run had the least participation. For example, as Baseline 2 (as of 12/31/19 + 200 BP) had significantly lower participation than run 2A, many of the 2A results will not be shown for this comparison.
- For the most part, companies did not make changes to their models to account for changes in the field test scenario sets. Therefore, field test results may not be fully representative of company results post implementation of the new scenarios.

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 NATIONAL MEETING SPRING 2023		
<h2>Field Test Run Descriptions</h2>		
<b>Note: Bold = Required Run</b>		
Run #	Description	Purpose of Run
<b>Baseline #1</b>	Scenario set(s) the company used for 12/31/21 statutory reporting	Baseline used as comparative basis for 12/31/21 runs
Baseline #2	ESG the company used for 12/31/21 statutory reporting of reserves and RBC, but modified to produce scenario sets with a 12/31/19 yield curve modified using a 200 BP increase across all maturities	Baseline used as comparative basis for 12/31/19 + 200 BP runs
<b>Test #1a</b>	GEMS Baseline Equity and Corporate model scenarios as of 12/31/21, and Conning Treasury model calibration with generalized fractional floor as of 12/31/21	Tests Conning Treasury model w/ GFF and Baseline Equity at YE 2021
<b>Test #1b</b>	Same as Test #1a, but with Alternative Treasury model calibration with shadow floor as of 12/31/21	Tests Alternative Treasury model with shadow floor and Baseline Equity at YE 2021
<b>Test #2a</b>	Same as Test #1a, but with Equity, Corporate, and Treasury models with a 12/31/19 starting yield curve modified using a 200 BP increase across all maturities. All other initial market conditions are unchanged. The Equity model parameters would be adjusted from #1a so that the year 30 median Large Cap Equity gross wealth factors remain consistent with #1a.	Stresses the starting Treasury rates using the same calibration as 1a to evaluate whether the model produces appropriate results in different economic environments
<b>Test #2b</b>	Same as Test #2a, but with the Alternative Treasury model calibration with shadow floor instead of the Conning Treasury model calibration with generalized fractional floor	Same as 2a, but designed to stress the 1b calibration

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 NATIONAL MEETING SPRING 2023		
<h2>Field Test Run Descriptions</h2>		
<b>Note: Bold = Required Run</b>		
Run #	Description	Purpose of Run
Test #3	Conning Treasury model calibration with generalized fractional floor as of 12/31/21, GEMS Corporate model as of 12/31/21, and GEMS Baseline Equity model corresponding to a 12/31/19 yield curve with a 200 BP increase across all maturities	Attribution analysis that will illustrate how much of the difference between runs #1a and #2a is driven by the equity model vs the Treasury and Corporate models
Test #4	Same as Test #3, but using Alternative Treasury model calibration with shadow floor as of 12/31/21	Same as #3, but with respect to runs #1b and #2b.
<b>Test #5a</b>	Same as #1a, but with Conning's original Equity model calibration that had significantly lower Gross Wealth Factor's (GWFs) than the AIRG Equity Model.	Tests Conning Treasury model w/ GFF and original equity model as of year-end 2021.
<b>Test #5b</b>	Same as #5a but using a 12/31/19 starting yield curve modified using a 200 BP increase across all maturities. The parameters of Conning's original Equity model are used without any adjustment.	Stresses the starting Treasury rates to understand the full impact of equity-Treasury linkage in Conning's original equity model
Test #6	Same as #1a, but with the ACLI's GEMS® Equity Calibration	Tests the ACLI's GEMS® Equity Calibration that assumes a constant mean equity return independent of rates and increases alignment with AIRG equity model GWFs

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6

**NAIC NATIONAL MEETING SPRING 2023**

## Field Test Participation: VM-21 and C3 Phase II

- 26 participant legal entity results are summarized in this presentation. The individual level of participation for each field test run is shown below.
- Hedging practices varied throughout the field test participants, but a majority used 1,000 scenario subset sizes and the AIRG in their reporting.
- Several participants commented that the value of results for field test runs 3 and 4 may be limited, and therefore those results have not been prioritized to be included in this presentation.

Hedge Modeling	Implicit	Explicit	No Model	Runoff
	7	8	9	2
Was Proprietary Economic Scenario Generator Used?	Yes		No	
	4		22	
Number of Scenarios	1000		<1000	>=1000
	22		2	2

**Valuation Dates:** 12/31/21 12/31/19 + 200 BP Hybrid

Field Test Run	Baseline 1*	Baseline 2	1A*	1B*	2A*	2B*	3	4	5A*	5B*	6
Number of Participants	26	11	26	26	26	26	13	13	25	25	12

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7

**NAIC NATIONAL MEETING SPRING 2023**

## Participant Separate Account Fund Distribution

Equity and Bond Funds (AIRG Names)	Type	Average Variable Annuity Separate Account Allocation
Diversified Large Capitalized U.S. Equity	Equity	41.3%
Diversified International Equity	Equity	10.9%
Intermediate Risk Equity	Equity	11.3%
Aggressive Equity	Equity	6.7%
Money Market	Bond	4.0%
U.S. Intermediate Term Government Bonds	Bond	4.3%
U.S. Long Term Corporate Bonds	Bond	12.6%
Diversified Fixed Income	Bond	5.3%
Diversified Balanced Allocation (60/40)	Equity and Bond	3.6%
<b>Total</b>		<b>100%</b>

Average Equity Fund Separate Account Allocation: **72.4%**

Average Bond Fund Separate Account Allocation: **27.6%**

- Participants were asked to provide the approximate separate account fund mapping that was used for the 12/31/21 field test runs. Data from 26 participating legal entities was included in this analysis.
- The average separate account allocation is shown in the table. Note that the average is simply an average allocation by fund across the participating legal entities, and is not weighted by the legal entity separate account balance
- All of the participating legal entities had a majority of their separate account funds mapped to equity funds, with the smallest allocation to equities being approximately 60%. The maximum equity fund allocation was 93%.

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8

**NAIC NATIONAL MEETING SPRING 2023**

## Participant Guaranteed Benefit Type Distribution

Type of Guaranteed Minimum Death or Living Benefit	Average Variable Annuity GMXB Allocation by:	
	% of Separate Account	% of Net Amount at Risk
Guaranteed Minimum Death Benefit (GMDB) Only	40.2%	46.9%
GMDB/Guaranteed Minimum Income Benefit (GMIB) Combo	9.3%	7.4%
GMDB/Guaranteed Minimum Withdrawal Benefit (GMWB) Combo	41.9%	41.4%
GMDB/Guaranteed Minimum Accumulation Benefit (GMAB) Combo	0.4%	0.1%
Other Benefit Combination	8.3%	4.3%
<b>Total</b>	<b>100%</b>	<b>100%</b>

- The distributions of guaranteed benefit types provided in the table above are shown as a percentage of separate account and as a percentage of net-amount-at-risk (NAAR). Note that the average above is a simple average across the participants and does not reflect any weighting by participant separate account or NAAR.
- The most prevalent guarantee types, by both the separate account and NAAR measures, are GMDB only and GMDB/GMWB combo.
- While the distribution of guaranteed benefits offered by companies could vary significantly within individual participants between the separate account and NAAR measures, overall, the measures showed a similar prevalence of guarantee types across participants.

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9

**NAIC NATIONAL MEETING SPRING 2023**

## High-Level Results: Comparisons to Baseline

Average Percent Increase over Baseline	Statistic	1A	1B	2A	2B	5A	5B	6
VM-21 Reserve for Guaranteed Benefits	Max	1,578%	1,279%	2,730%	2,802%	2,862%	5,645%	492%
	Average	29.4%	13.4%	13.5%	5.6%	78.7%	28.3%	10.1%
	Min	-20.7%	-47.8%	-94.9%	-79.5%	4.3%	0%	-14.0%
Risk-Based Capital	Max	6,782%	755%	2,709%	3,136%	17,100%	4,599%	12,161%
	Average	69.1%	43.4%	9.7%	11.6%	114%	26.5%	56%
	Min	-56.4%	-100%	-88.2%	-88.2%	-21.0%	-12.7%	-8.2%
<b>Number of Participants</b>		<b>26</b>	<b>26</b>	<b>11</b>	<b>11</b>	<b>25</b>	<b>11</b>	<b>12</b>

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10

## High-Level Observations

- For every field test run, there was a huge range in the reserve and capital impacts across the participating companies. Additional review of individual company results in a regulator-only session may provide a more complete understanding of the underlying factors behind the range of results.
- The field test runs generally produced increases in reserves and capital. However, a minority of participants had substantial reserve and/or capital decreases for some of the runs.
- A number of companies commented that guaranteed benefits were out-of-the-money due to the economic environment (favorable stock market), and that field test impacts would have been larger if a less favorable environment had been tested.

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11

## Drivers of Field Test Results

- **Hedging** – Companies that modeled hedging (either implicitly or explicitly) had much smaller impacts to reserves and capital on average vs. those that did not.
- **Relative importance of equity returns vs. interest rates** – This varied among companies. Many commented that equity returns were the main driver of results, while others noted that equity and interest rate impacts were nearly equal, or that interest rates were the primary driver.
- **Distribution of guaranteed benefit types** – There was a range in the distribution of guaranteed benefit types among participants. Some had primarily GMDB or lower guarantees, leading to smaller impacts vs. those with richer benefits.
- **Proprietary economic scenario generators** - Some companies used a proprietary economic scenario generator to produce their baseline results, so reserve and/or capital increases are generally smaller (since these generators are typically more conservative than the AIRG).
- **Hedge costs** - Some companies noted that the field test runs increased hedge costs.
- **Company-specific modeling assumptions** – For some companies, this had a significant impact

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12

**NAIC NATIONAL MEETING SPRING 2023**

## High-level Results: Stability of Results Across Valuation Dates

- On average, reserves and capital decreased when comparing the results produced using the 12/31/19 + 200 BP scenarios to their corresponding 12/31/21 results (i.e. Baseline 1 vs Baseline 2, 1A vs 2A, 1B vs 2B, and 5A vs. 5B)
- For reserves, the smallest change in magnitude (and tightest range of results) came from comparing Baseline 1 to Baseline 2. However, the average reduction in reserves was comparable to the other field test results. The comparison of 5B to 5A (which included the full impact of the GEMS® equity-Treasury linkage) showed the largest swing in reserves.
- For risk-based capital results, the average decrease in results from Baseline 1 to Baseline 2 (-0.9%) was much smaller in magnitude than the other field test runs. The change from 1A to 2A was the largest in magnitude, but was comparable to the change seen from 1B to 2B and from 5A to 5B.

Reserve/Capital Amount	% Increase from Baseline 1 to Baseline 2			% Increase from 1A to 2A			% Increase from 1B to 2B			% Increase from 5A to 5B		
	Min	Avg.	Max	Min	Avg.	Max	Min	Avg.	Max	Min	Avg.	Max
<b>VM-21 Reserve for Guaranteed Benefits</b>	-84.2%	-51.7%	89.1%	-100%	-63.4%	1,486%	-100%	-61.4%	4,668%	-100%	-68.6%	255.3%
<b>Risk-Based Capital</b>	-100%	-0.9%	746.2%	-100%	-67.6%	20.7%	-100%	-66.4%	77.4%	-100%	-59.5%	63.2%
<b>Number of Participants</b>	11			26			26			25		


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13

**NAIC NATIONAL MEETING SPRING 2023**

## Next Steps

- The NAIC will look to present economic scenario generator field test results for VM-20 and C3 Phase I in the next 1 – 2 months after the Spring National Meeting. Additional time for follow-up discussions may be necessary
- Regulators will continue to work with interested parties in economic scenario generator drafting groups to continue progress on reserve/capital framework specific implementation tasks
- The Life Actuarial (A) Task Force will engage with the American Academy of Actuaries and other interested parties to decide on stylized facts and acceptance criteria ahead of a recalibration of the economic scenario generator and a second field test.



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14





# Detailed Field Test Results: VM-21/C3 Phase II

15

## Field Test 1A: US Treasury Overview

- Field Test 1A (as of 12/31/21) included a recalibration of the Conning GEMS® US Treasury model that was designed to meet the regulator’s acceptance criteria related to low for long, the prevalence of high interest rates, upper and lower bounds, initial yield curve fit, and yield curve shape. The frequency and severity of negative interest rates were controlled using a generalized fractional floor.
- The 1A UST scenario set as of 12/31/21 had a much higher prevalence of low UST rates, including negative interest rates, compared to the scenarios produced by the AIRG as of 12/31/21, which is floored at 1 BP.
- The 1A UST scenario set also included greater and more frequent high UST rates, with maximum UST rates greatly exceeding that of the AIRG. While a floor was employed in all of the field test UST scenario sets, no cap was employed on how high rates could get.

**1A: 10,000 1-yr UST Scenario Percentiles by Projection Month as of 12/31/21**

Percentile	12	60	120	240	360
Min	-0.49%	-0.97%	-0.94%	-0.91%	-0.93%
1%	-0.17%	-0.51%	-0.58%	-0.56%	-0.56%
10%	0.10%	-0.14%	-0.19%	-0.13%	-0.11%
25%	0.25%	0.14%	0.14%	0.19%	0.25%
50%	0.62%	0.84%	1.18%	1.61%	2.09%
75%	1.63%	2.83%	3.59%	4.39%	4.93%
95%	3.15%	6.14%	7.78%	9.35%	10.38%
99%	4.32%	8.86%	11.38%	13.53%	14.47%
Max	7.93%	14.36%	19.89%	25.18%	26.72%

**AIRG: 10,000 1-yr UST Scenario Percentiles by Projection Month as of 12/31/21**

Percentile	12	60	120	240	360
Min	0.01%	0.01%	0.01%	0.01%	0.01%
1%	0.01%	0.21%	0.33%	0.32%	0.32%
10%	0.27%	0.66%	0.87%	0.98%	0.99%
25%	0.47%	0.96%	1.22%	1.41%	1.45%
50%	0.69%	1.35%	1.68%	1.99%	2.10%
75%	0.92%	1.78%	2.27%	2.74%	2.90%
95%	1.29%	2.57%	3.40%	4.29%	4.66%
99%	1.59%	3.37%	4.75%	6.17%	6.31%
Max	2.31%	5.82%	10.94%	13.22%	12.76%

**1A-AIRG: 10,000 1-yr UST Scenario Percentiles by Projection Month**

Difference	12	60	120	240	360
Min	-0.5%	-1.0%	-0.9%	-0.9%	-0.9%
1%	-0.2%	-0.7%	-0.9%	-0.9%	-0.9%
10%	-0.2%	-0.8%	-1.1%	-1.1%	-1.1%
25%	-0.2%	-0.8%	-1.1%	-1.2%	-1.2%
50%	-0.1%	-0.5%	-0.5%	-0.4%	0.0%
75%	0.7%	1.0%	1.3%	1.7%	2.0%
95%	1.9%	3.6%	4.4%	5.1%	5.7%
99%	2.7%	5.5%	6.7%	7.4%	8.2%
Max	5.6%	8.5%	8.9%	12.0%	14.0%

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16

## Field Test 1A: Equity Overview

- The 1A equity scenario set used a calibration that targeted the median gross wealth factor (GWF) produced by the AIRG at the end of 30 years. This recentering of the equity return distribution with changes to the starting interest environment partially mitigates the impact of the GEMS® equity-Treasury linkage functionality.
- While the GWF's between the AIRG and field test 1A are consistent at the 50<sup>th</sup> percentile at the end of the 30<sup>th</sup> projection year, the 1A scenario set generally has somewhat lower GWFs in the lower percentiles and earlier projection years compared to the AIRG.
- In the later durations and higher percentiles, the 1A GWFs are greater than those produced by the AIRG.

**1A: 10,000 SP500 GWF %-tiles by Projection Month**

	12	60	120	240	360
Min	0.50	0.28	0.24	0.39	0.39
1.0%	0.71	0.59	0.59	0.83	1.17
2.5%	0.77	0.68	0.75	1.06	1.60
5.0%	0.82	0.78	0.87	1.34	2.11
10.0%	0.87	0.89	1.05	1.69	2.86
25.0%	0.97	1.09	1.40	2.54	4.88
50.0%	1.07	1.35	1.88	4.01	8.99
75.0%	1.16	1.64	2.57	6.49	16.98
90.0%	1.25	1.96	3.41	10.26	31.70
95.0%	1.31	2.20	4.04	13.67	47.46
97.5%	1.35	2.45	4.70	17.57	66.83
99.0%	1.41	2.77	5.65	23.45	101.58
Max	1.81	4.53	13.89	55.97	457.07

**AIRG: 10,000 SP500 GWF %-tiles by Projection Month**

	12	60	120	240	360
Min	0.41	0.32	0.26	0.35	0.38
1.0%	0.70	0.62	0.66	0.83	1.22
2.5%	0.76	0.72	0.77	1.10	1.69
5.0%	0.82	0.81	0.92	1.41	2.25
10.0%	0.89	0.93	1.12	1.83	3.09
25.0%	0.98	1.16	1.51	2.74	5.11
50.0%	1.09	1.45	2.09	4.27	8.84
75.0%	1.19	1.81	2.88	6.80	15.35
90.0%	1.30	2.22	3.81	10.15	24.98
95.0%	1.37	2.48	4.44	12.92	34.25
97.5%	1.44	2.72	5.17	15.65	45.88
99.0%	1.52	3.06	6.18	20.49	60.45
Max	1.92	4.77	11.86	66.94	235.95

**1A/AIRG: GWF Ratios by Projection Month**

SP500	12	60	120	240	360
Min	123%	90%	94%	113%	101%
1.0%	101%	96%	90%	100%	95%
2.5%	102%	95%	97%	96%	95%
5.0%	100%	96%	95%	95%	94%
10.0%	99%	96%	93%	92%	92%
25.0%	98%	94%	92%	93%	96%
50.0%	98%	93%	90%	94%	102%
75.0%	98%	90%	90%	95%	111%
90.0%	97%	88%	90%	101%	127%
95.0%	95%	89%	91%	106%	139%
97.5%	94%	90%	91%	112%	146%
99.0%	93%	90%	92%	114%	168%
Max	94%	95%	117%	84%	194%

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17

## Field Test 1A Quantitative Results

- For field test 1A, the average field test participant VM-21 reserve for guaranteed benefits increased by 29.4% and the average Risk-Based Capital increased by 69.1%.
- However, the results were highly skewed among participants, with many seeing higher impacts to reserves and capital than the average indicates.
- Several participants noted that the lower equity returns and lower (and negative) interest rates that were more prevalent in 1A compared to the AIRG led to increases in reserves and capital. The lower equity returns result in more guaranteed benefits being in-the-money and less account value-based fee income. Lower interest rates lead to less discounting of future guaranteed benefit claims.
- Participants that modeled hedging (implicitly or explicitly) saw smaller impacts to reserves (25.4%) and capital (67.8%) than those that did not model hedging (163.3% and 91.6% for reserves and capital respectively).

Reserve/Capital Amount	Percentage Increase over Baseline					
	Average	Min	Percentiles			Max
			25th	50th	75th	
<b>VM-21 Reserve for Guaranteed Benefits</b>	29.4%	-20.7%	19.0%	69.5%	170.5%	1,578%
<b>Risk-Based Capital</b>	69.1%	-56.4%	11.6%	29.6%	256.9%	6,782%

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**26/30 Participants**

18

## Field Test 1B: US Treasury Overview

- Field Test 1B (as of 12/31/21) included a calibration of the Conning GEMS® US Treasury model that was designed to meet regulator acceptance criteria but placed additional emphasis on maintaining realistic term premiums throughout the projection. Towards that end, there was a significantly lower frequency of inversions (e.g. ~5% of 1B scenarios had 10 year/2year UST inversions at the end of year 30 compared to ~12% seen in 1A). The average level of inversion was also significantly lower (e.g. in 1B 10 year/2 year UST inversions average ~30 BP at the end of year 30, compared to ~90 BP average inversion level for 1A).
- 1B also included lower and less frequent high interest rates than 1A, but still contained greater and more frequent high interest rates than the AIRG.
- The frequency and severity of negative interest rates were controlled using a shadow floor that preserves the arbitrage free nature of the scenarios. The 1B UST scenario set has a comparable amount of low/negative UST rates to 1A, but significantly more severe and frequent low (and negative) UST rates compared to the AIRG.

**1B: 10,000 1-yr UST Scenario Percentiles by Projection Month**

Percentile	12	60	120	240	360
Min	-0.59%	-1.08%	-1.24%	-1.18%	-1.19%
1%	-0.10%	-0.51%	-0.61%	-0.59%	-0.58%
10%	0.22%	-0.04%	-0.10%	-0.02%	0.06%
25%	0.42%	0.26%	0.27%	0.37%	0.49%
50%	0.65%	0.65%	0.71%	0.88%	1.28%
75%	0.88%	1.24%	1.67%	2.60%	3.52%
95%	1.76%	3.38%	4.38%	5.99%	7.49%
99%	2.57%	4.89%	6.44%	8.90%	10.64%
Max	4.25%	10.28%	11.63%	17.99%	22.87%

**AIRG: 10,000 1-yr UST Scenario Percentiles by Projection Month**

Percentile	12	60	120	240	360
Min	0.01%	0.01%	0.01%	0.01%	0.01%
1%	0.01%	0.21%	0.33%	0.32%	0.32%
10%	0.27%	0.66%	0.87%	0.98%	0.99%
25%	0.47%	0.96%	1.22%	1.41%	1.45%
50%	0.69%	1.35%	1.68%	1.99%	2.10%
75%	0.92%	1.78%	2.27%	2.74%	2.90%
95%	1.29%	2.57%	3.40%	4.29%	4.66%
99%	1.59%	3.37%	4.75%	6.17%	6.31%
Max	2.31%	5.82%	10.94%	13.22%	12.76%

**1B-AIRG: 10,000 1-yr UST Scenario Percentiles by Projection Month**

Difference	12	60	120	240	360
Min	-0.6%	-1.1%	-1.2%	-1.2%	-1.2%
1%	-0.1%	-0.7%	-0.9%	-0.9%	-0.9%
10%	0.0%	-0.7%	-1.0%	-1.0%	-0.9%
25%	-0.1%	-0.7%	-1.0%	-1.0%	-1.0%
50%	0.0%	-0.7%	-1.0%	-1.1%	-0.8%
75%	0.0%	-0.5%	-0.6%	-0.1%	0.6%
95%	0.5%	0.8%	1.0%	1.7%	2.8%
99%	1.0%	1.5%	1.7%	2.7%	4.3%
Max	1.9%	4.5%	0.7%	4.8%	10.1%

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19

## Field Test 1B: Equity Overview

- The 1B equity scenario set used the same calibration as 1A. However, due to the equity-Treasury linkage, the resulting GWFs are different. The largest differences between the 1A and 1B equity GWFs are seen at the upper percentiles at the end of the 30<sup>th</sup> projection year, with the 1B being substantially lower and more in line with the AIRG.
- The median GWF at the end of the 30<sup>th</sup> projection year for 1B (7.99) is materially lower than both 1A (8.99) and the AIRG (8.84).
- Finally, the 1<sup>st</sup> percentile GWF at the end of the 30<sup>th</sup> projection year for 1b (1.19) was consistent with those of 1A (1.17) and the AIRG (1.22).

**1B: 10,000 SP500 GWF %-tiles by Projection Month**

	12	60	120	240	360
Min	0.51	0.30	0.26	0.34	0.27
1.0%	0.71	0.61	0.61	0.82	1.19
2.5%	0.78	0.70	0.76	1.05	1.59
5.0%	0.83	0.80	0.90	1.33	2.07
10.0%	0.88	0.92	1.08	1.68	2.72
25.0%	0.98	1.12	1.42	2.47	4.57
50.0%	1.08	1.38	1.90	3.78	7.99
75.0%	1.17	1.68	2.56	5.85	13.71
90.0%	1.26	2.00	3.32	8.61	23.14
95.0%	1.32	2.24	3.94	10.91	32.00
97.5%	1.36	2.50	4.53	13.70	43.02
99.0%	1.42	2.80	5.44	17.25	61.86
Max	1.83	4.67	14.21	76.72	258.35

**AIRG: 10,000 SP500 GWF %-tiles by Projection Month**

	12	60	120	240	360
Min	0.41	0.32	0.26	0.35	0.38
1.0%	0.70	0.62	0.66	0.83	1.22
2.5%	0.76	0.72	0.77	1.10	1.69
5.0%	0.82	0.81	0.92	1.41	2.25
10.0%	0.89	0.93	1.12	1.83	3.09
25.0%	0.98	1.16	1.51	2.74	5.11
50.0%	1.09	1.45	2.09	4.27	8.84
75.0%	1.19	1.81	2.88	6.80	15.35
90.0%	1.30	2.22	3.81	10.15	24.98
95.0%	1.37	2.48	4.44	12.92	34.25
97.5%	1.44	2.72	5.17	15.65	45.88
99.0%	1.52	3.06	6.18	20.49	60.45
Max	1.92	4.77	11.86	66.94	235.95

**1B/AIRG: GWF Ratios by Projection Month**

SP500	12	60	120	240	360
Min	124%	94%	102%	98%	71%
1.0%	102%	98%	93%	99%	98%
2.5%	103%	98%	99%	95%	94%
5.0%	101%	99%	97%	94%	92%
10.0%	100%	99%	96%	92%	88%
25.0%	99%	97%	94%	90%	89%
50.0%	99%	95%	91%	88%	90%
75.0%	99%	93%	89%	86%	89%
90.0%	97%	90%	87%	85%	93%
95.0%	96%	90%	89%	84%	93%
97.5%	95%	92%	88%	88%	94%
99.0%	94%	91%	88%	84%	102%
Max	95%	98%	120%	115%	109%

NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

20

**NAIC NATIONAL MEETING SPRING 2023**

## Field Test 1B Quantitative Results

- For field test 1B, the average field test participant VM-21 reserve for guaranteed benefits increased by 13.4%, and the average Risk-Based Capital increased by 43.3%, compared to 29.4% and 68.0% for 1A reserves and capital, respectively.
- Some participants noted exposure to high UST rates, which were less frequent and severe in 1B compared to 1A.
- Participants that modeled hedging (implicitly or explicitly) saw smaller impacts to reserves (10.1%) and capital (41.9%) than those that did not model hedging (127.4% and 68.9% for reserves and capital respectively).

Reserve/Capital Amount	Percentage Increase over Baseline					
	Average	Min	Percentiles			Max
			25th	50th	75th	
<b>VM-21 Reserve for Guaranteed Benefits</b>	13.4%	-47.8%	3.9%	23.7%	53.2%	1,279%
<b>Risk-Based Capital</b>	43.4%	-100.0%	-12.8%	5.1%	40.7%	755%

NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

26/30 Participants

21

**NAIC NATIONAL MEETING SPRING 2023**

## Field Test 2A: US Treasury Overview

- Field Test 2A (as of 12/31/19 + 200 BP) used the same calibration as 1A (Conning Calibration with a Generalized Fractional Floor) but with a 12/31/19 starting yield curve modified using a 200 BP increase across all maturities.
- The higher starting interest environment leads to greater and more frequent high interest rates and less severe and less frequent low interest rates in 2A compared to 1A.
- Compared to the AIRG with a 12/31/19 + 200 BP starting interest environment, the 2A scenario set has a greater frequency and severity of high UST rates and more prevalent and severe low (and negative) UST rates.

**2A (12/31/19 + 200 BP): 10,000 1-yr UST Scenario Percentiles by Projection Month**

Percentile	12	60	120	240	360
Min	-0.13%	-0.78%	-0.82%	-0.89%	-0.92%
1%	0.29%	-0.27%	-0.42%	-0.49%	-0.53%
10%	1.34%	0.19%	0.02%	-0.04%	-0.06%
25%	2.26%	0.87%	0.39%	0.31%	0.32%
50%	3.34%	2.89%	2.69%	2.43%	2.54%
75%	4.49%	5.15%	5.38%	5.47%	5.53%
95%	6.19%	8.80%	10.06%	10.86%	11.30%
99%	7.44%	11.88%	13.61%	15.32%	15.70%
Max	11.48%	17.62%	22.91%	27.07%	28.97%

**AIRG (12/31/19 + 200 BP): 10,000 1-yr UST Scenario Percentiles by Projection Month**

Percentile	12	60	120	240	360
Min	0.31%	0.01%	0.01%	0.01%	0.01%
1%	1.25%	0.47%	0.34%	0.29%	0.31%
10%	1.82%	1.22%	1.06%	1.04%	1.00%
25%	2.16%	1.72%	1.58%	1.53%	1.50%
50%	2.53%	2.35%	2.24%	2.21%	2.18%
75%	2.92%	3.06%	3.08%	3.10%	3.05%
95%	3.55%	4.39%	4.77%	4.96%	4.94%
99%	4.06%	5.66%	6.73%	7.29%	6.73%
Max	5.24%	9.85%	16.66%	15.13%	13.59%

**2A-AIRG: 10,000 1-yr UST Scenario Percentiles by Projection Month**

Difference	12	60	120	240	360
Min	-0.4%	-0.8%	-0.8%	-0.9%	-0.9%
1%	-1.0%	-0.7%	-0.8%	-0.8%	-0.8%
10%	-0.5%	-1.0%	-1.0%	-1.1%	-1.1%
25%	0.1%	-0.8%	-1.2%	-1.2%	-1.2%
50%	0.8%	0.5%	0.4%	0.2%	0.4%
75%	1.6%	2.1%	2.3%	2.4%	2.5%
95%	2.6%	4.4%	5.3%	5.9%	6.4%
99%	3.4%	6.2%	6.9%	8.0%	9.0%
Max	6.2%	7.8%	6.3%	11.9%	15.4%

NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

22

## Field Test 2A: Equity Overview

- The targets of the 2A equity scenarios is designed to align the GWF at the end of the 30<sup>th</sup> projection year (8.97) with those produced by the AIRG (8.84) no matter the starting interest rate environment. However, there is still an impact to the 2A equity scenarios due to the increased starting interest rate environment and the equity-Treasury linkage compared to the 1A equity scenarios.
- The largest differences between the 2A and 1A equity GWFs are seen at the upper percentiles at the end of the 30<sup>th</sup> projection year, for example the 99<sup>th</sup> percentile GWF for 1b is 127.28 at the end of the 30<sup>th</sup> year compared to 101.58 for the 1A scenario set.
- The same considerations apply when comparing 2A to the AIRG with a 12/31/19 + 200 BP starting interest rate environment, with the largest differences between the GWFs of 2A and the AIRG occurring in the higher percentiles and later projection years.

**2A: 10,000 SP500 GWF %-tiles by Projection Month**

	12	60	120	240	360
Min	0.51	0.30	0.26	0.40	0.36
1.0%	0.73	0.65	0.64	0.83	1.07
2.5%	0.79	0.75	0.80	1.08	1.46
5.0%	0.84	0.85	0.95	1.34	1.93
10.0%	0.90	0.97	1.15	1.73	2.63
25.0%	1.00	1.20	1.54	2.64	4.71
50.0%	1.10	1.48	2.11	4.38	8.97
75.0%	1.20	1.82	2.96	7.42	18.20
90.0%	1.29	2.19	4.01	12.10	35.66
95.0%	1.35	2.46	4.74	16.60	54.53
97.5%	1.39	2.73	5.63	22.33	83.32
99.0%	1.45	3.10	7.00	30.39	127.28
Max	1.87	5.11	15.80	86.26	817.22

**AIRG: 10,000 SP500 GWF %-tiles by Projection Month**

	12	60	120	240	360
Min	0.41	0.32	0.26	0.35	0.38
1.0%	0.70	0.62	0.66	0.83	1.22
2.5%	0.76	0.72	0.77	1.10	1.69
5.0%	0.82	0.81	0.92	1.41	2.25
10.0%	0.89	0.93	1.12	1.83	3.09
25.0%	0.98	1.16	1.51	2.74	5.11
50.0%	1.09	1.45	2.09	4.27	8.84
75.0%	1.19	1.81	2.88	6.80	15.35
90.0%	1.30	2.22	3.81	10.15	24.98
95.0%	1.37	2.48	4.44	12.92	34.25
97.5%	1.44	2.72	5.17	15.65	45.88
99.0%	1.52	3.06	6.18	20.49	60.45
Max	1.92	4.77	11.86	66.94	235.95

**2A/AIRG: GWF Ratios by Projection Month**

SP500	12	60	120	240	360
Min	124%	95%	99%	116%	94%
1.0%	104%	104%	97%	100%	88%
2.5%	105%	103%	103%	98%	87%
5.0%	103%	105%	103%	95%	86%
10.0%	101%	104%	102%	94%	85%
25.0%	101%	103%	102%	96%	92%
50.0%	101%	102%	101%	103%	101%
75.0%	101%	100%	103%	109%	119%
90.0%	100%	99%	105%	119%	143%
95.0%	98%	99%	107%	129%	159%
97.5%	97%	100%	109%	143%	182%
99.0%	96%	101%	113%	148%	211%
Max	98%	107%	133%	129%	346%

NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

23

## Field Test 2A Quantitative Results

- The average field test participant VM-21 reserve for guaranteed benefits increased by 13.5%, and the average Risk-Based Capital increased by 9.7%.
- Comparisons to the baseline results were limited by participation in the optional Baseline 2 run.
- Less severe and less frequent low (and negative) UST rates combined with higher equity GWFs (relative to 1A) throughout the projection contributed to smaller reserve and capital increases.
- Participants that modeled hedging (implicitly or explicitly) saw smaller impacts to reserves (10.1%) and capital (41.9%) than those that did not model hedging (127.4% and 68.9% for reserves and capital respectively).

Reserve/Capital Amount	Percentage Increase over Baseline					
	Average	Min	Percentiles			Max
			25th	50th	75th	
<b>VM-21 Reserve for Guaranteed Benefits</b>	13.5%	-94.9%	-29.8%	0%	21.5%	2,730%
<b>Risk-Based Capital</b>	9.7%	-88.2%	-15.1%	-0.5%	24.3%	2,709%

NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

**11/30 Participants**

24

## Field Test 2B: US Treasury Overview

- Field Test 2B (as of 12/31/19 + 200 BP) used the same calibration as 1B (Alternative Calibration with Shadow Floor) but with a 12/31/19 starting yield curve modified using a 200 BP increase across all maturities. Again, generally inversions were significantly less frequent and less severe in the 2B scenario set compared to 2A.
- The higher starting interest environment leads to greater and more frequent high interest rates and less severe and frequent low interest rates in 2B compared to 1B.
- Compared to the AIRG with a 12/31/19 + 200 BP starting interest environment, the 2B scenario set has a greater frequency and severity of high UST rates and more prevalent and severe low (and negative) UST rates.
- Compared to the 2A scenario set, the 2B scenario set has less frequent negative UST rates and less frequent 1-year UST rates over 10%.

**2B: 10,000 1-yr UST Scenario Percentiles by Projection Month**

Percentile	12	60	120	240	360
Min	0.28%	-0.64%	-0.99%	-1.05%	-1.14%
1%	0.77%	0.11%	-0.17%	-0.33%	-0.44%
10%	1.49%	0.70%	0.48%	0.36%	0.31%
25%	2.27%	1.30%	0.97%	0.86%	0.83%
50%	3.12%	2.83%	2.78%	2.64%	2.69%
75%	3.99%	4.54%	4.79%	5.04%	5.35%
95%	5.31%	7.10%	8.25%	9.24%	10.18%
99%	6.23%	9.11%	10.77%	12.84%	13.81%
Max	8.40%	15.44%	17.83%	23.70%	28.40%

**AIRG (12/31/19 + 200 BP): 10,000 1-yr UST Scenario Percentiles by Projection Month**

Percentile	12	60	120	240	360
Min	0.31%	0.01%	0.01%	0.01%	0.01%
1%	1.25%	0.47%	0.34%	0.29%	0.31%
10%	1.82%	1.22%	1.06%	1.04%	1.00%
25%	2.16%	1.72%	1.58%	1.53%	1.50%
50%	2.53%	2.35%	2.24%	2.21%	2.18%
75%	2.92%	3.06%	3.08%	3.10%	3.05%
95%	3.55%	4.39%	4.77%	4.96%	4.94%
99%	4.06%	5.66%	6.73%	7.29%	6.73%
Max	5.24%	9.85%	16.66%	15.13%	13.59%

**2B-AIRG: 10,000 1-yr UST Scenario Percentiles by Projection Month**

Difference	12	60	120	240	360
Min	0.0%	-0.6%	-1.0%	-1.1%	-1.2%
1%	-0.5%	-0.4%	-0.5%	-0.6%	-0.7%
10%	-0.3%	-0.5%	-0.6%	-0.7%	-0.7%
25%	0.1%	-0.4%	-0.6%	-0.7%	-0.7%
50%	0.6%	0.5%	0.5%	0.4%	0.5%
75%	1.1%	1.5%	1.7%	1.9%	2.3%
95%	1.8%	2.7%	3.5%	4.3%	5.2%
99%	2.2%	3.4%	4.0%	5.5%	7.1%
Max	3.2%	5.6%	1.2%	8.6%	14.8%

NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

25

## Field Test 2B: Equity Overview

- The 2B equity scenario set used the same calibration as 2A. However, due to the equity-Treasury linkage, the resulting GWFs are different. The largest differences between the 2A and 2B equity GWFs are seen at the upper percentiles at the end of the 30<sup>th</sup> projection year, with the 2B being substantially lower and more in line with the AIRG (though still higher).
- The median GWF at the end of the 30<sup>th</sup> projection year for 2B (9.15) is consistent with both 2A (8.97) and the AIRG (8.84).
- Finally, the 1<sup>st</sup> percentile GWF at the end of the 30<sup>th</sup> projection year for 2B (1.13) was consistent with those of 1A (1.17) and the AIRG (1.22).

**2B: 10,000 SP500 GWF %-tiles by Projection Month**

	12	60	120	240	360
Min	0.51	0.32	0.30	0.40	0.35
1.0%	0.73	0.63	0.64	0.85	1.13
2.5%	0.79	0.74	0.81	1.09	1.58
5.0%	0.84	0.84	0.96	1.37	2.04
10.0%	0.90	0.96	1.14	1.79	2.80
25.0%	0.99	1.18	1.54	2.71	4.89
50.0%	1.10	1.46	2.08	4.34	9.15
75.0%	1.20	1.78	2.84	7.02	17.15
90.0%	1.29	2.13	3.75	10.90	31.48
95.0%	1.34	2.39	4.50	14.15	47.27
97.5%	1.39	2.66	5.20	18.23	66.95
99.0%	1.45	3.01	6.21	24.31	103.48
Max	1.87	4.81	16.83	142.35	599.47

**AIRG: 10,000 SP500 GWF %-tiles by Projection Month**

	12	60	120	240	360
Min	0.41	0.32	0.26	0.35	0.38
1.0%	0.70	0.62	0.66	0.83	1.22
2.5%	0.76	0.72	0.77	1.10	1.69
5.0%	0.82	0.81	0.92	1.41	2.25
10.0%	0.89	0.93	1.12	1.83	3.09
25.0%	0.98	1.16	1.51	2.74	5.11
50.0%	1.09	1.45	2.09	4.27	8.84
75.0%	1.19	1.81	2.88	6.80	15.35
90.0%	1.30	2.22	3.81	10.15	24.98
95.0%	1.37	2.48	4.44	12.92	34.25
97.5%	1.44	2.72	5.17	15.65	45.88
99.0%	1.52	3.06	6.18	20.49	60.45
Max	1.92	4.77	11.86	66.94	235.95

**2B/AIRG: GWF Ratios by Projection Month**

SP500	12	60	120	240	360
Min	124%	100%	116%	116%	92%
1.0%	104%	102%	98%	103%	92%
2.5%	104%	102%	105%	99%	94%
5.0%	103%	104%	103%	97%	91%
10.0%	101%	103%	102%	98%	90%
25.0%	101%	102%	102%	99%	96%
50.0%	101%	100%	100%	102%	103%
75.0%	101%	98%	99%	103%	112%
90.0%	99%	96%	99%	107%	126%
95.0%	98%	97%	101%	110%	138%
97.5%	97%	98%	101%	117%	146%
99.0%	95%	98%	101%	119%	171%
Max	97%	101%	142%	213%	254%

NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

26

## Field Test 2B Quantitative Results

- The average field test participant VM-21 reserve for guaranteed benefits increased by 5.6%, and the average Risk-Based Capital increased by 11.6%, compared to 13.5% and 9.7% for 2A reserves and capital, respectively.
- Participants that modeled hedging (implicitly or explicitly) saw smaller increases to reserves (4.1%) and capital (4.1%) than those that did not model hedging (276.0% and 414.6% for reserves and capital respectively).

Reserve/Capital Amount	Percentage Increase over Baseline					
	Average	Min	Percentiles			Max
			25th	50th	75th	
<b>VM-21 Reserve for Guaranteed Benefits</b>	5.6%	-79.5%	-1.4%	0.5%	42.8%	2,802%
<b>Risk-Based Capital</b>	11.6%	-88.2%	-4.8%	16.5%	26.7%	3,136%

NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

**11/30 Participants**

27

## Field Test 5A: Treasury and Equity Overview

- The 5A scenario set uses the exact same UST scenarios as 1A.
- For the 5A equity scenario set, the Conning's original equity model calibration is used that includes the full impact of the equity-Treasury linkage. With 5A's lower overall UST rates, the equity GWFs at the lower percentiles are much more severe than the AIRG and other field test scenario sets. For example, the 1<sup>st</sup> percentile of equity GWFs for 5A is .39, compared to 1.22 for the AIRG and 1.19 for 1A.
- The median GWF at the end of the 30<sup>th</sup> projection year for 5A (5.88) is significantly lower than with both 1A (8.99) and the AIRG (8.84).

5A: 10,000 SP500 GWF %-tiles by Projection Month

	12	60	120	240	360
Min	0.47	0.13	0.06	0.04	0.05
1.0%	0.71	0.45	0.36	0.38	0.39
2.5%	0.76	0.57	0.48	0.54	0.65
5.0%	0.82	0.67	0.63	0.73	0.95
10.0%	0.87	0.80	0.82	1.04	1.48
25.0%	0.96	1.02	1.20	1.79	2.93
50.0%	1.05	1.28	1.69	3.09	5.88
75.0%	1.14	1.56	2.31	5.11	11.43
90.0%	1.21	1.85	3.02	8.11	21.44
95.0%	1.26	2.04	3.59	10.76	32.94
97.5%	1.30	2.23	4.11	13.83	47.77
99.0%	1.35	2.50	4.83	18.95	71.23
Max	1.68	3.79	10.89	64.69	494.22

AIRG: 10,000 SP500 GWF %-tiles by Projection Month

	12	60	120	240	360
Min	0.41	0.32	0.26	0.35	0.38
1.0%	0.70	0.62	0.66	0.83	1.22
2.5%	0.76	0.72	0.77	1.10	1.69
5.0%	0.82	0.81	0.92	1.41	2.25
10.0%	0.89	0.93	1.12	1.83	3.09
25.0%	0.98	1.16	1.51	2.74	5.11
50.0%	1.09	1.45	2.09	4.27	8.84
75.0%	1.19	1.81	2.88	6.80	15.35
90.0%	1.30	2.22	3.81	10.15	24.98
95.0%	1.37	2.48	4.44	12.92	34.25
97.5%	1.44	2.72	5.17	15.65	45.88
99.0%	1.52	3.06	6.18	20.49	60.45
Max	1.92	4.77	11.86	66.94	235.95

5A/AIRG: GWF Ratios by Projection Month

SP500	12	60	120	240	360
Min	114%	40%	24%	11%	13%
1.0%	101%	73%	54%	46%	32%
2.5%	100%	79%	62%	49%	39%
5.0%	100%	83%	68%	51%	42%
10.0%	99%	86%	73%	57%	48%
25.0%	98%	88%	79%	65%	57%
50.0%	97%	88%	81%	72%	66%
75.0%	96%	86%	80%	75%	74%
90.0%	94%	83%	79%	80%	86%
95.0%	92%	82%	81%	83%	96%
97.5%	91%	82%	80%	88%	104%
99.0%	89%	82%	78%	92%	118%
Max	87%	80%	92%	97%	209%

NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

28

**NAIC NATIONAL MEETING SPRING 2023**

## Field Test 5A Quantitative Results

- The average field test participant VM-21 reserve for guaranteed benefits increased by 78.7%, and the average Risk-Based Capital increased by 114%.
- Several participants noted that the very low equity returns present in 5A were a major driver of the increase in their results.
- Participants that modeled hedging (implicitly or explicitly) saw smaller impacts to reserves (64.5%) and capital (108.7%) than those that did not model hedging (371.7% and 279.6% for reserves and capital respectively).

Reserve/Capital Amount	Percentage Increase over Baseline					
	Average	Min	Percentiles			Max
			25th	50th	75th	
<b>VM-21 Reserve for Guaranteed Benefits</b>	<b>78.7%</b>	<b>4.3%</b>	<b>69.9%</b>	<b>347.8%</b>	<b>643.6%</b>	<b>2,862%</b>
<b>Risk-Based Capital</b>	<b>114%</b>	<b>-21.0%</b>	<b>34.2%</b>	<b>84.6%</b>	<b>388.9%</b>	<b>17,100%</b>

NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

25/30 Participants

29

**NAIC NATIONAL MEETING SPRING 2023**

## Field Test 5B: Treasury and Equity Overview

- The 5B scenario set uses the exact same UST scenarios as 2A (as of 12/31/19 + 200 BP).
- For the 5B equity scenario set, the Conning's original equity model calibration is used that includes the full impact of the equity-Treasury linkage. With 5B's higher starting interest levels, the equity GWFs at the lower percentiles are higher than those in 5A, but still lower than those in the AIRG and 2A. For example, the 1<sup>st</sup> percentile of equity GWFs for 5A is .54, compared to 1.22 for the AIRG and 1.07 for 2A.
- The median GWF at the end of the 30<sup>th</sup> projection year for 5B is 8.59, which is in the ballpark of the corresponding GWFs for both 2A (8.97) and the AIRG (8.84).

	12	60	120	240	360
Min	0.48	0.14	0.07	0.05	0.07
1.0%	0.74	0.53	0.44	0.50	0.54
2.5%	0.79	0.66	0.60	0.71	0.90
5.0%	0.85	0.78	0.78	0.98	1.30
10.0%	0.91	0.93	1.03	1.39	2.05
25.0%	1.00	1.19	1.51	2.43	4.14
50.0%	1.10	1.50	2.15	4.33	8.59
75.0%	1.19	1.85	3.01	7.48	17.74
90.0%	1.27	2.20	4.04	12.44	35.86
95.0%	1.32	2.43	4.84	17.03	57.52
97.5%	1.36	2.69	5.60	22.65	84.51
99.0%	1.41	3.01	6.78	31.13	132.92
Max	1.76	4.87	16.46	115.46	1058.35

	12	60	120	240	360
Min	0.41	0.32	0.26	0.35	0.38
1.0%	0.70	0.62	0.66	0.83	1.22
2.5%	0.76	0.72	0.77	1.10	1.69
5.0%	0.82	0.81	0.92	1.41	2.25
10.0%	0.89	0.93	1.12	1.83	3.09
25.0%	0.98	1.16	1.51	2.74	5.11
50.0%	1.09	1.45	2.09	4.27	8.84
75.0%	1.19	1.81	2.88	6.80	15.35
90.0%	1.30	2.22	3.81	10.15	24.98
95.0%	1.37	2.48	4.44	12.92	34.25
97.5%	1.44	2.72	5.17	15.65	45.88
99.0%	1.52	3.06	6.18	20.49	60.45
Max	1.92	4.77	11.86	66.94	235.95

SP500	12	60	120	240	360
Min	118%	44%	27%	14%	17%
1.0%	106%	85%	67%	60%	44%
2.5%	105%	91%	77%	64%	54%
5.0%	104%	96%	85%	69%	58%
10.0%	103%	99%	91%	76%	66%
25.0%	102%	103%	99%	89%	81%
50.0%	101%	104%	103%	101%	97%
75.0%	100%	102%	105%	110%	116%
90.0%	98%	99%	106%	123%	144%
95.0%	96%	98%	109%	132%	168%
97.5%	95%	99%	109%	145%	184%
99.0%	93%	98%	110%	152%	220%
Max	92%	102%	139%	172%	449%

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30



## Field Test 5B Quantitative Results

- The average field test participant VM-21 reserve for guaranteed benefits increased by 28.3%, and the average Risk-Based Capital increased by 26.8% for field test 5B, compared to much higher average reserve (78.7%) and capital (114%) increases for 5A.
- The equity-Treasury linkage produced higher equity returns in the 5B scenario set as of 12/31/19 + 200 BP, leading to more favorable results for participants.
- Participants that modeled hedging (implicitly or explicitly) saw smaller increases to reserves (25.2%) and capital (15.1%) than those that did not model hedging (586.1% and 638.8% for reserves and capital respectively).

Reserve/Capital Amount	Percentage Increase over Baseline					
	Average	Min	Percentiles			Max
			25th	50th	75th	
<b>VM-21 Reserve for Guaranteed Benefits</b>	28.3%	0%	14.4%	68.7%	219.7%	5,645%
<b>Risk-Based Capital</b>	26.5%	-12.7%	5.9%	45.4%	84.4%	4,599%

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**11/30 Participants**

31

## Field Test 6: Treasury and Equity Overview

- The field test 6 scenario set uses the exact same UST scenarios as 1A.
- The equity calibration for scenario set 6 assumes a constant mean equity return independent of rates and increases alignment with AIRG equity model GWFs.
- The median GWF at the end of the 30<sup>th</sup> projection year for 6 is 9.49, which is close but somewhat higher than the the corresponding GWFs for both 1A (8.99) and the AIRG (8.84).
- While there are differences (somewhat lower GWFs in low percentiles, lower GWFs at higher percentiles), the equity scenarios from 6 overall are more consistent with those produced by the AIRG than other field test scenario sets.

6: 10,000 SP500 GWF %-tiles by Projection Month

	12	60	120	240	360
Min	0.43	0.14	0.13	0.31	0.23
1.0%	0.71	0.57	0.59	0.79	1.20
2.5%	0.77	0.68	0.76	1.08	1.73
5.0%	0.83	0.80	0.92	1.41	2.32
10.0%	0.89	0.94	1.14	1.85	3.20
25.0%	0.99	1.19	1.58	2.90	5.41
50.0%	1.09	1.50	2.17	4.55	9.49
75.0%	1.19	1.82	2.90	6.83	15.89
90.0%	1.28	2.15	3.66	9.85	24.35
95.0%	1.33	2.34	4.22	12.01	31.70
97.5%	1.38	2.52	4.76	14.36	39.68
99.0%	1.43	2.75	5.37	17.19	52.06
Max	1.79	3.97	9.38	33.26	135.23

AIRG: 10,000 SP500 GWF %-tiles by Projection Month

	12	60	120	240	360
Min	0.41	0.32	0.26	0.35	0.38
1.0%	0.70	0.62	0.66	0.83	1.22
2.5%	0.76	0.72	0.77	1.10	1.69
5.0%	0.82	0.81	0.92	1.41	2.25
10.0%	0.89	0.93	1.12	1.83	3.09
25.0%	0.98	1.16	1.51	2.74	5.11
50.0%	1.09	1.45	2.09	4.27	8.84
75.0%	1.19	1.81	2.88	6.80	15.35
90.0%	1.30	2.22	3.81	10.15	24.98
95.0%	1.37	2.48	4.44	12.92	34.25
97.5%	1.44	2.72	5.17	15.65	45.88
99.0%	1.52	3.06	6.18	20.49	60.45
Max	1.92	4.77	11.86	66.94	235.95

6/AIRG: GWF Ratios by Projection Month

SP500	12	60	120	240	360
Min	106%	44%	50%	88%	60%
1.0%	101%	92%	89%	95%	98%
2.5%	102%	95%	99%	98%	102%
5.0%	101%	100%	100%	100%	103%
10.0%	100%	101%	102%	101%	103%
25.0%	101%	103%	104%	106%	106%
50.0%	100%	103%	104%	107%	107%
75.0%	100%	100%	101%	101%	104%
90.0%	99%	97%	96%	97%	97%
95.0%	97%	95%	95%	93%	93%
97.5%	96%	92%	92%	92%	86%
99.0%	94%	90%	87%	84%	86%
Max	93%	83%	79%	50%	57%

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32

## Field Test 6 Quantitative Results

- The average field test participant VM-21 reserve for guaranteed benefits increased by 10.1%, and the average Risk-Based Capital increased by 56%, compared to 29.4% and 68.0% for 1A reserves and capital, respectively.
- Given the alignment between the AIRG and scenario set 6 equity GWFs, the increases in reserves and capital compared to the baseline are likely driven primarily by the UST model calibration.
- The effect of hedging was less clear in the results of the participants who elected to perform field test 6. There were a limited number of companies that participated in field test 6 and that did not model hedging.

Reserve/Capital Amount	Percentage Increase over Baseline					
	Average	Min	Percentiles			Max
			25th	50th	75th	
<b>VM-21 Reserve for Guaranteed Benefits</b>	10.1%	-14.0%	7.2%	62.2%	218.6%	492.2%
<b>Risk-Based Capital</b>	56%	-8.2%	13.4%	21.7%	216.7%	12,161%

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**12/30 Participants**

<b>Dates:</b> Received	Reviewed by Staff	Distributed	Considered
3/7/23	SO		
<b>Notes:</b> APF 2023-05			

**Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force  
Amendment Proposal Form\***

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

**Identification:**

Brian Bayerle, ACLI

**Title of the Issue:**

Revise hedge modeling language to address index credit hedging.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

VM-01, VM-21 Section 4.A.4, VM-21 Section 9, VM-21 Section 9.C.2, VM-31 Section 3.F.8.d

January 1, 2023 NAIC Valuation Manual, APF 2020-12

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

See attached.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

Index credit hedging is fundamentally different than the dynamic GMxB hedging which formed the conceptual underpinnings for VM-21. For example, the relatively fixed parameters of traditional GMxBs drive the hedging approach. In contrast, indexed products (including RILAs) have flexible crediting parameters which are continually reset based on hedge availability and costs, as well as current market conditions. In short, GMxB contract features drive hedging, while index product hedging drives contract features.

Since the reforms of VM-21 and C3P2, ILVA products have experienced major market growth. Several carriers, with the agreement of regulators and auditors, have interpreted the current VM-21 guidance as permitting the effects of index credit hedging to be reflected in product cash flows instead of within the “best efforts” and “adjusted” scenarios. Both regulators and industry would benefit from the codification of this approach within VM-21.

ACLI’s proposal borrows heavily from the Academy’s draft VM-22. The “error” for index credit hedging is describes as a percentage reduction to hedge payoffs. The percentage reduction must be supported by relevant, credible, and documented experience. A minimum of 1% is proposed as a regulatory guardrail.

The ACLI proposal would subject index credit hedging to the “clearly defined” documentation requirements of VM-21. Substantively, the change would (a) include index credit hedge purchases with the VM-21 “adjusted” run, and (b) permit index credit hedging to reflect a different, and potentially lower, level of ineffectiveness.

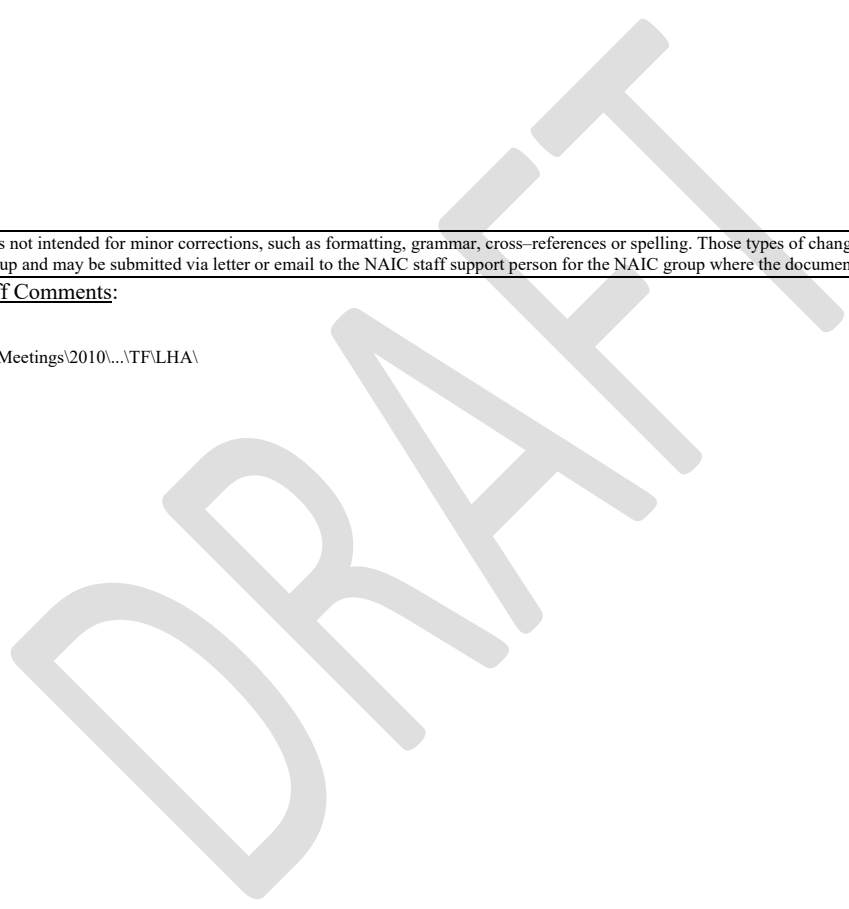
<b>Dates:</b> Received	Reviewed by Staff	Distributed	Considered
3/7/23	SO		
<b>Notes:</b> APF 2023-05			

ACLI supports aligning the index credit hedging guidance between VM-21 and VM-22. We started with draft VM-22 verbiage in creating this APF. In a few areas, our members have suggested technical improvements to the draft VM-22 definitions. It may be appropriate to carry these over to VM-22.

\* This form is not intended for minor corrections, such as formatting, grammar, cross-references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

W:\National Meetings\2010\...\TF\LHA\



<b>Dates:</b> Received	Reviewed by Staff	Distributed	Considered
3/7/23	SO		
<b>Notes:</b> APF 2023-05			

## VM-01

The term “Index Credit Hedge Margin” means a margin capturing the risk of inefficiencies in the company’s hedging program supporting index credits. This includes basis risk, persistency risk, and the risk associated with modeling decisions and simplifications. It also includes any uncertainty of costs associated with managing the hedging program and changes due to investment and management decisions.

The term “Index Credit” means any interest credit, multiplier, factor, bonus, charge reduction, or other enhancement to policy values that is directly linked to one or more indices. Amounts credited to the policy resulting from a floor on an index account are included. An Index Credit may be positive or negative.

The term “Index Crediting Strategies” means the strategies defined in a contract to determine index credits for a contract. For example, this may refer to underlying index, index parameters, date, timing, performance triggers, and other elements of the crediting method.

## VM-21 Section 4.A.4

### 4. Modeling of Hedges

- a. For a company that does not have a future hedging strategy supporting the contracts tied directly to the contracts falling under the scope of VM-21 stochastic reserve requirements:
  - i. The company shall not consider the cash flows from any future hedge purchases or any rebalancing of existing hedge assets in its modeling, since they are not included in the company’s investment strategy supporting the contracts.
  - ii. Existing hedging instruments that are currently held by the company in support of the contracts falling under the scope of these requirements shall be included in the starting assets.
- b. For a company with one or more future hedging strategies supporting the contracts tied directly to the contracts falling under the scope of VM-21 stochastic reserve requirements:
  - i. For a future hedging strategy with hedge payoffs that solely offset interest credits associated with indexed interest strategies (indexed interest credits):
    - a) In modeling cash flows, the company shall include the cash flows from future hedge purchases or any rebalancing of existing hedge assets that are intended solely to offset interest credits to contract holders.
    - b) Existing hedging instruments that are currently held by the company for offsetting the indexed credits in support of the contracts falling under the scope of these requirements shall be included in the starting assets.
    - c) An Index Credit Hedge Margin for these hedge instruments shall be reflected in both the “best efforts” and the “adjusted” runs by reducing index interest credit hedge payoffs by a margin multiple that shall be justified by sufficient and credible company experience and account for model error. It shall be no less than [1%] multiplicatively of the interest credited. In the absence of sufficient and credible company experience, a margin of

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[20%] shall be assumed. There is no cap on the index credit hedge margin if company experience indicates actual error is greater than [20%].

- ii. For a company with one or more future hedging strategies supporting the contracts that do not solely offset indexed interest credits, the detailed requirements for the modeling of the hedges are defined in Section 9. The following requirements do not supersede the detailed requirements.
  - a) The appropriate costs and benefits of hedging instruments that are currently held by the company in support of the contracts falling under the scope of these requirements shall be included in the projections used in the determination of the SR.
  - b) The projections shall take into account the appropriate costs and benefits of hedge positions expected to be held in the future through the execution of the future hedging strategies supporting the contracts. Because models do not always accurately portray the results of hedge programs, the company shall, through back-testing and other means, assess the accuracy of the hedge modeling. The company shall determine a SR as the weighted average of two CTE values; first, a CTE70 (“best efforts”) representing the company’s projection of all of the hedge cash flows, including future hedge purchases, and a second CTE70 (“adjusted”) which shall use only hedge assets held by the company on the valuation date and only no future hedge purchases associated solely with indexed interest credited. These are discussed in greater detail in Section 9. The SR shall be the weighted average of the two CTE70 values, where the weights reflect the error factor determined following the guidance of Section 9.C.4.
  - c) The company is responsible for verifying compliance with all requirements in Section 9 for all hedging instruments included in the projections.
  - d) The use of products not falling under the scope of these requirements (e.g., equity-indexed annuities) as a hedge shall not be recognized in the determination of accumulated deficiencies.
- iii. If a company has a more comprehensive hedge strategy combining index credits, guaranteed benefit, and other risks (e.g., full fair value or economic hedging), an appropriate and documented bifurcation method should be used in the application of sections 4.A.4.b.i and 4.A.4.b.ii above for the hedge modeling and justification. Such bifurcation methods may quantify the specific risk exposure attributable to index credit liabilities versus other liabilities such as guaranteed living benefits, and apply such for the basis for allocation.

## **VM-21 Section 9**

### Section 9: Modeling Hedges under a Future Non-Index Credit Hedging Strategy

#### A. Initial Considerations

- 1. This section applies to modeling of hedges other than situations where the company only hedges index credits. If the company clearly separates index credit hedging from other hedging, then this section only applies to the other hedging if the index hedging follows the requirements in Section

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4.A.4.b.i. If the company does not clearly separate index credit hedging from other hedging, then this section is applicable for modeling of all hedges.

2. Subject to Section 9.C.2, the appropriate costs and benefits of hedging instruments that are currently held by the company in support of the contracts falling under the scope of these requirements shall be included in the calculation of the SR, determined in accordance with Section 3.D and Section 4.D.

(Subsequent sections to be renumbered)

**VM-21 Section 9.C.2**

2. The company shall calculate a CTE70 (adjusted) by recalculating the CTE70 assuming the company has no future hedging strategies supporting the contracts except hedge purchases solely related to strategies to hedge index credits, therefore following the requirements of Section 4.A.4.a and 4.A.4.b.i.

**VM-31 Section 3.F.8.d.x (new subsection)**

- x. Justification for the margin for any future hedging strategy that offsets interest credits associated with indexed interest strategies (indexed interest credits), including relevant experience, other relevant analysis, and an assessment of potential model error.
- y. The method used to bifurcate comprehensive hedge strategies (i.e., strategies combining index credits, guaranteed benefit, and other risks (e.g., full fair value or economic hedging), per section 4.A.4.c

# Life Practice Council Update

Ben Slutsker, MAAA, FSA  
Vice President, Life Practice Council  
Amanda Barry-Moilanen  
Policy Analyst, Life

Life Actuarial Task Force (LATF) Meeting  
March 21, 2023

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## Academy Webinars and Events

2

- Recent
  - [PBR Bootcamp: Governance and Reporting](#)—March 15
- Upcoming
  - [Post-NAIC update on asset topics](#)—April 4
  - [PBR Bootcamp: Assets \(Part 1\)](#)—April 19
  - [PBR Bootcamp: Assets \(Part 2\)](#)—April 26
  - Bank-Owned Life Insurance/Corporate Owned Life Insurance (BOLI/COLI) webinar—TBD
  - Additional PBR webinars in 2023

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## Recent Activity

3

- Created a new group, the Asset Adequacy and Reinsurance Issues Task Force
  - Will focus on issues related to emerging reinsurance transactions and follow-ups to Actuarial Guideline (AG) 53 and asset adequacy testing
- Delivered recommended edits to the fixed annuity principle-based reserving framework to the Valuation Manual (VM)-22 (A) Subgroup
- Developed a white paper on considerations for market risk benefits in new accounting standards on targeted improvements for long-duration contracts in U.S. GAAP accounting

## Recent Activity

4

- Presented to the Risk-Based Capital Investment Risk and Evaluation (E) Working Group on considerations for collateralized loan obligation C-1 factors at the Fall National Meeting
  - As a follow-up, submitted clarification questions for the working group to consider for developing a framework
- Proposed to the Life Risk-Based Capital (E) Working Group structural updates, revisions to instructions, and a new financial statement note to address the newly adopted C-2 mortality factors

## Ongoing Activity

5


- Developed multiple education sessions on economic scenario generators and acceptance criteria for the Life Actuarial (A) Task Force
- Engaging in the discussions on a fixed annuity principle-based reserving framework in the VM-22 (A) Subgroup
- Revisiting the covariance methodology in life risk-based capital
- Creating a discussion brief related to asset assumptions
- Updating the asset adequacy analysis practice note

## Thank you

6

Questions?


- For more information, please contact the Academy's life policy analyst, Amanda Barry-Moilanen, at [barrymoilanen@actuary.org](mailto:barrymoilanen@actuary.org).



# SOCIETY OF ACTUARIES RESEARCH UPDATE TO LATF

March 21, 2023


R. DALE HALL, FSA, MAAA, CERA, CFA  
Managing Director of Research



1

## Presentation Disclaimer

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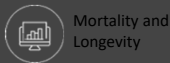


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# 2014-19 Individual Payout Annuity Experience Study – Report



Mortality and  
Longevity

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## 2014-2019 Payout Annuity Mortality Study

- Study was published in December 2022
- This is the first study released under Experience Studies Pro, the partnership between the SOA Research Institute and LIMRA
- For access to full report and detailed study results in Tableau, companies must purchase the Standard Data Package (SDP)



4

4

## 2014-2019 Payout Annuity Mortality Study

- High-level results:

Metric	Current Study, 2014-2019	Previous Study, 2009-2013
Exposure in contract years	4,323,432	4,494,272
Exposure in annual income years	33,639,077,075	26,831,330,765
Number of deaths	236,331	230,019

A/E by Amount, Expected Basis = 2012 IAM Basic w/Scale G2	Current Study, 2014-2019	Previous Study, 2009-2013
Overall	108.7%	106.4%
Females	106.7%	104.8%
Males	110.9%	107.7%



## 2014-2019 Payout Annuity Mortality Study

- Additional detail available in the full report:

- Expected bases:
  - 2012 IAM Basic Table
  - 2012 IAM Basic Table with Scale G2
  - 2012 IAM Period Table
  - 2012 IAM Period Table with Scale G2
  - 2019 SSA Table
- Data breakouts:
  - Sex
  - Attained age group
  - Contract year group
  - Study year
  - Tax class
  - Annual income group
  - Contract type
  - Refund feature
  - Benefit class
  - Annuitant status



## 2014-2019 Payout Annuity Mortality Study

- This completed study will be the basis for VM-22 Mortality SPA development for Payout Annuities
- Mortality adjustment factors by sex and attained age groups are being reviewed and developed
  - Previous factors were developed based on the 2009-2013 study
  - Will analyze any material differences in factors from 2009-13 study to current study
- Does the mortality experience in this study demonstrate the need for a new base table?
  - Would be an update to the 2012 Individual Annuity Mortality (IAM) Basic Table
  - Has not been discussed or decided on yet
  - Would a new table be the expected basis for Fixed and Variable annuities as well, or does each product line need its own table?

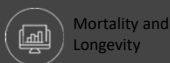


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## US Population Mortality Observations: Updated with 2021 Experience

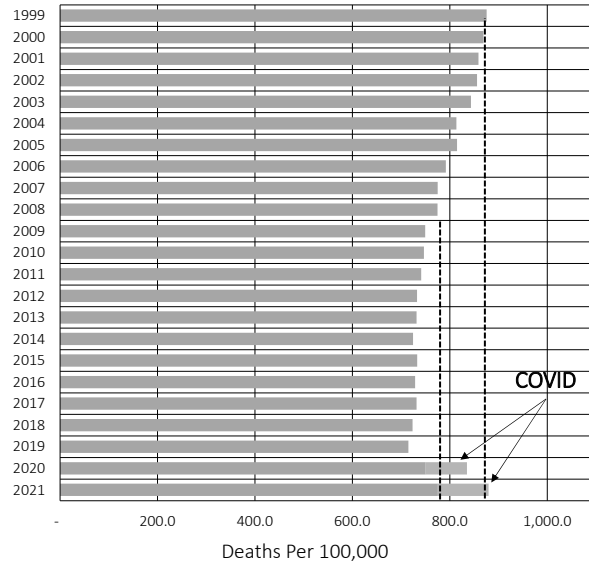


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## Historical U.S. Population Mortality

- Total Population
  - 2021 mortality rate of 879.7/100,000 (0.9%)
  - 5.3% increase over 2020 (2019 to 2020 was 16.8%)
  - 23% higher in 2021 than 2019
  - highest rate in last 23 years
- COVID
  - 2021 mortality rate of 104.1 deaths/100,000
  - 22.6% increase over 2020
  - 8% decrease if 2020 'annualized'
- Without COVID
  - 2021 mortality rate of 775.6 deaths/100,000
  - 3.3% increase over 2020 (2019 to 2020 was 4.9%)
  - Highest since 2008



9

9

## Change in Mortality Rates by Cause of Death

- Heart disease: 3.3% increase in 2021 following 4.1% increase in 2020
- Cancer: 2021 had first increase in last 22 years
- Accidents, diabetes, liver, hypertension, assaults 2021 increases over very large 2020 increases
- Deaths from suicides back up after decrease in 2020
- Good news in Alzheimer's, pulmonary and flu/pneumonia

Cause of Death	2021 Deaths %	Change in Age-Adjusted Mortality Rates	
		2019-2020	2020-2021
Heart Disease	20.1%	4.1%	3.3%
Cancer	17.5%	-1.4%	1.7%
COVID	12.0%	n/a	22.6%
Alzheimer's/Dementia	6.7%	7.9%	-4.5%
Accidents	6.5%	16.8%	12.4%
Stroke	4.7%	5.1%	5.9%
Pulmonary	4.1%	-4.6%	-4.7%
Diabetes	3.0%	14.9%	2.4%
Liver	1.6%	16.9%	9.1%
Suicide	1.4%	-3.0%	4.2%
Hypertension	1.2%	13.1%	6.1%
Flu & Pneumonia	1.2%	5.9%	-19.3%
Assault	0.8%	28.9%	5.1%
Other	19.3%	6.2%	6.2%
<b>All CODs</b>	<b>100.0%</b>	<b>16.8%</b>	<b>5.3%</b>

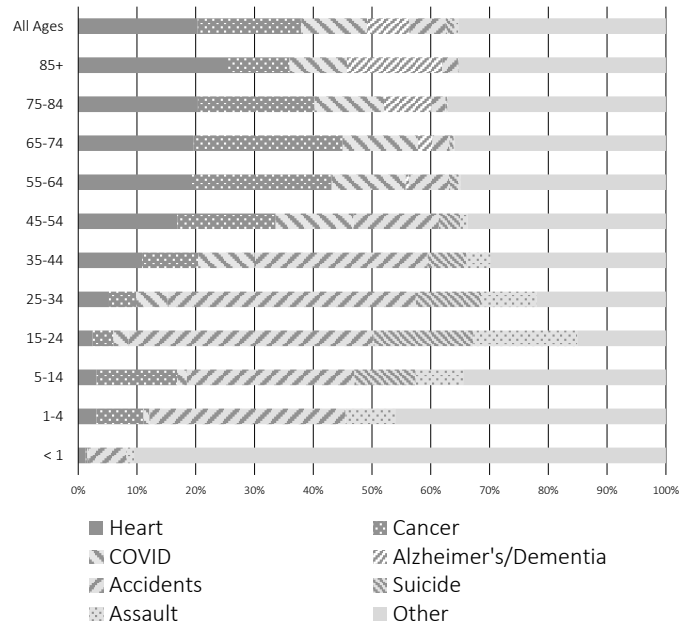


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## 2020 & 2021 Causes of Death by Age Group

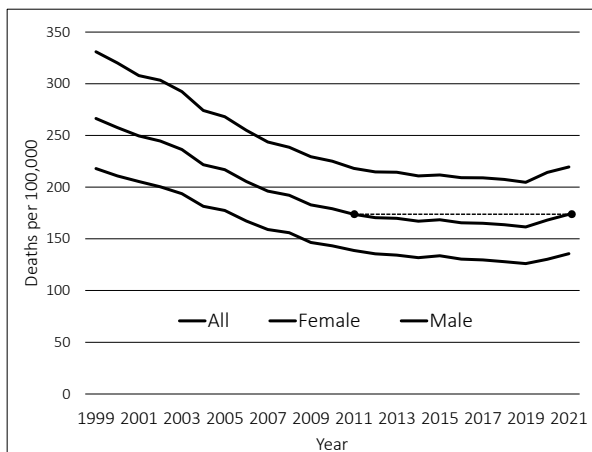
- Heart disease, cancer and COVID dominate ages 55-84
- Ages 45-54
  - #1 is Heart disease, then cancer, accidents & COVID
- Accidents dominate ages 1-44
- Suicide and assault are prominent for ages 5-34
- COVID not in top 3 for ages <35



11

11

## Heart Disease



All Ages	Average Annual Improvement		Cumulative Improvement	Average Annual Improvement	
	1999-2009	2009-2019	2019-2021	2019-2020	2020-2021
All	3.7%	1.2%	-7.6%	<b>-4.1%</b>	<b>-3.3%</b>
Male	3.6%	1.1%	-7.2%	-4.6%	-2.5%
Female	3.9%	1.5%	-7.5%	-3.2%	-4.1%
Age Group (includes both sexes)					
< 1	3.5%	3.0%	-4.9%	8.5%	-14.7%
1 - 4	2.3%	1.2%	9.7%	14.6%	-5.6%
5 - 14	2.4%	2.0%	-9.3%	6.2%	-16.4%
15 - 24	1.5%	1.5%	-7.2%	-0.1%	-7.2%
25 - 34	-0.2%	0.2%	-20.0%	<b>-13.7%</b>	-5.6%
35 - 44	1.2%	0.6%	-16.6%	<b>-14.7%</b>	-1.7%
45 - 54	1.5%	0.8%	-11.4%	<b>-11.1%</b>	-0.3%
55 - 64	3.4%	0.0%	-9.6%	<b>-9.7%</b>	0.0%
65 - 74	4.9%	0.8%	-7.1%	-6.5%	-0.6%
75 - 84	4.1%	2.0%	-5.4%	-2.6%	-2.7%
85+	3.3%	1.3%	-7.4%	-0.6%	-6.7%

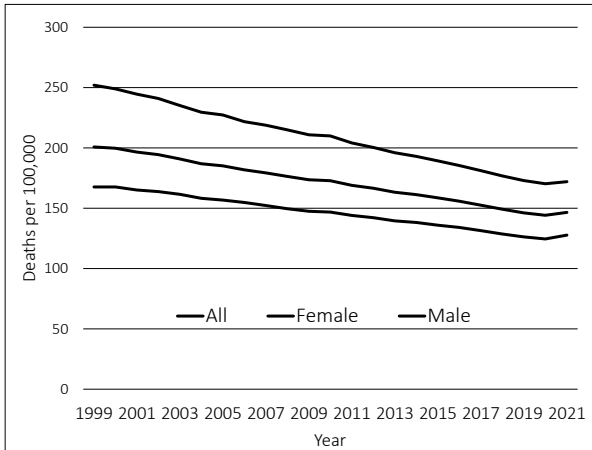


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## Cancer

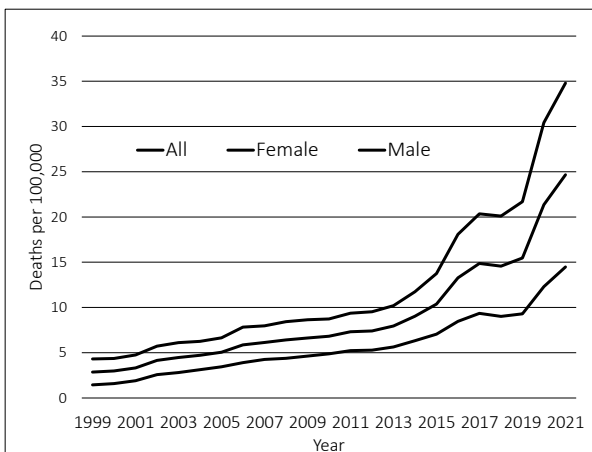


All Ages	Average Annual Improvement		Cumulative Improvement	Average Annual Improvement	
	1999-2009	2009-2019	2019-2021	2019-2020	2020-2021
All	1.4%	1.7%	-0.3%	1.4%	<b>-1.7%</b>
Male	1.8%	2.0%	0.5%	1.5%	-1.0%
Female	1.3%	1.5%	-1.2%	1.3%	-2.5%
Age Group (includes both sexes)					
< 1	-0.3%	2.4%	-0.3%	0.6%	-0.9%
1 - 4	2.3%	1.8%	-2.4%	-9.3%	6.3%
5 - 14	1.2%	1.5%	-0.9%	-2.2%	1.3%
15 - 24	1.7%	1.4%	5.6%	5.6%	0.0%
25 - 34	1.0%	1.4%	-2.1%	0.4%	<b>-2.5%</b>
35 - 44	2.0%	1.6%	-0.5%	0.8%	<b>-1.3%</b>
45 - 54	1.2%	2.6%	5.2%	1.6%	3.7%
55 - 64	2.1%	1.4%	4.1%	1.3%	2.9%
65 - 74	2.1%	2.0%	2.1%	0.8%	1.3%
75 - 84	0.9%	1.9%	-1.1%	1.6%	<b>-2.7%</b>
85+	0.6%	0.8%	-9.0%	2.1%	<b>-11.4%</b>

13

13

## Opioids

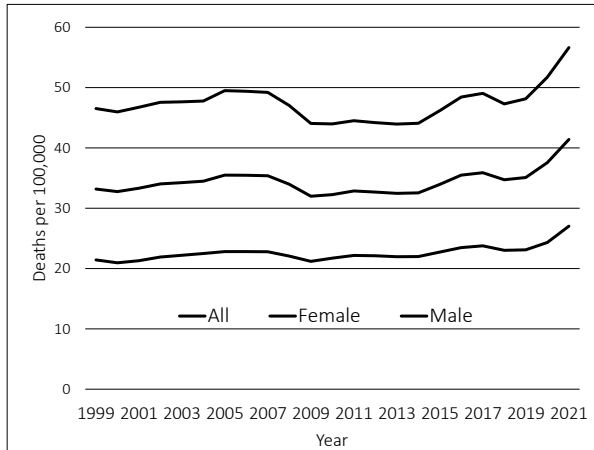


All Ages	Average Annual Improvement		Cumulative Improvement	Average Annual Improvement	
	1999-2009	2009-2019	2019-2021	2019-2020	2020-2021
All	-8.7%	-8.9%	-59.5%	<b>-38.0%</b>	<b>-15.6%</b>
Male	-7.2%	-9.6%	-60.5%	-40.3%	-14.4%
Female	-12.3%	-7.2%	-55.7%	-32.4%	-17.7%
Age Group (includes both sexes)					
< 1					-87.7%
1 - 4		-4.0%	-175.9%	-50.9%	-82.9%
5 - 14		-2.6%	-128.1%	-96.8%	-15.9%
15 - 24	-12.3%	-5.5%	-67.9%	<b>-61.2%</b>	-4.1%
25 - 34	-10.0%	-10.5%	-53.9%	<b>-36.7%</b>	<b>-12.6%</b>
35 - 44	-4.7%	-10.2%	-63.0%	<b>-40.6%</b>	<b>-16.0%</b>
45 - 54	-9.5%	-6.2%	-56.5%	<b>-34.0%</b>	<b>-16.7%</b>
55 - 64	-16.8%	-10.4%	-62.6%	<b>-31.1%</b>	<b>-24.1%</b>
65 - 74	-13.8%	-12.7%	-61.8%	<b>-25.0%</b>	<b>-29.5%</b>
75 - 84	-7.4%	-6.3%	-16.0%	7.0%	<b>-24.7%</b>
85+		-3.1%	-25.9%	-4.7%	<b>-20.2%</b>

14

14

## Accidents excluding Opioids



All Ages	Average Annual Improvement		Cumulative Improvement	Average Annual Improvement	
	1999-2009	2009-2019	2019-2021	2019-2020	2020-2021
All	0.4%	-0.9%	-18.0%	-7.0%	-10.3%
Male	0.5%	-0.9%	-17.7%	-7.5%	-9.5%
Female	0.1%	-0.9%	-17.1%	-5.3%	-11.2%
Age Group (includes both sexes)					
< 1					
1 - 4			-16.2%	-1.3%	-14.7%
5 - 14		1.3%	-12.2%	-3.2%	-8.8%
15 - 24	3.4%	2.2%	-16.9%	-13.3%	-2.8%
25 - 34	0.5%	-0.3%	-27.1%	-16.3%	-9.3%
35 - 44	0.6%	-1.1%	-25.6%	-13.3%	-10.9%
45 - 54	-1.9%	-0.4%	-17.8%	-9.8%	-7.3%
55 - 64	-0.5%	-3.0%	-17.8%	-8.3%	-8.7%
65 - 74	0.8%	-1.9%	-12.7%	-2.1%	-10.4%
75 - 84	-0.3%	-1.1%	-9.6%	1.9%	-11.8%
85+		-2.0%	-18.1%	-1.6%	-16.2%

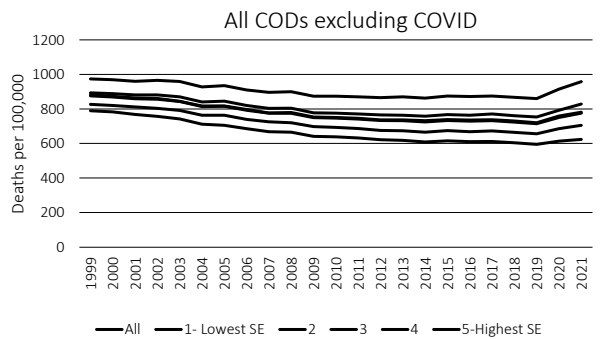
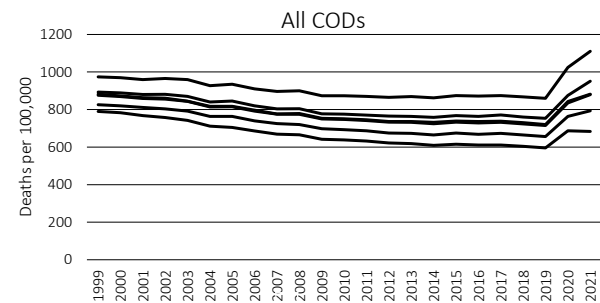


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## Mortality by Socioeconomic (SE) Group

Quintile	Average Annual Improvement		Cumulative 2021 Improvement			
	1999-2009	2009-2019	With COVID		Without COVID	
			Since 2019	Since 2020	Since 2019	Since 2020
1 – Lowest SE	1.1%	0.2%	-29.1%	-8.5%	-11.3%	-4.7%
2	1.4%	0.3%	-26.2%	-8.8%	-9.9%	-4.4%
3	1.6%	0.4%	-22.5%	-4.7%	-8.5%	-2.9%
4	1.7%	0.6%	-20.8%	-3.9%	-7.4%	-2.8%
5 – Highest SE	2.1%	0.7%	-14.7%	0.5%	-4.7%	-1.8%
All	1.5%	0.5%	-23.0%	-5.3%	-8.4%	-3.3%
High-Low	1.0%	0.6%	14.4%	9.2%	6.6%	3.0%



16

16

## US Population Mortality Observations: Updated with 2021 Experience

QR code to final report:



17

17



Additional Life Research

18

18

## Experience Studies

Project Name	Objective	Link/Expected Completion Date
2014-19 Individual Payout Annuity Experience Study - Report	Examine the mortality experience from 2014-19 under individual payout annuity contracts.	<a href="https://www.soa.org/resources/experience-studies/2022/14-19-payout-annuity-mortality/#public">https://www.soa.org/resources/experience-studies/2022/14-19-payout-annuity-mortality/#public</a>
COVID-19 Cause of Death Study - 2021 Q4 Update	Publish a cause of death study for individual life insurance.	<a href="https://www.soa.org/resources/experience-studies/2022/cause-of-death-q4/">https://www.soa.org/resources/experience-studies/2022/cause-of-death-q4/</a>
COVID-19 Reported Claim Study - 2Q 2022 Update	Draft a research study reviewing Covid-19 reported deaths by quarter.	<a href="https://www.soa.org/resources/experience-studies/2022/us-ind-life-covid-19-q2/">https://www.soa.org/resources/experience-studies/2022/us-ind-life-covid-19-q2/</a>
Group Life COVID-19 Mortality Survey Update - through June 2022	Complete an update on a mortality study assessing the impact of COVID-19 on Group Life Insurance.	<a href="https://www.soa.org/resources/experience-studies/2022/group-life-covid-19-mortality-06-2022/">https://www.soa.org/resources/experience-studies/2022/group-life-covid-19-mortality-06-2022/</a>
US Population Mortality Observations: Updated with 2021 Experience	Explore observations from the release of the 2021 U.S. population mortality data.	<a href="https://www.soa.org/resources/research-reports/2023/us-population-mortality/">https://www.soa.org/resources/research-reports/2023/us-population-mortality/</a>
COVID-19 Individual Life Mortality Study - Experience Study Report - 2022 Q1	Complete a mortality study assessing the impact of COVID-19 on Individual Life Insurance.	3/16/2023
COVID-19 Reported Claim Study - 3Q 2022 Update	Draft a research study reviewing Covid-19 reported deaths by quarter	3/16/2023
2011-2015 Deferred Annuity Mortality Study	Examine the mortality experience from 2011-2015 in deferred annuity contracts and release a report with the findings and a database with the experience data.	3/31/2023
2019-20 Fixed Indexed Annuity Study - Report	Examine lapse and the utilization of guaranteed living withdrawal benefit options on fixed index annuity policies under a Joint SOA/LIMRA project and release Tableau visualizations with the observations from the study.	4/15/2023
COVID-19 Cause of Death Study - 2022 Q1 Update	Publish a cause of death study for individual life insurance	4/15/2023



19

19

## Practice Research & Data Driven In-house Research

Project Name	Objective	Link/Expected Completion Date
2022 Mortality Improvement Company Survey	Survey life insurers and annuity companies to see how mortality improvement assumptions have changed in light of COVID.	<a href="https://www.soa.org/resources/research-reports/2022/mort-improve-survey/">https://www.soa.org/resources/research-reports/2022/mort-improve-survey/</a>
Guideline Excess Spread Attribution Analysis	Specify general considerations to guide the development of a methodology to attribute spread to different investment risks related to AGS3.	<a href="https://www.soa.org/resources/research-reports/2023/methodology-ag3/">https://www.soa.org/resources/research-reports/2023/methodology-ag3/</a>
Mortality and Mental Illness	Examine the impact on mortality of mental illness during the COVID-19 pandemic.	<a href="https://www.soa.org/resources/research-reports/2022/002-mental-illness-us-mort-long/">https://www.soa.org/resources/research-reports/2022/002-mental-illness-us-mort-long/</a>
International Comparison of Regulatory Requirements Study Note - 2021-08	Capital Adequacy Regulatory Requirements in Life Insurance across 4 key models in the US, Canada, EU and Bermuda.	3/13/2023
Mortality and Race	Summarize available literature on mortality and race and discuss actuarial aspects.	4/17/2023
Maternal Mortality	Study maternal mortality in US and compare to other countries.	4/30/2023
Unhealthy Longevity	Examine differences in mortality/longevity between impaired vs healthy lives.	4/30/2023
Expert Opinion on Impact of COVID-19 on Future Mortality - Survey 2	Survey panel of experts on short and mid term thoughts on future population and insured mortality.	5/31/2023



20

20



21

# Mortality Improvements Life Work Group (MILWG)— 2023 Update and Work Plan

Academy Mortality Improvements Life Work Group (MILWG);  
SOA Mortality and Longevity Oversight Advisory Council (MLOAC)

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Life Actuarial Task Force (LATF) — NAIC 2023 Spring Meeting (3/21/23)

1

## Agenda

- Recap: approved approach for 2022 HMI and FMI scales
- 2023 scale updates (HMI and FMI)
- MILWG 2023 work plan



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# Recap: approved approach for Recap: 2022 HMI and FMI scales



3

## 2022 HMI/FMI General Methodology

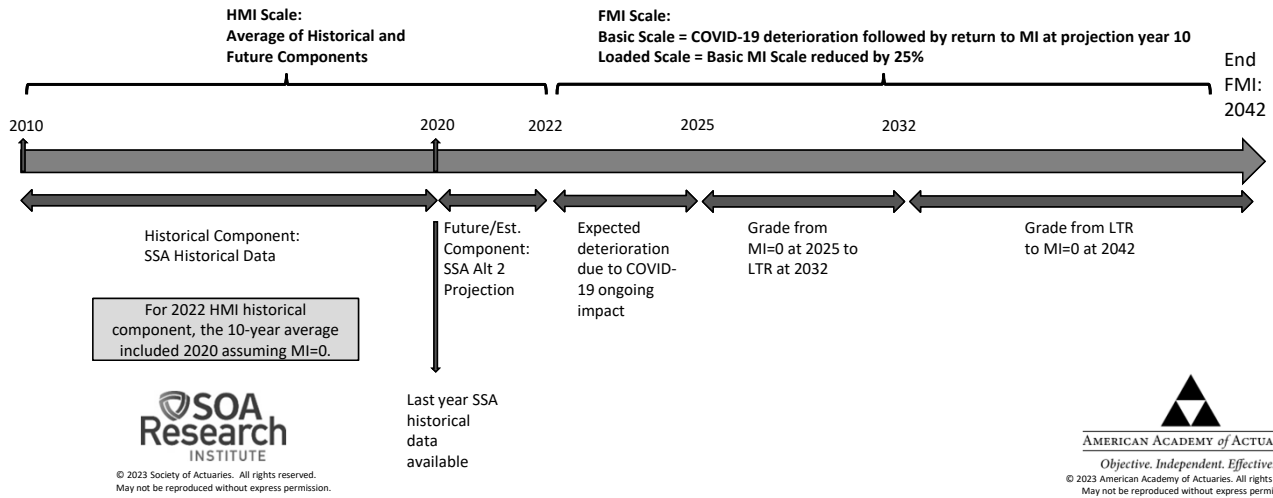
HMI Scale Year	Historical Component: <i>Historical Data (10 yrs)</i> <i>SSA Data – Gen Population Mean</i>	Estimated/Future Component: <i>SSA (Social Security Administration)</i> <i>Alt2 Projection (20 yr average)</i>
2022	Averaging Period: 2010-2020	Averaging Period: 2020-2040
FMI Scale Year	Process	Long-Term Rate (LTR)
2022	<b>Basic Scale:</b> <ul style="list-style-type: none"> <li>Grades to LTR at projection yr 10 (2032)</li> <li>Remains at LTR for projection yrs 10-15</li> <li>Grades to no additional MI at projection yr 20 (2042)</li> <li>Margin for uncertainty included to develop “Loaded Scale”</li> </ul>	Average of SSA Alt 2 MI for projection years 10-15 (decision point on whether to change LTR basis)



4

# HMI/FMI General Methodology

Example : Scale Year = 2022



5

## COVID-19 Modifications to General Methodology for 2022 HMI and FMI

### HMI Modified Approach:

Use average from 2010–2020 but include 2020 mortality = 2019 mortality

- Assumes zero improvement for 2020
- Results in less mortality improvement in general than HMI Approach 1

### FMI Modified Approach:

Basic scale : include COVID-19 impact (deterioration in mortality) in early years of the FMI scale

- Assume deterioration for 2023 and 2024 followed by zero improvement in 2025.
- Then grade to long-term (LT) MI level based on Social Security Administration (SSA) Intermediate projection at year 10 (grade from 2025–2032).

Loaded scale (prudent estimate) = scale above plus 25% general margin for uncertainty in trend

6



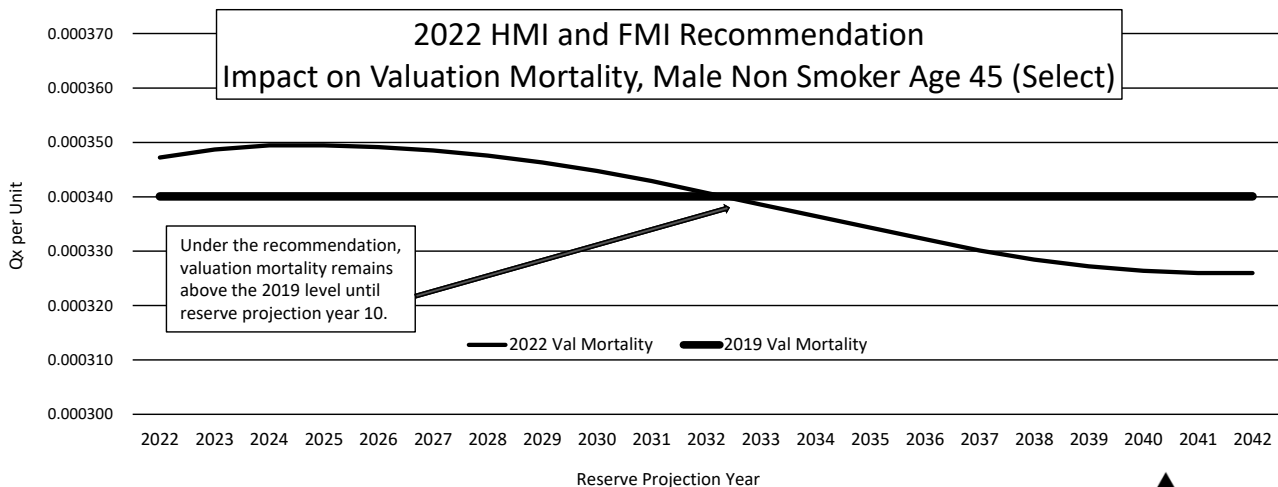
# Issues Addressed

- SSA Alt 2—appears to be a reasonable basis for the LTR development
  - Primary criticism of SSA’s intermediate projection has been concern that MI implied rates are too low
- Appropriateness of inclusion of COVID-19 impacts in FMI
  - Consistent with Industry Mortality Group principle that states that the shock impact of COVID-19 or other short-term mortality events should only be included in the future mortality expectations to the extent they are expected to continue
  - Recommended inclusion of FMI deterioration in the first 3 years of the reserve projection estimates the expected future impact of COVID-19



7

# General Impact of 2022 Modifications on Valuation Mortality



8

# 2023 Scale Updates (HMI and FMI)



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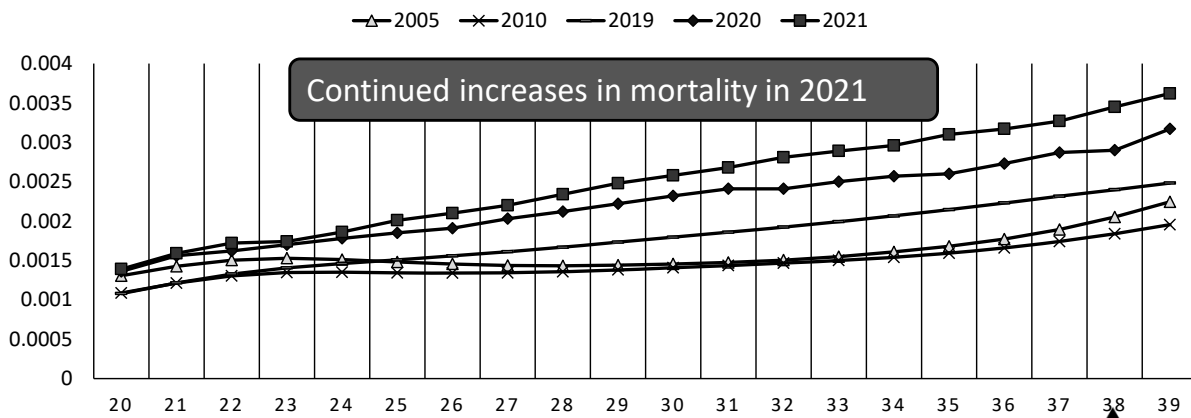


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9

## 2023 HMI Scale – Males Preliminary 2021 Mortality Data

### AGES 20-39



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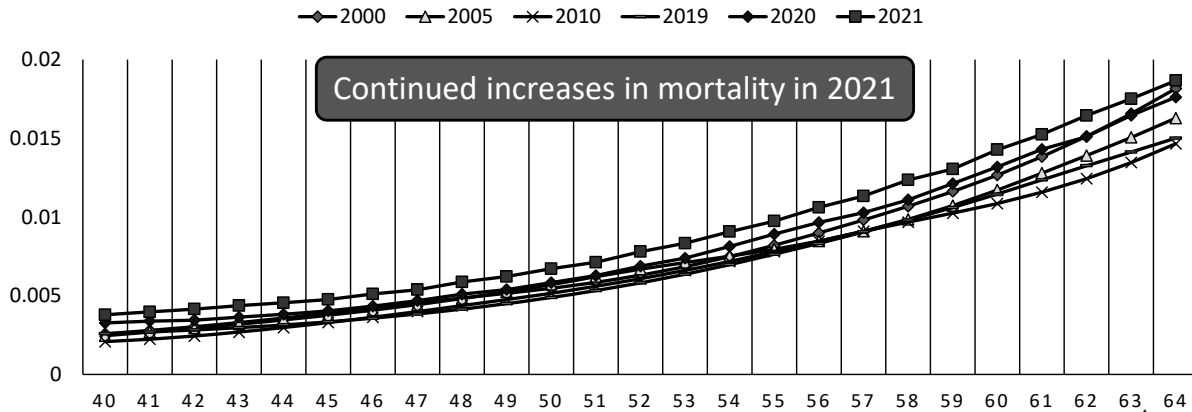


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# 2023 HMI Scale – Males Preliminary 2021 Mortality Data

## ADULTS, 40-64



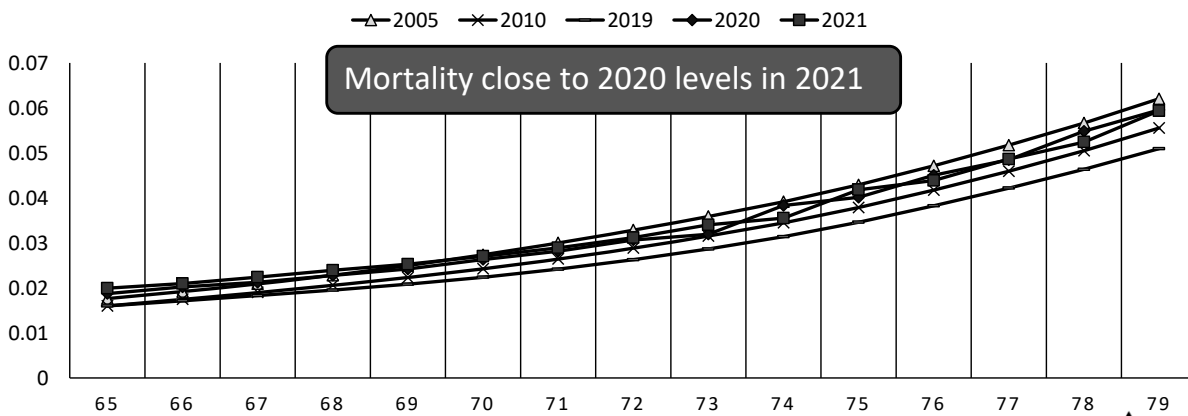
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# 2023 HMI Scale – Males Preliminary 2021 Mortality Data

## ADULTS, 65-79



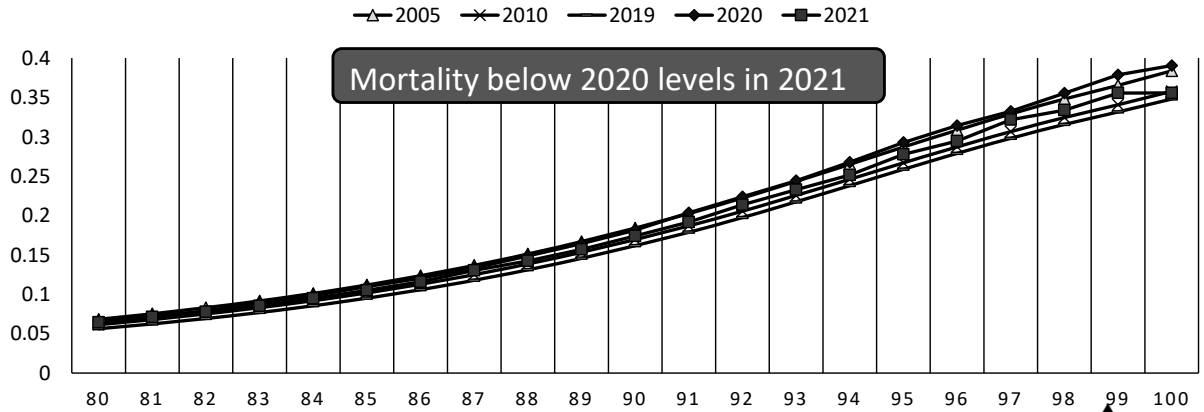
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# 2023 HMI Scale – Males Preliminary 2021 Mortality Data

## ADULTS, 80 AND OLDER



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# MILWG 2023 Work Plan

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# 2023 Plan

- Approach to COVID-19 impact for 2023 – FMI and HMI
- Revisit HMI methodology in light of recent and expected experience
- Insured vs. general population MI recommendation
- Revisit FMI margin structure
- Revisit smoothing approach for HMI and FMI
- Review recommendation for MI with 2008 VBT Limited Underwriting (LU) table

15

# Approach to COVID-19 impact

- Quantification of COVID-19 impact
  - Data sources
  - Consideration of short- vs. medium- vs. longer-term impacts
  - Return to previously projected mortality level over time or residual excess mortality
  - Insured vs. general population considerations
  - Direct adjustment to MI rates or reflected in additional margins
- Implicit margins in MI scale development
  - Data source—general population data unadjusted for insured population differences (largest source of margin)
    - Starting MI level (HMI)
    - Long-term rate (FMI)
  - Limit on FMI assumption (20 years)

16

# COVID-19 Impact Discussions

- Revisit the question of inclusion/exclusion of COVID-19 deaths
  - Could remove deaths directly attributed to COVID-19 as primary cause
  - This will not remove COVID-19 deaths where it was not reported as the primary cause
- Review data for other causes of death and how much those trends will likely continue
  - Utilize data from SOA research on excess mortality for individual life insureds
  - Utilize cause of death information from SOA general population mortality research
- Keep in mind goal of this scale development work

HMI: Establish a reasonable starting point for valuation mortality

FMI: Establish a reasonable expectation of ongoing life insured mortality

17

# HMI Methodology Review

To be completed for 2023 HMI Scale Recommendation

- Data sources – historical and future/estimated components
- Gender and age scales
- Historical averaging period – 10 years
- Averaging methodology
- Forecast/estimate averaging period – 20 years
- Continue with 50/50 weighting for average

18

## Insured vs General Population Mortality Recommendation (HMI and FMI)

Data review and analysis, initial thinking to be completed in 2023

- Data sources – historical and future/estimated components
- SOA Mortality Improvement Model (MIM) support work:
  - Updated 2020-2021 data with COVID-19 impacts
  - Developing/documenting potential methodology to remove COVID-19 impact for data analysis work
  - Compare population data by socioeconomic decile to 2015 VBT and to actual industry experience for the same periods

19

## Other MILWG Projects

- Revisit FMI margin structure
- Revisit smoothing approach for HMI and FMI
- Review recommendation for MI with 2008 VBT Limited Underwriting (LU) table

20

# Questions?



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21

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22



# Appendix



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## Reserve Impact—NAIC Model Office

- Universal Life with Secondary Guarantees (ULSG) model—long-duration product, larger potential for reserve reduction
  - Model office and assumptions same as used in the yearly renewable term (YRT) representative model analysis
  - Lifetime shadow account secondary guarantee
  - No reinsurance in the model

Component	Values
Issue ages	Decennial issue ages 30 – 70
Gender	Male Female
Risk classes	Preferred non-tobacco Standard non-tobacco Standard tobacco
Face bands	Low (\$250,000) High (\$1,000,000)



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24

# Reserve Impact—NAIC Model Office

- Term Life Insurance Product with 10- and 20-year level premium periods
  - Model office and assumptions same as used in the YRT representative model analysis
  - Mature at age 95
  - 100% shock lapse at end of level term period

Component	Values
Issue ages	Decennial issue ages 20 – 60
Gender	Male Female
Risk classes	Preferred non-tobacco Standard non-tobacco Standard tobacco
Face bands	Low (\$250,000) High (\$1,000,000)
Term lengths	10 year 20 year



25

# Reserve Impact Results—ULSG

Mortality Improvement Basis	ULSG		Approaches to HMI and FMI
	Normalized VM-20 Deterministic Reserve (DR)	Percentage Change from Baseline	
<b>Baseline:</b>			
HMI: no change to HMI FMI: zero FMI	\$ 1,000,000.00	----	<b>HMI</b> Approach 1 = historical average 2009-2019 Approach 2 = historical average 2010-2020 (zero MI in 2020)
HMI: Approach 2 FMI: Zero FMI	\$ 1,014,962.02	1.50%	<b>FMI</b> - grades to SSA intermediate projection long-term rate over 10 years
<b>RECOMMENDATION:</b>			Approach 1 = no FMI deterioration for COVID-19 Approach 2 = apply deterioration due to COVID-19 for first 3 years
HMI: Approach 2 FMI: Approach 2	\$ 940,464.62	-5.95%	Approach 3 = apply greater 50 percent greater deterioration due to COVID-19 for first 3 years (sensitivity)
Sensitivity:			
HMI: Approach 2 FMI: Approach 3	\$ 938,346.28*	-6.17%*	

The slight decrease in reserves for the sensitivity run compared to the recommendation seems counterintuitive given the higher initial mortality deterioration present in the sensitivity. However, specific impacts related to the net-amount-at-risk pattern (decreasing in the initial years due to fund value growth before growing in later years as fund value runs out and the secondary guarantee comes into effect) meant that the shift of death claims to earlier years from later years for the sensitivity run resulted in a slightly reduced deterministic reserve compared to the recommendation. Overall, the conclusion is that the additional margin did not have a material impact on the deterministic reserve calculation for this model office product.



26

## Reserve Impact Results—Term

Mortality Improvement Basis	Term	
	VM-20 DR	Reserve Change
<b>Baseline:</b>		
HMI: no change to HMI FMI: zero FMI	\$ (79,846)	----
HMI: Approach 2 FMI: Zero FMI	\$ (50,285)	\$ 29,561
<b>RECOMMENDATION:</b>		
HMI: Approach 2 FMI: Approach 2	\$ (68,968)	\$ 10,878
Sensitivity:		
HMI: Approach 2 FMI: Approach 3	\$ (66,303)	\$ 13,543

**Approaches to HMI and FMI**

**HMI**  
**Approach 1** = historical average 2009-2019  
**Approach 2** = historical average 2010-2020 (zero MI in 2020)

**FMI** - grades to SSA intermediate projection long-term rate over 10 years  
**Approach 1** = no FMI deterioration for COVID-19  
**Approach 2** = apply deterioration due to COVID-19 for first 3 years  
**Approach 3** = apply greater 50 percent greater deterioration due to COVID-19 for first 3 years (sensitivity)



Note: All of the valuation date deterministic reserves shown on this slide are negative



27

## Additional Considerations HMI and FMI

- MI improvement scale annual updates should not create reserve volatility
- Individual companies should also consider their own business and make appropriate additional adjustments



28



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March 6, 2023

Rachel Hemphill  
Chair, NAIC Life Actuarial (A) Task Force (LATF)

Re: APF 2023-03 Parts 3-5

Dear Ms. Hemphill:

The American Council of Life Insurers (ACLI) appreciates the opportunity to submit comments on Parts 3-5 of APF 2023-03 (APF), which was exposed by LATF during their meeting on February 2<sup>nd</sup>. While we are generally supportive of the provisions contained within these sections of the APF, we do have some concerns related to the scope of the proposal as well as some technical details that we believe should be addressed before adoption.

Overall, APF 2023-03 includes several potentially material changes that are not related to or dependent on one another, so we would recommend splitting this proposal into multiple APFs so each item can be considered separately. This would likely lead to easier and quicker adoption of the more minor items that are included. In addition, several of the proposed items cite consistency with other sections in the Valuation Manual as rationale for the change. While consistency may be desirable, further explanation of the rationale for the changes would be appreciated for these items.

However, as stated above, our feedback for this round of comments addresses changes proposed in Part 3 of the APF. Particularly, we have concerns surrounding the differences between VM-20 and VM-21 as we feel that the changes do not take into consideration that VM-20 and VM-21 also differ in the discount rates used to calculate scenario reserves. Under the APF, a company that models its actual strategy (rather than the alternative investment strategy) would have to document it as a simplification if borrowing cost being greater than or equal to reinvestment rate isn't true in every period.

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The American Council of Life Insurers (ACLI) is the leading trade association driving public policy and advocacy on behalf of the life insurance industry. 90 million American families rely on the life insurance industry for financial protection and retirement security. ACLI's member companies are dedicated to protecting consumers' financial wellbeing through life insurance, annuities, retirement plans, long-term care insurance, disability income insurance, reinsurance, and dental, vision and other supplemental benefits. ACLI's 280 member companies represent 94 percent of industry assets in the United States.

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This is especially troublesome when you add the consideration of VM-20 Section 7.E.2 consistent with the VM-21 Section 4.D.4.c requirement on the company's assumed cost of borrowing along with the associated Guidance Note. This consideration adds language requiring that the assumed cost of borrowing is not lower than the rate at which positive cash flows are reinvested in the same time period, taking into account duration, ratings, and other attributes of the borrowing mechanism. While this change does align the assumed cost of borrowing between VM-20 and VM-21, it results in a disconnect between the rate at which deficiencies are accumulated and the scenario discount rate. As stated in each respective VM section:

*VM-20 Section 7.H.4: "The company shall use the path of one-year Treasury interest rates in effect at the beginning of each projection year multiplied by 1.05 for each model segment within each scenario as the discount rates in the SR calculations in Section 5."*

*VM-21 Section 4.B.2: "In determining the scenario reserve, accumulated deficiencies shall be discounted at the NAER on additional assets, as defined in Section 4.B.3". Section 4.B.3 describes an NAER that would be akin to a new money earned rate.*

Furthermore, the disconnect created between the Stochastic Reserve discount rate and borrowing rate could result in infinite SR calculations. For example, suppose that at the end of 50 years in the projection, there is a 1M deficiency and no/few policies remaining. Assuming the net earned rate on positive cash flows = borrowing rate = 5% and the discount rate is =  $1.05 * \text{Treasury} = 2\%$ , letting the projection run another N years would result in the PV of deficiency continuing to grow by  $(1.05/1.02)^N$ . It may be difficult for companies to defend cutting off the projection at 50 years, if running it 100 years causes the scenario reserve to increase by 300%, primarily driven by the disconnect in discounting accumulation rates.

It is our current understanding that these changes are regulators way of saying that companies should not be assuming significant benefits from borrowing, which is a point we agree with at an overarching level. But as we have stated above, if regulators would like to reach this goal as expeditiously as possible, there are several changes that could be made to address both the technical and bureaucratic challenges presented by the APF as it currently stands including dividing the APF into smaller proposals and acknowledging the differences between VM-20 and VM-21 requirements.

Thank you once again for your consideration of our comments and we are looking forward to further conversation and cooperation with regulators on this matter as we work towards compiling feedback on Parts 1 and 2.

cc: Scott O'Neal, NAIC

**Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force  
Amendment Proposal Form\***

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

**Identification:**

PBR Staff of Texas Department of Insurance

**Title of the Issue:**

Address several clean-up items for VM-20, as well as related VM-21 and VM-31 Sections.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

VM- 20 Section 3.B.5.c.ii.4, VM-20 Section 5.B.3, VM-20 Section 7.E.2 and Guidance Note below, VM-21 Section 4.D.4.c, VM-20 Section 7.K.3, VM-31 Section 3.D.6.f, VM-20 Section 9.A.4

January 1, 2023 NAIC Valuation Manual

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

See attached.

4. State the reason for the proposed amendment? (You may do this through an attachment.)

1. The formula for calculating the NPR for ULSG based on the value of the SG in VM-20 Section 3.B.5.c.ii.4 excludes the EA from the scaling of the NPR. This is inconsistent with the formula for calculating the NPR for ULSG disregarding the SG in VM-20 Section 3.B.5.d.iv. The scale is the prefunding ratio of actual SG (denoted ASG) to fully funded SG (denoted FFSG), and it makes intuitive sense that the NPR would be scaled to decrease or increase relative to the level of funding of the SG.
2. The VM-20 Section 5.B.3 stochastic reserve methodology is missing an aggregate cash surrender value (CSV) floor for scenario reserves before calculating CTE70. This allows scenario reserves that exceed the CSV to be dampened or eliminated by being averaged with scenario reserves. A CSV floor in the NPR does not address this concern, because it does not reflect the scenario reserves in the SR that exceed the CSV. In contrast, in VM-21 Section 4.B.1 scenario reserves are floored at the aggregate CSV as appropriate. Scenario reserves, as the asset requirement for specific scenarios, should be held at or above the CSV.
3. Add consideration to VM-20 Section 7.E.2 consistent with VM-21 Section 4.D.4.c’s requirement on the company’s assumed cost of borrowing along with the associated Guidance Note. Editorial clarifications to the existing Guidance Note in VM-21.
4. VM-20 Section 7.K.3 should clarify the requirement to reflect the hedge modeling error or insufficiency. Related to this change, more discussion about the hedging strategy and hedge modeling should be added to the Life Report section of the VM-31 Section 3.D.6.f report.

5. VM-20 Section 9.A.4 implies companies can elect to stochastically model risk factors other than interest rates & equities. Stochastic assumptions are not subject to the requirements of Section 9 relating to prudent estimate assumptions. Nor are any guidance/specific requirements provided if companies elect to stochastically model other risk factors. Add consideration to VM-20 consistent with VM-21 Section 12.B.4's requirement about the risk factors other than interest rates & equities that are stochastically modelled, which was added to VM-21 for this same reasoning.

\* This form is not intended for minor corrections, such as formatting, grammar, cross-references or spelling. Those types of changes do not require action by the entire group and may be submitted via letter or email to the NAIC staff support person for the NAIC group where the document originated.

NAIC Staff Comments:

<b>Dates:</b> Received	Reviewed by Staff	Distributed	Considered
1/30/23	SO		
<b>Notes:</b> <u>APF 2023-03</u>			

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**VM-20 Section 3.B.5.c.ii.4**

- 4) The NPR for an insured age x at issue at time t shall be according to the formula below:

$$\frac{\text{Min} [ \text{ASG}_{x+t} / \text{FFSG}_{x+t}, 1 ] \cdot \text{NSP}_{x+t} - E_{x+t}}{\text{Min} [ \text{ASG}_{x+t} / \text{FFSG}_{x+t}, 1 ] \cdot (\text{NSP}_{x+t} - E_{x+t})}$$

**VM-20 Section 5.B.3**

3. Set the scenario reserve equal to the sum of the statement value of the starting assets across all model segments and the maximum of the amounts calculated in Subparagraph 2 above.

The scenario reserve for any given scenario shall not be less than the cash surrender value in aggregate on the valuation date for the group of contracts modeled in the projection.

**VM-20 Section 7.E.2**

2. Model at each projection interval any disinvestment in a manner that is consistent with the company’s investment policy and that reflects the company’s cost of borrowing where applicable, provided that the assumed cost of borrowing is not lower than the rate at which positive cash flows are reinvested in the same time period, taking into account duration, ratings, and other attributes of the borrowing mechanism. Gross asset spreads used in computing market values of assets sold in the model shall be consistent with, but not necessarily the same as, the gross asset spreads in Section 7.E.1.d and Section 7.E.1.f above, recognizing that starting assets may have different characteristics than modeled reinvestment assets.

**Guidance Note:** The simple language above "provided that the assumed cost of borrowing is not lower than the rate at which positive cash flows are reinvested in the same time period" is intended to prevent excessively optimistic borrowing assumptions. If in any case, the assumed cost of borrowing restriction cannot be fully applied or followed precisely, then as with all other simplifications/approximations, the company shall not allow borrowing assumptions to materially reduce the reserve.

**VM-21 Section 4.D.4.c**

**Guidance Note:** The simple language above "provided that the assumed cost of borrowing is not lower than the rate at which positive cash flows are reinvested in the same time period" is intended to prevent excessively optimistic borrowing assumptions. If in any case, the assumed cost of borrowing restriction cannot be fully applied or followed precisely, then as with all other simplifications/approximations, the company shall not allow borrowing assumptions to materially reduce the reserve.

- Deleted:** This limitation is being referred to Life Actuarial (A) Task Force for review.
- Deleted:** not intended to impose a literal requirement. It is
- Deleted:** to reflect a general concept
- Deleted:** It is recognized that borrowing parameters and rules can be complicated, such that modeling limitations may not allow for literal compliance, in every time step, as long as the reserve is not materially affected. However, if
- Deleted:** the company is unable to fully apply this
- Deleted:** prudence dictates that a

**VM-20 Section 7.K.3**



3. In circumstances where one or more material risk factors related to a derivative program are not fully captured within the cash-flow model used to calculate CTE 70, the company shall reflect the approximation, simplification or model limitations in the modeling of such risk factors by increasing the SR as described in Section 5.E. The company shall also be able to justify that the method appropriately reflects the potential error using historical experience, e.g., analysis of historical performance or backtesting.

### **VM-31 Section 3.D.6.f**

- f. Risk Management – Detailed description of model risk management strategies, such as hedging and other derivative programs, including any future hedging strategies supporting the policies and any adjustments to the SR pursuant to VM-20, Section 7.K.3 and VM-20, Section 7.K.4, specific to the groups of policies covered in this sub-report and not discussed in the Life Summary Section 3.C.5. Documentation of any future hedging strategies should include documentation addressing each of the CDHS documentation attributes. The following should be included in the documentation:
- i. Descriptions of basis risk, gap risk, price risk and assumption risk.
  - ii. Methods and criteria for estimating the a priori effectiveness of the strategy.
  - iii. Results of any reviews of actual historical hedging effectiveness.
  - iv. Strategy Changes – Discussion of any changes to the hedging strategy during the past 12 months, including identification of the change, reasons for the change, and the implementation date of the change.
  - v. Hedge Modeling – Description of how the hedge strategy was incorporated into modeling, including:
    - Differences in timing between model and actual strategy implementation.
    - For a company that does not have a future hedging strategy supporting the contracts, confirmation that currently held hedge assets were included in the starting assets.
    - Evaluations of the appropriateness of the assumptions on future trading, transaction costs, other elements of the model, the strategy, and other items that are likely to result in materially adverse results.
    - Discussion of the projection horizon for the future hedging strategy as modeled and a comparison to the timeline for any anticipated future changes in the company's hedging strategy.
    - If residual risks and frictional costs are assumed to have a value of zero, a demonstration that a value of zero is an appropriate expectation.
    - Any discontinuous hedging strategies modeled, and where such discontinuous hedging strategies contribute materially to a reduction in the SR, any evaluations of the interaction of future trigger definitions and the discontinuous hedging strategy, including any analyses of model assumptions that, when combined with the reliance on the discontinuous hedging strategy, may result in adverse results relative to those modeled.

- The approach and rationale used to reflect the hedge modeling error(s).

#### **VM-20 Section 9.A.4**

4. If the company elects to stochastically model risk factors in addition to those listed in Section 9.A.3 above, the requirements in this section for determining prudent estimate assumptions for these risk factors do not apply.

It is expected that companies will not stochastically model risk factors other than the economic scenarios, such as policyholder behavior or mortality, until VM-20 has more specific guidance and requirements available. Companies shall discuss with domiciliary regulators if they wish to stochastically model other risk factors.

## Life Actuarial (A) Task Force/ Health Actuarial (B) Task Force Amendment Proposal Form\*

1. Identify yourself, your affiliation and a very brief description (title) of the issue.

**Identification:**

PBR Staff of Texas Department of Insurance

**Title of the Issue:**

The values of the starting assets defined in the two sentences in VM-21 Section 4.D.1.a are not identical.

2. Identify the document, including the date if the document is “released for comment,” and the location in the document where the amendment is proposed:

VM-21 Section 4.D.1.a.iii in January 1, 2023 NAIC Valuation Manual

3. Show what changes are needed by providing a red-line version of the original verbiage with deletions and identify the verbiage to be deleted, inserted or changed by providing a red-line (turn on “track changes” in Word®) version of the verbiage. (You may do this through an attachment.)

1. Starting Asset Amount

a. For the projections of accumulated deficiencies, the value of assets at the start of the projection shall be set equal to the approximate value of statutory reserves at the start of the projection plus the allocated amount of PIMR attributable to the assets selected. Assets shall be valued consistently with their annual statement values. The amount of such asset values shall equal the sum of the following items, all as of the start of the projection:

- i. All of the separate account assets supporting the contracts;
- ii. Any hedge instruments held in support of the contracts being valued; and
- iii. An amount of assets held in the general account equal to the approximate value of statutory reserves as of the start of the projections plus the allocated amount of PIMR attributable to the assets selected less the amount in (i) and (ii).

4. State the reason for the proposed amendment? (You may do this through an attachment.)

The edit is necessary to have the identical value of the assets at the start of the projection as in the first sentence (i.e., For the projections of accumulated deficiencies, the value of assets at the start of the projection shall be set equal to the approximate value of statutory reserves at the start of the projection **plus the allocated amount of PIMR attributable to the assets selected**).

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NAIC Staff Comments:

Dates: Received	Reviewed by Staff	Distributed	Considered
1/9/23, 2/7/23, 3/2/23	SO		
<b>Notes:</b> APF 2023-01 2/23/23 edit was to move the “plus the allocated amount of PIMR attributable to the assets selected” down to 4.D.1.a.iii from 4.D.1.a.			

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