

# MEETING MATERIALS PACKET

LIFE ACTUARIAL (A) TASK FORCE

April 8, 2021

NAIC SPRING NATIONAL MEETING

Virtual

April 8, 2021

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# NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

**NAIC 2021** | **SPRING NATIONAL MEETING VIRTUAL**

Date: 3/24/21

## LIFE ACTUARIAL (A) TASK FORCE

Thursday, April 8, 2021

11:00 a.m. – 5:30 p.m. ET / 10:00 a.m. – 4:30 p.m. CT / 9:00 a.m. – 3:30 p.m. MT / 8:00 a.m. – 2:30 p.m. PT

### ROLL CALL

Member	Representative	State
Doug Slape, Chair	Mike Boerner	Texas
Judith L. French, Vice Chair	Peter Weber	Ohio
Jim L. Ridling	Steve Ostlund	Alabama
Lori K. Wing-Heier	Sharon Comstock	Alaska
Ricardo Lara	Perry Kupferman	California
Michael Conway	Eric Unger	Colorado
Andrew N. Mais	Wanchin Chou	Connecticut
Dana Popish Severinghaus	Bruce Sartain	Illinois
Stephen W. Robertson	Karl Knable	Indiana
Doug Ommen	Mike Yanacheak	Iowa
Vicki Schmidt	Nicole Boyd	Kansas
Grace Arnold	Fred Andersen	Minnesota
Chlora Lindley-Myers	William Leung	Missouri
Bruce R. Ramge	Rhonda Ahrens	Nebraska
Marlene Caride	Seong-min Eom	New Jersey
Linda A. Lacewell	Bill Carmello	New York
Glen Mulready	Andrew Schallhorn	Oklahoma
Jonathan T. Pike	Tomasz Serbinowski	Utah
Scott A. White	Craig Chupp	Virginia
James A. Dodrill	Timothy Sigman/Joylynn Fix	West Virginia

NAIC Support Staff: Reggie Mazyck/Scott O’Neal

### AGENDA

- 10:00 – 10:05 a.m.                    1. Call to Order/Roll Call/Consider Adoption of its Minutes and Subgroup Reports—*Mike Boerner (TX)*
- 10:05 – 10:15 a.m.                    2. Consider Adoption of the Valuation Manual (VM)-22 (A) Subgroup Report—*Bruce Sartain (IL)*
- 10:15 – 11:30 a.m.                    3. Consider Exposure of the Future *Mortality Improvement* Amendment Proposal—*Marianne Purushotham (Society of Actuaries—SOA) and Rachel Hemphill (TX)*
- 11:30 – 11:40 a.m.                    Break
- 11:40 a.m. – 1:00 p.m.                4. Discuss Comments on the Economic Scenario Generator (ESG) —*Pat Allison (NAIC)*



## NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

**NAIC** | **SPRING**  
**2021** | **NATIONAL**  
| **MEETING**  
| **VIRTUAL**

- |                  |   |
|------------------|---|
| 1:00 – 2:00 p.m. | Lunch   |
| 2:00 – 3:20 p.m. | 5. Discuss Comments on the ESG (continued)— <i>Pat Allison (NAIC)</i>   |
| 3:20 – 3:30 p.m. | Break   |
| 3:30 – 3:45 p.m. | 6. Hear an Update on SOA Research and Education— <i>Dale Hall (SOA)</i>   |
| 3:45 – 4:00 p.m. | 7. Hear an Update from the American Academy of Actuaries (Academy) Life Practice Council— <i>Laura Hanson (Academy Life Practice Council)</i> |
| 4:00 – 4:25 p.m. | 8. Consider Exposure or Adoption of <i>Valuation Manual</i> Amendment Proposals— <i>Mike Boerner (TX)</i>                                     |
| 4:25 – 4:30 p.m. | 9. Discuss Any Other Matter Brought Before the Task Force   |

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Agenda Item 1  
Consider Adoption of its Minutes

Draft: 3/29/21

Life Actuarial (A) Task Force  
Virtual Meeting  
March 18, 2021

The Life Actuarial (A) Task Force met March 18, 2021. The following Task Force members participated: Doug Slape, Chair, represented by Mike Boerner and Rachel Hemphill (TX); Judith L. French, Vice Chair, represented by Peter Weber (OH); Lori K. Wing-Heier represented by Sharon Comstock (AK); Jim L. Ridling represented by Jennifer Li and Steve Ostlund (AL); Ricardo Lara represented by Ben Bock and Perry Kupferman (CA); Michael Conway represented by Eric Unger (CO); Andrew N. Mais represented by Wanchin Chou (CT); Dana Popish Severinghaus represented by Vincent Tsang (IL); Stephen W. Robertson represented by Karl Knable (IN); Vicki Schmidt represented by Nicole Boyd (KS); Grace Arnold represented by Fred Andersen and John Robinson (MN); Chlora Lindley-Myers represented by William Leung (MO); Bruce R. Rame represented by Rhonda Ahrens (NE); Marlene Caride represented by Kevin Clarkson (NJ); Linda A. Laceywell represented by Bill Carmello and Amanda Fenwick (NY); Glen Mulready represented by Andrew Schallhorn (OK); Jonathan T. Pike represented by Tomasz Serbinowski (UT); and Scott A. White represented by Craig Chupp (VA).

1. Discussed the ACLI Proposal to Extend the Nonforfeiture Timing

Mr. Boerner said the passage of the federal Consolidated Appropriations Act, 2021 in December 2020 changed the calculated nonforfeiture interest rate for policies with guarantees of greater than 20 years to 3.75%. The American Council of Life Insurers' (ACLI's) amendment proposal 2021-02 (Attachment A) recommends allowing the use of the 2020 nonforfeiture rates through June 2022, instead of through December 2021 as allowed by the *Standard Nonforfeiture Law for Life Insurance* (#808). Mr. Boerner said that authority that Model #808 gives the *Valuation Manual* is limited to setting the nonforfeiture rate for the calendar year. He said that Model #808 allows companies the option of using the nonforfeiture rate in effect at the end of the previous calendar year. He noted that the option cannot be extended by the *Valuation Manual*, as the ACLI proposes. Several state insurance regulators concurred with Mr. Boerner's interpretation of Model #808. Dan Schelp (NAIC) said while he understands the ACLI's concerns, his reading of Model #808 and the *Valuation Manual* does not support the *Valuation Manual* changes proposed by the ACLI.

Mr. Carmello suggested that the *Valuation Manual* could be revised to set a fixed rate to be used for the 2022 calendar year instead of using the methodology currently in place. Mr. Serbinowski noted that Mr. Carmello's suggestion will also allow for use of that fixed rate for 2023. Brian Bayerle (ACLI) said the ACLI understands the issues outlined by the state insurance regulators and will consider revising the amendment proposal to conform to the existing requirements. He said market issues will arise if companies are unable to get policy filings approved before the end of 2021. Paul Graham (ACLI) asked the state insurance regulators to consider the impact on small companies that had the nonforfeiture rate set at 4% for 2021 and anticipated using that rate for 2022. He said the small companies will experience resource constraints if required to change the rate to 3.75% for 2022.

Mr. Weber said the potential market disruptions is a policy issue and should not be addressed with technical solutions. He asked if the ACLI had raised the issue with the Life Insurance and Annuities (A) Committee. Mr. Graham said he had not discussed the matter with the Committee. Mr. Boerner said he would update the Committee chair on the issue. Mr. Graham agreed to withdraw the amendment proposal but said he believes a path to a solution may still be available through the *Valuation Manual*. He said the ACLI will consider potential next steps, including going to the Committee.

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

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Draft: 3/19/21

Life Actuarial (A) Task Force  
Virtual Meeting  
March 4 and March 11, 2021

The Life Actuarial (A) Task Force met March 4 and March 11, 2021. The following Task Force members participated: Doug Slape, Chair, represented by Mike Boerner and Rachel Hemphill (TX); Judith L. French, Vice Chair, represented by Jason Wade (OH); Lori K. Wing-Heier represented by Sharon Comstock (AK); Jim L. Ridling represented by Jennifer Li and Steve Ostlund (AL); Ricardo Lara represented by Ben Bock and Perry Kupferman (CA); Michael Conway represented by Eric Unger (CO); Andrew N. Mais represented by Wanchin Chou (CT); Doug Ommen represented by Mike Yanacheak (IA); Dana Popish Severinghaus represented by Vincent Tsang (IL); Stephen W. Robertson represented by Karl Knable (IN); Vicki Schmidt represented by Nicole Boyd (KS); Grace Arnold represented by Fred Andersen and John Robinson (MN); Chlora Lindley-Myers represented by William Leung (MO); Bruce R. Ramge represented by Rhonda Ahrens (NE); Marlene Caride represented by Kevin Clarkson (NJ); Linda A. Laceywell represented by Bill Carmello and Amanda Fenwick (NY); Glen Mulready represented by Andrew Schallhorn (OK); Jonathan T. Pike represented by Tomasz Serbinowski (UT); Scott A. White represented by Craig Chupp (VA); and James A. Dodrill represented by Tim Sigman (WV).

1. Discussed the ESG Questions Received through March 4

Dan Finn (Conning) discussed the economic scenario generator (ESG) questions (Attachment A) received from interested parties and interested state insurance regulators through March 4. Responses were focused on treasury and equity model questions; corporate model and governance questions will be addressed later. The questions and responses will be added to the Question and Answer (Q&A) document (Attachment B) on the Conning website. Mr. Finn said a free trial of the GEMS application programming interface (API) is available to companies interested in testing its functionality.

Connie Tang (Prudential) asked if documentation of the interrelationships of the treasury, equity and corporate models can be made available. Mr. Finn said Conning is currently working on that documentation.

2. Discussed the ESG Questions Received through March 11

On March 11, Scott O'Neal (NAIC) described the format of the Question Log (Attachment C). Brian Bayerle (American Council of Life Insurers—ACLI) said the ACLI has identified a few challenges, including the availability of documentation. He discussed the ACLI questions included in the Q&A document. Mr. Finn said Conning has focused solely on the characteristics of the model and the calibration. He said Conning has made no effort to determine the model's impact on reserves and capital. He said the current calibration is intended to provide a starting point that will be modified based on the feedback from state insurance regulators and companies. He said the information informing the calibration will not be limited to historical data. He said decisions about issues, such as volatility, will be made later. Mr. Bayerle said more documentation is needed before the ACLI is able to provide substantive comments. He said the totality of the model, including the interaction between its components, must be understood before making decisions on parameters. Mr. Finn said without calculating the reserve components, the types of information the ACLI is asking about is difficult to provide. Ms. Tang said there needs to be an understanding of the origination of the ESG components and their underlying dynamics. Mr. Finn said Conning is willing to provide more data, test more parameters and conduct more sensitivity tests if companies feel it will be helpful. He said Conning is also willing to test parameters over different time horizons.

Mr. Finn continued answering questions submitted by Chris Conrad (American Academy of Actuaries—Academy), Mr. Chupp, Link Richardson (American International Group—AIG), and Mark Tenney (Mathematical Finance Company).

The recordings of the virtual meeting are available on the Related Documents tab of the Task Force website.

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

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Draft: 3/15/21

Life Actuarial (A) Task Force  
Virtual Meeting  
February 25, 2021

The Life Actuarial (A) Task Force met Feb. 25, 2021. The following Task Force members participated: Doug Slape, Chair, represented by Mike Boerner and Rachel Hemphill (TX); Judith L. French, Vice Chair, represented by Jason Wade (OH); Lori K. Wing-Heier represented by Sharon Comstock (AK); Jim L. Ridling represented by Jennifer Li and Steve Ostlund (AL); Ricardo Lara represented by Ben Bock and Perry Kupferman (CA); Michael Conway represented by Eric Unger (CO); Andrew N. Mais represented by Wanchin Chou (CT); Doug Ommen represented by Mike Yanacheak (IA); Dana Popish Severinghaus represented by Vincent Tsang (IL); Stephen W. Robertson represented by Karl Knable (IN); Vicki Schmidt represented by Nicole Boyd (KS); Grace Arnold represented by Fred Andersen and John Robinson (MN); Chlora Lindley-Myers represented by William Leung (MO); Bruce R. Ramage represented by Rhonda Ahrens (NE); Marlene Caride represented by Kevin Clarkson (NJ); Linda A. Lacewell represented by Bill Carmello and Amanda Fenwick (NY); Glen Mulready represented by Andrew Schallhorn (OK); Jonathan T. Pike represented by Tomasz Serbinowski (UT); Scott A. White represented by Craig Chupp (VA); and James A. Dodrill represented by Tim Sigman (WV).

1. Discussed General ESG Updates

Pat Allison (NAIC) provided an update on the economic scenario generator (ESG) project. She said the landing page on the Conning & Company (Conning) website has been revised to facilitate access to ESG documentation. She said 23 companies have volunteered so far to participate in the ESG field test. She said participation requests will be accepted beyond the March 1 deadline. She said the question-and-answer (Q&A) document and technical documentation are available on the Conning website.

2. Heard a Presentation on the Equity Model from Conning

Daniel Finn (Conning) presented a slide deck (Attachment A) on the GEMS equity model. He said the basic dataset provides equity indices for small cap, mid-cap, large and aggressive U.S equities. He discussed the following items related to equity returns: 1) risk premium parameters; 2) variance parameters; 3) jump parameters; and 4) dividend parameters. He noted that the calibration methodology looks at recent equity price changes over the period leading up to the model start date.

3. Received an Overview of the Recent Exposures

Scott O'Neal (NAIC) provided an overview of the list of ESG documents (Attachment B) that the Task Force chair exposed on Feb. 24. The exposures are available on the Exposure tab of the Task Force website for public comment through March 22. The documents are also available on the Conning website.

The recording of the virtual meeting is available on the Related Documents tab of the Task Force website.

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

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Draft: 3/8/21

Life Actuarial (A) Task Force  
Virtual Meeting  
February 11, 2021

The Life Actuarial (A) Task Force met Feb. 11, 2021. The following Task Force members participated: Doug Slape, Chair, represented by Mike Boerner and Rachel Hemphill (TX); Judith L. French, Vice Chair, represented by Jason Wade (OH); Lori K. Wing-Heier represented by Sharon Comstock (AK); Jim L. Ridling represented by Jennifer Li and Steve Ostlund (AL); Ricardo Lara represented by Ben Bock and Perry Kupferman (CA); Michael Conway represented by Eric Unger (CO); Andrew N. Mais represented by Wanchin Chou (CT); Doug Ommen represented by Mike Yanacheak (IA); Dana Popish Severinghaus represented by Vincent Tsang (IL); Stephen W. Robertson represented by Karl Knable (IN); Vicki Schmidt represented by Nicole Boyd (KS); Grace Arnold represented by Fred Andersen and John Robinson (MN); Chlora Lindley-Myers represented by William Leung (MO); Bruce R. Ramage represented by Rhonda Ahrens (NE); Marlene Caride represented by Kevin Clarkson (NJ); Linda A. Lacewell represented by Bill Carmello and Amanda Fenwick (NY); Glen Mulready represented by Andrew Schallhorn (OK); Jonathan T. Pike represented by Tomasz Serbinowski (UT); Scott A. White represented by Craig Chupp (VA); and James A. Dodrill represented by Tim Sigman (WV). Also attending was: Steve Boston (PA).

1. Adopted Amendment Proposal 2020-11

Mr. Robinson discussed his comments (Attachment A) on amendment proposal 2020-11, which recommends revisions to the life principle-based reserving (PBR) exemption to modify the treatment of policies resulting from conversions. Ms. Hemphill said three editorial changes to the amendment proposal were made to reflect some of Mr. Robinson's comments. The first change revises the language in the third paragraph of Subsection 1.D.1 from "company fails to meet either condition ..." to "company does not meet either condition ...". The second and third changes revise Subsection 1.D.2 by respectively placing the words "that would otherwise be" in front of "subject to VM-20" and by deleting the phrase "that are being valued."

Mr. Leung made a motion, seconded by Ms. Ahrens, to adopt amendment proposal 2020-11 (Attachment B), including the editorial changes proposed by Ms. Hemphill. The motion passed unanimously.

2. Discussed Amendment Proposal 2019-33

Mr. Bock said the California Department of Insurance (DOI) comments (Attachment C) on amendment proposal 2019-33 (Attachment D) are largely editorial but specifically mention that the Subsection 1.B and Subsection 1.C references to Subsection 1.F should be revised to clarify whether they refer to Subsection 1.F.1 or Subsection 1.F.2. He said the proposal should also clarify whether retroactivity is permitted and for what years the premium for group business subject to individual underwriting will be included in the premium considered in the determination of eligibility for the PBR exemption. Mary Bahna-Nolan (American Academy of Actuaries—Academy) agreed to make the clarifications to the proposal based on the comments. Ms. Hemphill said the intent is to include all premiums for group business subject to individual underwriting regardless of the issue year. Ms. Allison said amendment proposal 2020-11 may also need clarification on that point.

Mr. Boston said his comment letter (Attachment E) suggests the need for clarification of the transition language in Subsection 1.F.1. Ms. Bahna-Nolan said the intent was to have the language apply only to group life certificates, not to group master contracts. She said the Academy will review the language.

Mr. Robinson said the primary purpose of his comments (Attachment F) is to redraft some of the language. He said his primary suggestion is to bring the footnote into the body of the text. Ms. Bahna-Nolan said the Academy agrees with the comments and will revise its proposal accordingly. Reggie Mazyck (NAIC) said that making a change to the annual statement blank to move the premium for group business subject to individual underwriting from the group column to the individual life column would alleviate the need for referencing group premiums in the footnote.

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

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Draft: 3/8/21

Life Actuarial (A) Task Force  
Virtual Meeting  
February 4, 2021

The Life Actuarial (A) Task Force met Feb. 4, 2021. The following Task Force members participated: Doug Slape, Chair, represented by Mike Boerner and Rachel Hemphill (TX); Tynesia Dorsey, Vice Chair, represented by Peter Weber (OH); Lori K. Wing-Heier represented by Sharon Comstock (AK); Jim L. Ridling represented by Jennifer Li (AL); Ricardo Lara represented by Ben Bock and Perry Kupferman (CA); Michael Conway represented by Eric Unger (CO); Andrew N. Mais represented by Wanchin Chou (CT); Doug Ommen represented by Mike Yanacheak (IA); Dana Popish Severinghaus represented by Vincent Tsang (IL); Stephen W. Robertson represented by Karl Knable (IN); Vicki Schmidt represented by Nicole Boyd (KS); Grace Arnold represented by Fred Andersen and John Robinson (MN); Chlora Lindley-Myers represented by William Leung (MO); Bruce R. Ramage represented by Rhonda Ahrens (NE); Marlene Caride represented by Kevin Clarkson (NJ); Linda A. Lacewell represented by Bill Carmello and Amanda Fenwick (NY); Glen Mulready represented by Andrew Schallhorn (OK); Jonathan T. Pike represented by Tomasz Serbinowski (UT); Scott A. White represented by Craig Chupp (VA); and James A. Dodrill represented by Tim Sigman (WV).

1. Exposed Amendment Proposal 2020-12

Ms. Hemphill said amendment proposal 2020-12 (Attachment A) provides *Valuation Manual* edits to make the definition of the term “clearly defined hedging strategy” (CDHS) in VM-21, Requirements for Principle-Based Reserves for Variable Annuities, consistent with the definition used in VM-20, Requirements for Principle-Based Reserves for Life Products. She said the definition is also applicable to the principle-based version of VM-22, Statutory Maximum Valuation Interest Rates for Income Annuities, currently in development. She noted that the amendment proposal moves the revised definition from VM-20 to VM-01, Definitions for Terms in Requirements. She said the amendment additionally proposes defining a new term, “seasoned hedging strategy” (SHS), which prevents companies from avoiding CDHS requirements by opting to fail one of the qualifying CDHS criteria. The SHS requirements mandate the modeling of an SHS that would increase the minimum reserve or total asset requirement (TAR). Ms. Hemphill also presented coordinating revisions to *Statement of Statutory Accounting Principles (SSAP) 108—Derivatives Hedging Variable Annuity Guarantees* (Attachment B). The coordinating revisions will be forwarded to the Statutory Accounting Principles (E) Working Group following the Task Force adoption of amendment proposal 2020-12.

Mr. Robinson made a motion, seconded by Mr. Leung, to expose amendment proposal 2020-12 for a 50-day public comment period ending March 26. The motion passed unanimously.

2. Exposed Amendment Proposal 2020-13

Ms. Hemphill said amendment proposal 2020-13 (Attachment C) revises the VM-20 starting asset collar parameters to correctly apply the collar to a modeled reserve that is negative.

Mr. Weber made a motion, seconded by Mr. Leung, to expose amendment proposal 2020-13 for a 21-day public comment period ending February 26. The motion passed unanimously.

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

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Draft: 2/5/21

Life Actuarial (A) Task Force  
Virtual Meeting  
January 28, 2021

The Life Actuarial (A) Task Force met Jan. 28, 2021. The following Task Force members participated: Doug Slape, Chair, represented by Mike Boerner and Rachel Hemphill (TX); Tynesia Dorsey, Vice Chair, represented by Peter Weber (OH); Lori K. Wing-Heier represented by Sharon Comstock (AK); Jim L. Ridling represented by Steve Ostlund (AL); Ricardo Lara represented by Ben Bock and Perry Kupferman (CA); Michael Conway represented by Eric Unger (CO); Andrew N. Mais represented by Wanchin Chou (CT); Doug Ommen represented by Mike Yanacheak (IA); Dana Popish Severinghaus represented by Vincent Tsang (IL); Stephen W. Robertson represented by Karl Knable (IN); Vicki Schmidt represented by Nicole Boyd (KS); Grace Arnold represented by Fred Andersen and John Robinson (MN); Chlora Lindley-Myers represented by William Leung (MO); Bruce R. Ramage represented by Rhonda Ahrens (NE); Marlene Caride represented by Kevin Clarkson (NJ); Linda A. Lacewell represented by Bill Carmello and Amanda Fenwick (NY); Glen Mulready represented by Andrew Schallhorn (OK); Jonathan T. Pike represented by Tomasz Serbinowski (UT); Scott A. White represented by Craig Chupp (VA); and James A. Dodrill represented by Tim Sigman (WV).

1. Discussed the Questions on the ESG Exposures

Scott O’Neal (NAIC) discussed items related to the economic scenario generator (ESG). He said the revised ESG timeline (see the Jan. 21 Task Force minutes) is posted on the Related Documents tab on the Task Force webpage. He said the public comment period for the Initial ESG Recommendation has been extended to March 7. He noted that an addendum was added to the exposure to indicate the extended comment period and provide clarifying information about the industry field test. He gave a reminder that ESG scenario statistics and reports, the scenario picker tool, and the stochastic exclusion test scenarios are exposed for a public comment period ending March 7.

Mr. O’Neal discussed the ESG question and answer (Q&A) document being developed by NAIC actuarial staff to capture and respond to the questions submitted by industry members. He said references to the submitted questions have been removed. The Q&A document will be posted on the Conning website. Randall McCumber (Lincoln Financial Group) asked when Conning expects to provide revised scenarios that fix the issue with the short end of the yield curve and when the actual scenarios for the Valuation Manual (VM)-20, Requirements for Principle-Based Reserves for Life Products, Stochastic Exclusion Ratio Test (SERT) will be available. Mr. O’Neal said NAIC staff and Conning are working to produce and evaluate additional scenario sets, and they will provide them as soon as possible. Dan Finn (Conning) said the SERT scenarios should be available in two weeks. Mr. McCumber asked if the deterministic reserve (DR) would still be linked to the same SERT scenario from the new ESG. Pat Allison (NAIC) said that is still the case. Mr. McCumber asked what scenario data companies will receive for the field test. Ms. Allison said it will probably include both the full set of 10,000 scenarios and a smaller subset of scenarios. Connie Tang (Prudential) asked if additional statistics and reports could be provided when the scenarios are released. Ms. Allison expressed openness to receiving feedback on specific statistics that industry members would like to see. Brian Bayerle (American Council of Life Insurer—ACLI) and Jason Kehrberg (American Academy of Actuaries—Academy) communicated that having additional documentation as soon as possible will facilitate the development of better questions from industry. Mr. Boerner said any existing documentation questions should be submitted as soon as possible.

2. Discussed Comments on the Criteria to Assess VM-20 YRT Reinsurance Solutions

Mr. Bayerle discussed the ACLI comment letter (Attachment A) on the Criteria to Assess VM-20 YRT Solutions (Attachment B). He said industry is supportive of allowing a prudent level of mortality improvement in the reserve projection. He said the ACLI believes that a principle-based yearly renewable term (YRT) solution should not be constrained by the current requirements of the *Accounting Practices and Procedures Manual* (AP&P Manual). He opined that changes to the AP&P Manual to address the YRT solution may be appropriate depending on the solution chosen.

Mr. Robinson said his comment letter (Attachment C) provides feedback on the considerations listed in the solutions document. He suggested that a few of the criteria included in the considerations could be eliminated.

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

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Draft: 1/28/21

Life Actuarial (A) Task Force  
Virtual Meeting  
January 21, 2021

The Life Actuarial (A) Task Force met Jan. 21, 2021. The following Task Force members participated: Texas, Chair, represented by Mike Boerner and Rachel Hemphill (TX); Tynesia Dorsey, Vice Chair, represented by Peter Weber (OH); Jim L. Ridling represented by Steve Ostlund (AL); Ricardo Lara represented by Ben Bock and Perry Kupferman (CA); Michael Conway represented by Eric Unger (CO); Andrew N. Mais represented by Wanchin Chou (CT); Doug Ommen represented by Mike Yanacheak (IA); Dana Popish Severinghaus represented by Vincent Tsang (IL); Stephen W. Robertson represented by Karl Knable (IN); Vicki Schmidt represented by Nicole Boyd (KS); Grace Arnold represented by Fred Andersen and John Robinson (MN); Chlora Lindley-Myers represented by William Leung (MO); Bruce R. Ramage represented by Rhonda Ahrens (NE); Marlene Caride represented by Kevin Clarkson (NJ); Linda A. Laceywell represented by Bill Carmello and Amanda Fenwick (NY); Glen Mulready represented by Andrew Schallhorn (OK); Jonathan T. Pike represented by Tomasz Serbinowski (UT); Scott A. White represented by Craig Chupp (VA); and James A. Dodrill represented by Tim Sigman (WV).

1. Adopted its 2020 Fall Meeting Minutes

Mr. Chou made a motion, seconded by Mr. Ostlund, to adopt the Task Force’s Dec. 3, 2020, minutes (Attachment A). The motion passed unanimously.

2. Heard an Update on IRC Section 7702

Paul Graham (American Council of Life Insurers—ACLI) said the U.S. Congress passed the federal Consolidated Appropriations Act of 2020 at the end of December 2020. He said the Act included COVID-19 relief and changes to Section 7702 of the Internal Revenue Code (IRC), replacing the hard-coded 4% rate for the cash value accumulation test and the 6% rate used in the net single premium calculation for the guideline premium test with an indexed rate. He said that based on the revisions to Section 7702, a 2% life insurance nonforfeiture interest rate floor will be in place for 2021 and 2022, allowing a reduction in the maximum nonforfeiture interest rate to 3.75% for guarantee durations greater than 20 years. He said the ACLI will review the relevant wording in VM-02, Minimum Nonforfeiture Mortality and Interest, to fine-tune it as needed. Mr. Boerner said that companies will have 12 months to comply with the 3.75% rate for states that provide the 12-month option as found in the *Standard Nonforfeiture Law for Life Insurance* (#808), Section 5cH(1). He said state insurance regulators should expect a surge in product filings.

3. Heard a Status Report on the ESG and Exposed the Scenario Statistics and Reports, the Senior Picker Tool, and the Stochastic Exclusion Ratio Test Documents

Pat Allison (NAIC) discussed the revised economic scenario generator (ESG) implementation timeline (Attachment B). She said the timing of the Executive Committee (EX) and Plenary anticipated adoption of ESG-related *Valuation Manual* amendments has been moved from the Summer National Meeting to the Fall National Meeting. She said the Life Insurance and Annuities (A) Committee and the Task Force target adoption dates have been adjusted accordingly. She discussed other target dates that have been adjusted to reflect the revised adoption dates. Brian Bayerle (ACLI) said the timeline is still aggressive and does not allow time for a second round of field testing, if necessary. Mr. Boerner said that if an additional field test is needed, the date for adoption of the *Valuation Manual* amendments will likely be pushed to 2022.

Ms. Allison said the initial ESG recommendations exposed for public comment in December will be revised to include an addendum indicating the types of feedback being sought. The exposure period was extended to March 7 without Task Force objection. Ms. Allison said the ESG field test is expected to run from June through August. NAIC staff will work with state insurance regulators to design the ESG field test. A request for field test participants will be distributed in the next few days. Companies will be asked to respond by March 1. Reports developed from field test results will be shared publicly.

Scott O’Neal (NAIC) shared that ESG-related exposures are posted on the Exposure tab of the Task Force web page. He said production scenario files and documentation will be available on the landing page of the Conning website. He said instructions for accessing these items are provided in the “Navigation to ESG Information” document (Attachment C) on the Related Documents tab of the Task Force web page. Mr. O’Neal and Dan Finn (Conning) discussed the Scenario Statistics and Reports (Attachment D), the Scenario Picker Tool (Attachment E), and the Stochastic Exclusion Ratio Test (Attachment F) documents.

Mr. Boerner exposed the three documents for a 45-day public comment period ending March 7.

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

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Draft: 1/5/20

Life Actuarial (A) Task Force  
Virtual Meeting  
December 17, 2020

The Life Actuarial (A) Task Force met Dec. 17, 2020. The following Task Force members participated: Texas, Chair, represented by Mike Boerner and Rachel Hemphill (TX); Tynesia Dorsey, Vice Chair, represented by Peter Weber (OH); Ricardo Lara represented by Ben Bock and Perry Kupferman (CA); Michael Conway represented by Eric Unger (CO); Andrew N. Mais represented by Wanchin Chou (CT); Doug Ommen represented by Mike Yanacheak (IA); Shannon Whalen represented by Vincent Tsang (IL); Stephen W. Robertson represented by Karl Knable (IN); Vicki Schmidt represented by Nicole Boyd (KS); Grace Arnold represented by Fred Andersen and John Robinson (MN); Chlora Lindley-Myers represented by William Leung (MO); Bruce R. Ramage represented by Rhonda Ahrens (NE); Marlene Caride represented by Kevin Clarkson (NJ); Linda A. Lacewell represented by Bill Carmello and Amanda Fenwick (NY); Glen Mulready represented by Andrew Schallhorn (OK); Tanji J. Northrup represented by Tomasz Serbinowski (UT); and Scott A. White represented by Craig Chupp (VA).

1. Exposed the Goals Spreadsheet and Treasury Targets and Parameters Spreadsheet

Daniel Finn (Conning Inc.) provided a GEMS equity and corporate models overview presentation (Attachment A), which outlines the potential goals related to the models and gives background information and rationale for each goal. Pat Allison (NAIC) discussed a spreadsheet that lists the goals for U.S. Treasury rates, equity and corporate bond returns, and the market proxies used to produce fund returns. The spreadsheet includes the related decisions the Task Force is asked to make for each goal and the initial Conning recommendations for each decision. Connie Tang (Prudential) asked if information supporting the initial Conning recommendations will be made available to interested parties. Ms. Allison said access to the Conning basic data set as of Dec. 31, 2019, calibrated based on the initial set of recommendations, will be made available on the Principle-Based Reserving (PBR) page on the Industry tab of the NAIC website ([https://content.naic.org/pbr\\_data.htm](https://content.naic.org/pbr_data.htm)). Mr. Finn said the information will be updated over time to reflect interested party comments and Task Force decisions.

Mr. Boerner asked if any Task Force members objected to exposing the spreadsheet summarizing the decisions needed for the Treasury, equity and corporate models (Attachment B) and the spreadsheet showing the parameters of the Treasury Model (Attachment C) for a public comment period ending Jan. 31. There was no objection from Task Force members.

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

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Agenda Item 1 (Continued)  
Consider Adoption of Subgroup Reports

March 17, 2021

**From:** Fred Andersen, Chair  
The Experience Reporting (A) Subgroup

**To:** Mike Boerner, Chair  
The Life Actuarial (A) Task Force

**Subject:** The Report of the Experience Reporting (A) Subgroup to the Life Actuarial (A) Task Force

The Experience Reporting (A) Subgroup met on March 2, 2021 (see the attached minutes) to discuss plans for collecting life insurance mortality and policyholder behavior data using the NAIC as the statistical agent. There are plans to start developing mandatory reporting of variable annuity data and to continue work on evaluating actuarial aspects of accelerated underwriting in 2021.

Draft: 3/17/21

Experience Reporting (A) Subgroup  
Virtual Meeting  
March 2, 2021

The Experience Reporting (A) Subgroup of the Life Actuarial (A) Task Force met March 2, 2021. The following Subgroup members participated: Fred Andersen, Chair (MN); Perry Kupferman (CA); Wanchin Chou (CT); Nicole Boyd (KS); Rhonda Ahrens (NE); Bill Carmello (NY); and Mike Boerner (TX).

1. Received an Update on the Mortality Experience Data Collection Project

Pat Allison (NAIC) provided an overview of the mortality experience data collection project (Attachment 1). She said companies will be asked to submit data for the 2018 and 2019 observation years using 2020 and 2021 *Valuation Manual* requirements. Data for 129 companies, representing 90% of industry claims, is expected to be submitted by the Sept. 30 deadline. Ms. Allison said that VM-51, Experience Reporting Formats, lists the data items to be collected and the format to be used for record submission. She said validity checks and reasonability checks will be used to screen the data for accuracy. Jim Stinson (NAIC) discussed the internal NAIC reports, designed using the Tableau software, to facilitate the reasonability checks.

Ms. Allison noted that the reasonability checks will include multiyear comparisons. She said data from the Kansas data call was used to help develop the validity and reasonability checks. She requested Subgroup feedback on the data screening approach.

An interested party asked whether each participating company will be asked to sign an agreement that outlines the details of the engagement. Dan Schelp (NAIC) responded that each company will execute a click agreement with the NAIC at the time of data submission. Ms. Allison discussed the multiple methods used to determine whether company submissions are acceptable. She noted the automated validity checks within the Regulatory Data Collection (RDC) tool. She said that the NAIC actuarial team will perform additional data validity checks. The results of the data validity checks will be shared with the submitting companies. Ms. Allison closed with a discussion of the responsibilities of participating companies.

Having no further business, the Experience Reporting (A) Subgroup adjourned.

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March 25, 2021

**From:** Rhonda Ahrens, Chair  
The Guaranteed Issue (GI) Life Valuation (A) Subgroup

**To:** Mike Boerner, Chair  
The Life Actuarial (A) Task Force

**Subject:** The Report of the GI Life Valuation (A) Subgroup to the Life Actuarial (A) Task Force

The GI Life Valuation (A) Subgroup has not met since the Fall National Meeting and may meet prior to the Summer National Meeting depending on availability of subgroup members or their concerns. Otherwise, it is in a dormant/monitoring mode given that there have been no new known studies of GI Life mortality that could prove useful in formulating a new prescriptive requirement for the reserves for GI Life products. One direction we could go is to continue consideration of how to adopt the GI Life table but require companies with credible experience to use a credibility weighted mortality whether their experience is lower or higher than the table.

March 15, 2021

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

**To:** Mike Boerner, Chair  
The Life Actuarial (A) Task Force

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

The Indexed Universal Life Illustration (A) Subgroup has not met since the Fall National Meeting. The Subgroup plans to meet again after any significant market developments following the adoption of *Actuarial Guideline XLIX-A, The Application of the Life Illustrations Model Regulation to Policies with Index-Based Interest Sold On or After November 25, 2020 (AG 49-A)*.

March 25, 2021

**From:** Rhonda Ahrens, Chair  
The Longevity Risk (E/A) Subgroup

**To:** Mike Boerner, Chair  
The Life Actuarial (A) Task Force

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

The Longevity Risk (A) Subgroup has not met since the Fall National Meeting and is not likely to meet prior to the Summer National Meeting. A Drafting Group has been formed to contemplate reserve requirements related to pension risk transfer (PRT) and longevity reinsurance (LR) transactions that are more specific to the PRT reserves and are not solely related to the longevity component. The Subgroup will reconsider C-2 RBC for PRT products or LR transactions after reviewing the Drafting Group's recommendations for resolution of identified issues.

April 8, 2021

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

**To:** Mike Boerner, Chair  
The Life Actuarial (A) Task Force

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

The Variable Annuity Capital and Reserve (E/A) Subgroup has not met since the Fall National Meeting. The Subgroup will monitor results of companies implementing the Variable Annuity framework and stand ready to consider any requests of the Task Force or the Life Risk-Based Capital (E) Working Group.

## Agenda Item 2

Consider Adoption of the Valuation Manual (VM)-22 (A) Subgroup Report

Draft: 3/29/21

Valuation Manual (VM)-22 (A) Subgroup  
Virtual Meeting  
March 17, 2021

The VM-22 (A) Subgroup of the Life Actuarial (A) Task Force met March 17, 2021. The following Subgroup members participated: Bruce Sartain, Chair, and Vincent Tsang (IL); Ahmad Kamil, Elaine Lam and Thomas Reedy (CA); Lei Rao-Knight (CT); Nicole Boyd (KS); William Leung (MO); Rhonda Ahrens (NE); Seong-min Eom (NJ); Bill Carmello and Amanda Fenwick (NY); Rachel Hemphill and Karen Jiang (TX); Tomasz Serbinowski (UT); and Craig Chupp (VA).

1. Voted to Use Two Risk Categories for VM-22 Valuations

Mr. Sartain said the consideration before the Subgroup is whether to have separate reserve categories for deferred and income annuities or have a single reserve category including both product types.

Mr. Carmello made a motion, seconded by Ms. Ahrens, to require two reserve categories for VM-22, Statutory Maximum Valuation Interest Rates for Income Annuities, with the requirement defaulting to a single risk category if the motion failed. The motion passed 6–4, with California, Kansas, Missouri, Nebraska, New York and Virginia in favor of the motion.

2. Tabled a Motion to Retain the VM-20 Integrated Risk Management Language

Ms. Lam made a motion, seconded by Mr. Leung, to retain the language in Section 5A of VM-20, Requirements for Principle-Based Reserves for Life Products, that allows for aggregation of products with significantly different risk profiles if the products are managed as part of an integrated risk management process. Ben Slutsker (American Academy of Actuaries—Academy) said the Academy Annuity Reserves and Capital Work Group (ARCWG) recommendation to have principles for aggregation was accompanied by a recommendation for having a single reserve category. He said, given the Subgroup vote for two reserve categories and the lack of clarity surrounding the integrated risk management language, the ARCWG favors removing the language in Section 5A from consideration for VM-22. Brian Bayerle (American Council of Life Insurers—ACLI) said the ACLI concurs with the ARCWG position. Ms. Hemphill said the language should be removed because it is unclear and may result in differing state insurance regulator interpretations and applications. Mr. Carmello and Ms. Ahrens said they believe the language serves as a useful regulatory tool.

Ms. Lam said she would be willing to amend the motion to include principles that might help clarify the VM-20 language but was unable to immediately offer specific language. Mr. Sartain suggested tabling the motion. Mr. Carmello made a motion, seconded by Ms. Lam, to table the motion. The motion passed unanimously.

3. Voted to Retain the VM-20 SERT Language

Mr. Sartain asked the Subgroup to consider whether the language in VM-20 Section 6.A.2.b.iv prohibiting the grouping of “contract types with significantly different risk profiles” when performing the stochastic exclusion ratio test (SERT) should be retained for VM-22.

Mr. Carmello made a motion, seconded by Ms. Hemphill, to retain VM-20 Section 6.A.2.b.iv language. The motion passed unanimously.

Having no further business, the VM-22 (A) Subgroup adjourned.

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Draft: 3/17/21

Valuation Manual (VM)-22 (A) Subgroup  
Virtual Meeting  
March 3, 2021

The VM-22 (A) Subgroup of the Life Actuarial (A) Task Force met March 3, 2021. The following Subgroup members participated: Bruce Sartain, Chair, and Vincent Tsang (IL); Ahmad Kamil and Thomas Reedy (CA); Lei Rao-Knight (CT); Mike Yanacheak (IA); Nicole Boyd (KS); William Leung (MO); Rhonda Ahrens (NE); Seong-min Eom (NJ); Anna Krylova (NM); Amanda Fenwick (NY); Rachel Hemphill and Karen Jiang (TX); Tomasz Serbinowski (UT); and Craig Chupp (VA).

1. Discussed Field Test Timing

Mr. Sartain said the VM-22, Statutory Maximum Valuation Interest Rates for Income Annuities, field test is now scheduled from February 2022 through June 2022. He said the new date will necessitate a shift in the target date for the implementation of the revised VM-22 beyond January 2023 as initially planned. He said an additional change is the inclusion of capital considerations into the scope of the field test as a means of updating C-3 Phase 1. He noted that different conditional tail expectation (CTE) measures will be used for the annuity valuation and the C-3 Phase 1 efforts.

2. Discussed the Product Scope of the Proposed ARCWG Framework

Chris Conrad (American Academy of Actuaries—Academy) said the Academy Annuity Reserves and Capital Work Group (ARCWG) has determined that the scope of VM-22 should include both deferred and immediate annuities, on both an individual and group basis. He said account value-based deferred annuities, including single premium deferred annuities (SPDAs), flexible premium deferred annuities (FPDAs) and fixed indexed annuities (FIAs), will be in scope. Examples of the payout annuities that are in scope are single premium immediate annuities (SPIAs), pension risk transfers (PRTs), deferred income annuities (DIAs) and structured settlement contracts. He said the ARCWG has proposed excluding, for now, guaranteed investment contracts (GICs), stable value contracts and funding agreements from the scope of VM-22, primarily because those products exhibit less optionality and are tied to other regulations. He said the application of the framework to in-force business is still in question. Brian Bayerle (American Council of Life Insurers—ACLI) said the ACLI suggests exempting products that are expected to consistently pass the exclusion test. Mr. Sartain asked if the certification method of exclusion testing would sufficiently address the ACLI concern. Mr. Bayerle said the ACLI would prefer an approach similar to the *Valuation Manual* treatment of guaranteed issue (GI) products.

3. Discussed Starting Assets and Discount Rates

Mr. Conrad said the ARCWG recommends that the treatment of starting assets and discount rate follow the requirements of VM-21, Requirements for Principle-Based Reserves for Variable Annuities, with a safe harbor of using the new money re-investment rate for net asset earned rate (NAER) discount rate upon depletion of assets to avoid anomalous re-investment rates when the asset base is small. Mr. Bayerle said the ACLI agrees but would like the ARCWG to revisit making borrowing cost restrictions more principle-based. Mr. Tsang suggested using a higher cost of borrowing when assets are depleted. Mr. Conrad said the Academy's proposal provides a guardrail that would allow a company the option to choose a more conservative rate. He said the issue may surface during the field test and can be addressed at that time.

4. Discussed Allocation of Policy Reserves

Ben Slutsker (Academy) said the method of reserve allocation affects the reporting categories in the annual financial statement, as well as per policy comparisons to cash value floor, which may have tax considerations. He said those considerations make allocation a sensitive issue. He said the ARCWG proposes a rigid approach that looks at the greatest present value of accumulated deficiencies (GPVAD) under a moderately adverse scenario. Ms. Hemphill said she is concerned about using a single scenario because it can be overly influenced by the business that drives the GPVAD for the CTE 70 scenario. She said the Texas Department of Insurance (TDI) recommended in its comment letter the disclosure of reserves for certain categories of business separately. She proposed using those same categories as the basis of an approach that could be scaled for the purpose of allocation. Mr. Slutsker said he will discuss the approach with the ARCWG. Mr. Sartain said he will add the disclosure proposal to the issues list.

Having no further business, the VM-22 (A) Subgroup adjourned.

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Draft: 3/17/21

Valuation Manual (VM)-22 (A) Subgroup  
Virtual Meeting  
February 24, 2021

The VM-22 (A) Subgroup of the Life Actuarial (A) Task Force met Feb. 24, 2021. The following Subgroup members participated: Bruce Sartain, Chair, and Vincent Tsang (IL); Elaine Lam, Ahmad Kamil and Thomas Reedy (CA); Lei Rao-Knight (CT); Mike Yanacheak (IA); Nicole Boyd (KS); William Leung (MO); Rhonda Ahrens (NE); Seong-min Eom (NJ); Anna Krylova (NM); Bill Carmello (NY); Rachel Hemphill and Karen Jiang (TX); Tomasz Serbinowski (UT); and Craig Chupp (VA).

1. Discussed Adding Longevity Risk to the Exclusion Test

Mr. Sartain said the topic of adding longevity risk to the exclusion test will be added to the issues list for consideration during the field test.

2. Discussed Whether to Allow a Policy with a CDHS to be Eligible for Exclusion from the Stochastic Reserve

Mr. Sartain said that VM-20, Requirements for Principle-Based Reserves for Life Products, does not allow a policy supported by a clearly defined hedging strategy (CDHS) to be excluded from the stochastic reserve calculation. He said the reasons given on the Feb. 17 Subgroup call were: 1) the existence of a CDHS implies that there is material economic risk that should preclude the associated policies from being excluded from the stochastic reserve; and 2) the possibility that policies could be excluded due to hedging is discomfoting. Ben Slutsker (American Academy of Actuaries—Academy) said the Academy believes that hedging programs should generally require stochastic reserve modeling, with the exception of hedging programs that are solely for the purpose of funding interest credits. He said fixed indexed annuities (FIAs) are examples of products that inherently have hedging in their designs, may not contain significant basis risk and should be allowed to use an exclusion test. Mr. Slutsker agreed to have the Academy look at the existing language in VM-21, Requirements for Principle-Based Reserves for Variable Annuities, to determine how it might be revised to address non-variable annuity hedging programs.

3. Discussed Reinvestment Guardrails

Chris Conrad (Academy) said that given the emphasis on the general account spread for fixed annuity products, the Academy is asking the Subgroup to revisit the existing fixed income guardrail of 50% A-rated bonds and 50% AA-rated bonds. He said the current split no longer reflects industry experience. He said the Academy recommends using the VM-22, Statutory Maximum Valuation Interest Rates for Income Annuities, credit quality distribution, which better represents average industry holdings. Ms. Hemphill said the Texas Department of Insurance (TDI) comment letter lists its concerns with the Academy recommendation. Brian Bayerle (American Council of Life Insurers—ACLI) said the ACLI supports the Academy recommendations. Steve Tizzoni (Equitable) said the Equitable comment letter expresses its belief that spread limits on reinvestments and existing assets ensure that there is no outsized reliance on excess credit spreads. He said Equitable's letter suggests that the timing for contraction of spreads should be shortened.

Mr. Sartain asked for a brief history of the data supporting the VM-22 credit quality distribution categories. Mr. Conrad said the bond data was obtained for the Academy C-1 Working Group, which provided granular data from the years 2011 and 2013. Mr. Tsang said he supports guardrails that consider industry trends but believes boundaries are necessary. He suggested that members of industry develop a proposal for state insurance regulator consideration. Mr. Bayerle said the ACLI will work to develop proposals for both life and annuity products.

Having no further business, the VM-22 (A) Subgroup adjourned.

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Draft: 2/24/21

Valuation Manual (VM)-22 (A) Subgroup  
Virtual Meeting  
February 10, 2021

The VM-22 (A) Subgroup of the Life Actuarial (A) Task Force met Feb. 10, 2021. The following Subgroup members participated: Bruce Sartain, Chair, and Vincent Tsang (IL); Elaine Lam, Ahmad Kamil and Thomas Reedy (CA); Lei Rao-Knight (CT); Mike Yanacheak (IA); William Leung (MO); Rhonda Ahrens (NE); Seong-min Eom (NJ); Bill Carmello (NY); Rachel Hemphill and Karen Jiang (TX); Tomasz Serbinowski (UT) and Craig Chupp (VA).

1. Announced the Formation of a PRT Drafting Group

Mr. Sartain said pension risk transfer (PRT) business is often originated in other countries, which raises the question of whether U.S. population tables are appropriate when reserving for PRT business. He said a regulator-to-regulator drafting group is being formed to look at this and other issues related to PRT business.

2. Discussed Treatment of Longevity Risk for Exclusion Testing

Ben Slutsker (American Academy of Actuaries—Academy) said the Academy proposed a stochastic exclusion ratio test (SERT) that had an up shock and a down shock to longevity for each of the 15 designated equity and interest scenarios. The greatest of the scenarios would become the numerator of the SERT. A baseline economic scenario without shocks would form the denominator of the SERT. Mr. Slutsker discussed a deterministic certification option, indicating that a stochastic run may not be necessary for contracts without policyholder options. He said a single deterministic scenario calibrated to a given conditional tail expectation (CTE) level may be sufficient. He said other criteria will have to be met.

Ms. Hemphill said that mortality is just one consideration to be addressed by the exclusion test; other risks will also need to be considered. She noted hedging as one such item that will need to be given consideration.

Brian Bayerle (American Council of Life Insurers—ACLI) said the ACLI believes that it is not clear whether including longevity as one of the considerations for stochastic testing makes sense. He said applying margins to the mortality assumptions might be a better way to capture longevity risk.

Ms. Hemphill said the Texas Department of Insurance (TDI) has concerns about having fixed SERT parameters that apply universally. She suggested incorporating a principle-based materiality threshold into the SERT determination.

3. Discussion of Whether to Allow Risks to Be Combined

Mr. Sartain asked if interest rate risk and longevity risk should be netted together. Mr. Slutsker said the intent of netting the two risks is to reflect any covariance that may exist. He said it also facilitates implementation. Mr. Tsang said he prefers keeping blocks of business separate to allow for a meaningful understanding of the specific risks in each block. Mr. Slutsker said that approach is similar to the deterministic certification option. He said the option does not eliminate the stochastic calculation but requires it less frequently.

4. Discussed Exclusion Testing for FIAs

Mr. Tsang discussed the reasoning for not allowing products for which a company uses a clearly defined hedging strategy (CDHS) to qualify for the exclusion tests. Mr. Sartain noted that if the VM-20, Requirements for Principle-Based Reserves for Life Products, language were to be used, fixed indexed annuities (FIAs) without guaranteed minimum benefits would not be eligible for exclusion.

Having no further business, the VM-22 (A) Subgroup adjourned.

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Draft: 2/24/21

Valuation Manual (VM)-22 (A) Subgroup  
Virtual Meeting  
February 3, 2021

The VM-22 (A) Subgroup of the Life Actuarial (A) Task Force met Feb. 3, 2021. The following Subgroup members participated: Bruce Sartain, Chair, and Vincent Tsang (IL); Elaine Lam, Ahmad Kamil and Thomas Reedy (CA); Lei Rao-Knight (CT); Mike Yanacheak (IA); William Leung (MO); Seong-min Eom (NJ); Bill Carmello (NY); and Rachel Hemphill and Karen Jiang (TX).

1. Discussed the Standard Projection Amount

Mr. Sartain said that a straw poll taken during Subgroup's Jan. 27 showed that most Subgroup members prefer limiting the standard projection amount (SPA) to a disclosure item instead of a stochastic reserve floor. He asked if anyone who prefers the SPA as a disclosure item had an alternative stochastic reserve floor in mind other than the cash value. No Subgroup members indicated a desire for an alternative stochastic reserve floor.

2. Discussed Aggregation Principles

Mr. Sartain said the final straw poll taken during the Subgroup's Jan. 27 meeting asked whether the language governing the criteria for aggregating products based on the management of associated risks should remain principle-based, be more prescriptive or be removed from the framework. He said that members voted, by a small margin, to remove the language. Ben Slutsker (American Academy of Actuaries—Academy) said the Academy initially thought that the language would apply to exclusion testing criteria, as well as reserving. He said now that the Subgroup is separately considering aggregation criteria for exclusion testing, the Academy believes the language is not needed for reserving. Brian Bayerle (American Council of Life Insurers—ACLI) and Mr. Leung agreed with the Academy's position. Ms. Lam said she considers the reserve categories as guardrails and believes the principles may still be necessary within the specific categories. Mr. Sartain said the principles are vague and might be difficult to regulate. He asked why it should matter whether their risks are managed together if the products can offset one another. Ms. Hemphill said if there are clear reasons that certain products should not be aggregated, that might be an indication that additional reserve categories are needed. Mr. Kamil said the principles should be further investigated before deciding they are not needed. Mr. Sartain said discussion will continue, with the goal of a final vote on the issue in March.

3. Discussed Aggregation for Exclusion Testing

Mr. Sartain said that VM-20, Requirements for Principle-Based Reserves for Life Products, requires that the types of business aggregated for exclusion testing must be similar. He asked if participants agreed that the VM-20 concept should be included in the language of the principled-based reserving (PBR) for non-variable annuities. Mr. Slutsker said the Academy would not be opposed to application of the principle for the purpose of exclusion testing but would be cautious about the granularity of exclusion testing restrictions. Mr. Sartain said the VM-20 language would be used as it currently stands. Ms. Hemphill said she is supportive of that position.

4. Discussed Other Exclusion Testing Issues

Mr. Bayerle said the ACLI comments include a suggestion that a materiality threshold be considered. He said decisions on the exclusion test should be deferred until they can be informed by the results of the field test. He said the ACLI has concerns about the inclusion of longevity risk in exclusion testing. He said products that will always be able to pass the exclusion tests should possibly be considered out of scope. He said the exclusion tests should be performed at the highest level of aggregation.

Having no further business, the VM-22 (A) Subgroup adjourned.

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Draft: 2/3/21

Valuation Manual (VM)-22 (A) Subgroup  
Virtual Meeting  
January 27, 2021

The VM-22 (A) Subgroup of the Life Actuarial (A) Task Force met Jan. 27, 2021. The following Subgroup members participated: Bruce Sartain, Chair, and Vincent Tsang (IL); Elaine Lam and Thomas Reedy (CA); Lei Rao-Knight (CT); Mike Yanacheak (IA); Nicole Boyd (KS); William Leung (MO); Rhonda Ahrens (NE); Seong-min Eom (NJ); Russell Toal (NM); Bill Carmello (NY); Rachel Hemphill and Karen Jiang (TX); Tomasz Serbinowski (UT); and Craig Chupp (VA).

1. Discussed the Academy's Preliminary Framework Elements for Fixed Annuity PBR

The Subgroup discussed whether the *Valuation Manual* should have separate categories for deferred annuities and payout annuities. Ms. Ahrens advocated for having separate chapters in recognition of the inherent differences in the products. She said the benefits of risk diversification between the products is not a sufficient reason for aggregating the products for the purpose of calculating reserves. She said she is comfortable with the two reserve categories for now. She noted that additional categories can be developed later if the necessity arises due to product innovation. Mr. Yanacheak said he is less concerned with whether deferred annuities and payout annuities are separated by chapters. He said he is more interested in developing principles that would apply appropriate reserving treatment for the two types of annuities.

The Subgroup took a straw poll on whether there should be one or two reserve categories for reserve aggregation. The vote was seven to five in favor of two reserve categories. Mr. Sartain noted that two or more categories could be required for disclosure.

A second straw poll asked whether the standard projection amount (SPA) should be used as a reserve floor or solely for disclosure. The vote was seven to four in favor of limiting the SPA to a disclosure item. The Subgroup agreed that multiple reserve categories should be required for the SPA.

The final straw poll asked whether the language governing the criteria for aggregating products based on the management of associated risks should remain principle-based, be more prescriptive, or be removed from the framework. There were four votes for removal of the principle-based language, three votes for retaining the principle-based language, and three abstentions. No members voted for more prescriptive language. Two members left the call prior to voting.

Having no further business, the VM-22 (A) Subgroup adjourned.

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Draft: 1/27/21

Valuation Manual (VM)-22 (A) Subgroup  
Virtual Meeting  
January 20, 2021

The VM-22 (A) Subgroup of the Life Actuarial (A) Task Force met Jan. 20, 2021. The following Subgroup members participated: Bruce Sartain, Chair, and Vincent Tsang (IL); Elaine Lam and Thomas Reedy (CA); Lei Rao-Knight (CT); Mike Yanacheak (IA); Nicole Boyd (KS); William Leung (MO); Rhonda Ahrens (NE); Seong-min Eom (NJ); Russell Toal (NM); Bill Carmello (NY); Rachel Hemphill and Karen Jiang (TX); Tomasz Serbinowski (UT); and Craig Chupp (VA).

1. Discussed the Academy's Preliminary Framework Elements for Fixed Annuity PBR

Mr. Sartain explained that the Subgroup will address the subject of aggregation separately for stochastic reserve calculation and exclusion testing. Ben Slutsker (American Academy of Actuaries [Academy] Annuity Reserve and Capital Work Group—ARCWG) said the aggregation of the reserve categories when calculating the conditional tail expectation (CTE)-70 allows for the benefits of diversification. He said the ARCWG favors a single reserving category for reserve aggregation. He said the ARCWG is open to considering multiple categories for exclusion testing aggregation.

Mr. Sartain asked commenters to discuss the portions of their comment letters that address aggregation. John Robinson (MN) said his comment letter (Attachment 1) reflects his concern with the auditability of non-variable annuity reserves if deferred and payout annuities are aggregated for the stochastic reserve calculation. Mr. Sartain asked if the auditability goal could be accomplished with additional disclosures. Mr. Robinson responded that even if the deferred and payout reserve numbers are separately disclosed, reconciling them to the aggregate reserve will be difficult. He reiterated his preference for at least two reserving categories. He also said the criteria applicable to aggregation requires greater definition.

Ms. Hemphill said page 3 of her comment letter (Attachment 2) addresses aggregation. She said the aggregation principles in the preliminary framework will lead to inconsistent aggregation across companies. She said aggregation based on the principles would be difficult to review. She said she favors full aggregation with disclosures of the aggregation benefits and application of the standard projection amount (SPA).

Brian Bayerle (American Council of Life Insurers—ACLI) said the ACLI comment letter (Attachment 3) supports the principle that aggregation be consistent with how assets are managed. He said the ACLI supports full aggregation with the disclosure of aggregation benefits.

Steve Tizzoni (Equitable) said the Equitable comment letter (Attachment 4) supports full aggregation because it reflects the diversification benefits that are core to the insurance industry. He also spoke in favor of the SPA as a floor to ensure that the diversification benefit is not excessive.

A straw poll was taken on the issue of whether, in the determination of the stochastic reserve, all fixed annuity business should be aggregated as a single reserving category with the appropriate disclosures or more than one reserving category should be required for aggregation. The Subgroup member voting was split evenly, with both options getting six votes. Mr. Sartain, the chair, refrained from voting. He suggested that given the tightness of the voting, the topic requires more discussion.

Having no further business, the VM-22 (A) Subgroup adjourned.

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### Agenda Item 3

Consider Exposure of the Future Mortality Improvement Amendment Proposal

Dates: Received	Reviewed by Staff	Distributed	Considered
03/26/21	RM		
APF 2020-10 revised 3/26/21			

**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.

Pat Allison – NAIC, Scott O’Neal – NAIC, Mary Bahna-Nolan – Pacific Life, and Rachel Hemphill – Texas Department of Insurance; SOA for development of rates and loading.

Reflect a prudent level of mortality improvement beyond the valuation date.

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, 2021 edition), VM-20 Section 6.A.2.b.v, VM-20 Section 8.C Introductory Paragraph, VM-20 Section 8.C.18 and Guidance Note, VM-20 Section 9.C.2.h, VM-20 Section 9.C.3.g, VM-20 Section 9.C.7.h (new), VM-31 Section 3.D.3.i, VM-31 Section 3.D.11.c.i

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 Appendix.

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

The current Valuation Manual requirements are beyond moderately adverse with regard to future mortality improvement when significant future mortality improvement is expected. The requirements also need to be clarified for the handling of historical or anticipated future mortality deterioration (i.e., negative improvement). We propose to reflect a prudent level of mortality improvement beyond the valuation date, using SOA analysis for best estimate future mortality improvement and margin.

With the reflection of a prudent level of future mortality improvement in the mortality assumption, the interim 1/2cx approach to YRT is a reasonable consideration for a long-term approach.

## Appendix

### VM-20 Section 6.A.2.b.v:

- v. Mortality improvement beyond the projection start date, other than that outlined in VM-20 Section 9.C.7.f, may not be reflected in the mortality assumption for the purpose of calculating the stochastic exclusion ratio.

### VM-20 Section 8.C, introductory paragraph:

#### C. Reflection of Reinsurance Cash Flows in the Deterministic Reserve or Stochastic Reserve

For non-guaranteed YRT reinsurance ceded or assumed, the cash-flow modeling requirements in Sections 8.C.1 through 8.C.14 below do not apply since non-guaranteed YRT reinsurance ceded or assumed does not need to be modeled; see Section 8.C.18 below. YRT shall include other reinsurance arrangements that are similar in effect to YRT.

### VM-20 Section 8.C.18 and Guidance Note:

18.

When the reinsurance ceded or assumed is on a non-guaranteed YRT or similar basis, the corresponding reinsurance cash flows do not need to be modeled. Rather, for a ceding company, the post-reinsurance-ceded DR or SR shall be the pre-reinsurance-ceded DR or SR pursuant to Section 8.D.2, plus any applicable provision pursuant to Section 8.C.15 and Section 8.C.17, minus the NPR reinsurance credit from Section 8.B. For an assuming company, the DR or SR for the business assumed on a non-guaranteed YRT or similar basis shall be set equal to the NPR from Section 3.B.8, plus any applicable provision pursuant to Section 8.C.16 and Section 8.C.17. In the case where there are also other reinsurance arrangements that are not on a non-guaranteed YRT or similar basis, the reinsurance credit shall include the modeled reinsurance credit reflecting those other reinsurance arrangements. In particular, where there are also other reinsurance arrangements that are dependent on the non-guaranteed YRT or similar actuarial judgment shall be used to project cash flows consistent with the above outlined treatment for non-guaranteed YRT or similar arrangements.

### VM-20 Section 9.C.2.h:

h. Mortality improvement shall not be incorporated beyond the valuation date in the company experience mortality rates. However, historical mortality improvement from the central point of the underlying company experience data to the valuation date may be incorporated.

**Guidance Note:** Future mortality improvement is not applied to the company experience mortality rates, since it would be duplicative of the future mortality improvement that is applied to the prudent estimate mortality assumptions in Section 9.C.7.f.

VM-20 Section 9.C.3.g:

g. Mortality improvement shall not be incorporated beyond the valuation date in the industry basic table. However, historical mortality improvement from the date of the industry basic table (e.g., Jan. 1, 2008, for the 2008 VBT and July 1, 2015, for the 2015 VBT) to the valuation date may be incorporated using the improvement factors for the applicable industry basic table as determined by the SOA, adopted by LATF, and published on the SOA website, <https://www.soa.org/research/topics/indiv-val-exp-study-list/> (Mortality Improvement Rates for AG-38 for Year-End YYYY).

**Guidance Note:** Future mortality improvement is not applied to the industry basic table, since it would be duplicative of the future mortality improvement that is applied to the prudent estimate mortality assumptions in Section 9.C.7.f.

To allow time for companies to reflect the updated mortality improvement rates, the rates that are to be used in the year-end YYYY valuation should be adopted by LATF and published on the SOA website by September of YYYY. If this timeline is not met, then at the company's option they may use the most recent set of prior mortality improvement rates adopted by LATF and published on the SOA website.

VM-20 Section 9.C.7.f (new section):

The prudent estimate mortality assumptions may be adjusted to reflect up to 20 years of future mortality improvement that the company expects beyond the valuation date, using prudent future mortality improvement factors no greater than the loaded factors determined by the SOA, adopted by LATF, and published on the SOA website, at [\[link/reference to SOA site TBD\]](#).

**Guidance Note:** Mortality improvement may be positive or negative (i.e., deterioration).

To allow time for companies to reflect the updated mortality improvement rates, the rates that are to be used in the year-end YYYY valuation should be adopted by LATF and published on the SOA website by September of YYYY. If this timeline is not met, then at the company's option they may use the mortality improvement rates for the prior year (year YYYY-1).

VM-31 Section 3.D.3.i:

i. Adjustments for Mortality Improvement – Description of and rationale for any adjustments to the mortality assumptions for mortality improvement up to and beyond the valuation date. Such a description shall include the assumed start and end dates of the improvements and a table of the annual improvement percentage(s) used, both without and with margin, separately for company experience and the industry basic table(s), along with a sample calculation of the adjustment (e.g., for a male preferred nonsmoker age 45).

VM-31 Section 3.D.11.c.i:

i. If the company believes the method used to determine anticipated experience mortality assumptions includes an implicit margin, the company can adjust the anticipated experience assumptions to remove this implicit margin for this reporting purpose only. If any such adjustment is made, the

company shall document the rationale and method used to determine the anticipated experience assumption.

# Future Mortality Improvement Recommendation (VM20)



MORTALITY IMPROVEMENTS LIFE WORKING GROUP  
(MILWG) OF THE ACADEMY LIFE EXPERIENCE COMMITTEE  
AND SOA PREFERRED MORTALITY PROJECT OVERSIGHT  
GROUP (“JOINT COMMITTEE”)

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NAIC Spring Meeting - April 8, 2021

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## Individual Life Insurance Future Mortality Improvement for VM20 Products

**GOAL: To allow a prudent level of future mortality improvement (FMI) for VM20 products beginning with the 2022 valuation manual**

- FMI scale will be developed, updated and made available to practitioners annually
- Updates will be limited to a threshold of materiality for making a change
- Two versions of the scale will be published: Basic and Loaded
- Period of scale application: 20 years

2



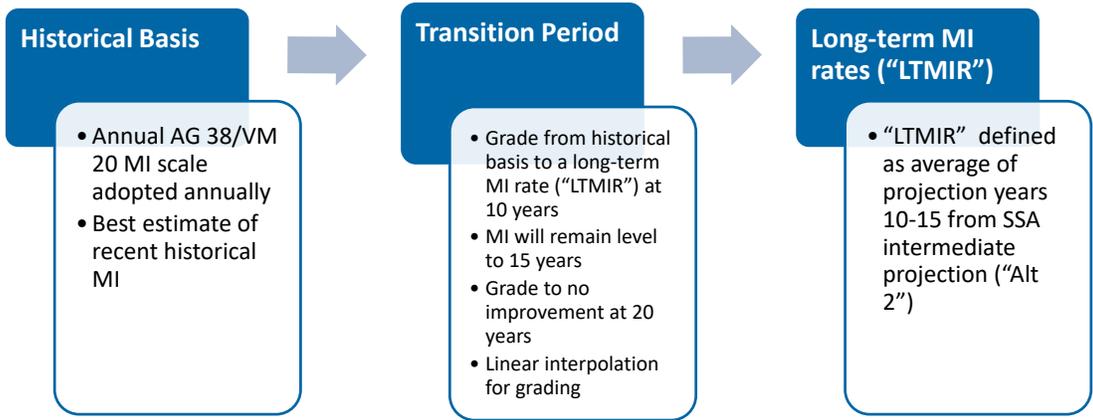
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2

### Recommended FMI Scale Methodology: Modification of Consistent Framework for MI Scale Development

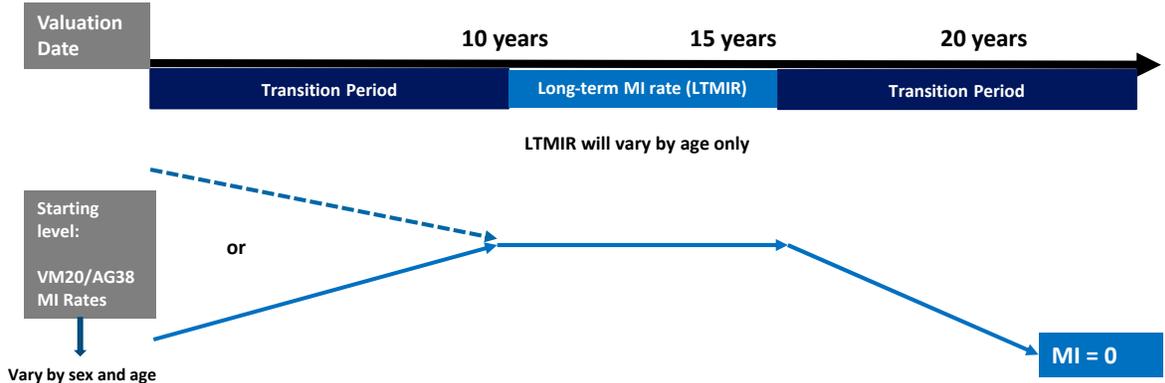


3



3

### Recommendation: Consistent Framework Approach Simplified Method



4



4

## Loading/Margin Considerations

### □ MARGIN ON THE INCREMENTAL MORTALITY IMPROVEMENT SCALE

- Simplified method represents our “best estimate”
- Margin will be included for all companies
  - Companies may use a more conservative MI but not less conservative
- Margin will take the form of a flat % reduction in the best estimate MI scale
  - **Current thinking is between one-quarter and one-third reduction in MI levels**
- There will be a discontinuity in the starting rates for FMI and those used up to the valuation date representing the application of the margin

### □ OPTIONS DISCUSSED:

- Greater volatility in recent historical data and for certain age groups



5



5

## Items for Discussion in Phase 2

### □ SHORTER TERM ISSUES

- Consideration of COVID-19 impacts when we reach 2020 data inclusion
  - Shock
  - Potential longer term impacts
- Impacts of opioid epidemic
- Threshold of materiality for making a change in a given year
- Socioeconomic differences (between general and insured population)

### □ LONGER TERM ISSUES

- Consideration of cohort effects



6



6

# Next Steps

- Amendment Proposal Form /methodology approval
- Implement smoothing process
- Finalize margin levels
- Develop best estimate and loaded scales for 2022 implementation

7



7

## Contact Information

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## Agenda Item 4 & 5

Discuss Comments on the Economic Scenario Generator (ESG)



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AMERICAN ACADEMY of ACTUARIES  
*Objective. Independent. Effective.™*

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March 24, 2021

Mr. Mike Boerner  
Chair, Life Actuarial (A) Task Force (LATF)  
National Association of Insurance Commissioners (NAIC)

Dear Mr. Boerner,

The American Academy of Actuaries'<sup>1</sup> Economic Scenario Generator Work Group (the "ESG WG") appreciates the opportunity to offer comments on LATF's Economic Scenario Generator (ESG) exposures.

1. Proprietary ESGs

As a general point, the ESG WG would like to reiterate the view previously communicated by Academy Life Practice Council work groups that the use of scenario sets generated by proprietary ESGs be permitted as an alternative option to scenario sets prescribed by the NAIC, subject to proper documentation on how the scenario sets were developed and why they are appropriate for statutory reserves and capital.

2. Full ESG Documentation

Deliverable I of NAIC RFP #2053 is "Full documentation on the ESG specifications, calibration, and tools." The ESG WG would like to reiterate the importance of this deliverable because it is full documentation of the model that enables actuaries to adequately understand the dynamics of the model and objectively evaluate whether the scenario sets it produces are fit for purpose (adequate for determining reserves and capital, *irrespective of the starting yield curve*) as required of actuaries by Actuarial Standard of Practice (ASOP) No. 56, *Modeling*, and ASOP No. 41, *Actuarial Communications*.

- a. ASOP No. 56, *Modeling*, provides guidance to actuaries when performing actuarial services with respect to using, reviewing, or evaluating models. Section 3.1.2 of ASOP No. 56 states actuaries "evaluating the model ... should confirm that, in the actuary's professional judgment, the model reasonably meets the intended purpose." Section 3.1.3 of ASOP No. 56 states that "[w]hen using the model, the actuary should make reasonable efforts to confirm that the model structure, data, assumptions, governance and controls, and model testing and output validation are consistent with the intended purpose."

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

- b. Section 3.2 of ASOP No. 41, *Actuarial Communications*, states “In the actuarial report, the actuary should state the actuarial findings, and identify the methods, procedures, assumptions, and data used by the actuary with sufficient clarity that another actuary qualified in the same practice area could make an objective appraisal of the reasonableness of the actuary’s work as presented in the actuarial report.”

Although several pieces of ESG documentation have been exposed by LATF, the ESGWG believes that many key elements of full ESG documentation are missing. Furthermore the ESGWG believes that achieving full documentation relies on the critical project path of adequately understanding how the ESG will perform under different conditions and assessing whether scenario sets produced by the ESG are fit for use in principle-based reserve and capital calculations. The ESGWG also believes that a lack of sufficient documentation could unintentionally impact the ESG quantity and quality of these important risk management tools available to the life insurance industry. Additional detail can be found in *Exhibit 2.1—ESG Documentation*,<sup>2</sup> but as a starting point, here are two specific pieces of documentation that, as yet, have not been publicly provided:

- The exact means by which the ESG model is adjusted to fit any discrepancies to the starting yield curve, and exactly how those discrepancies run off over the course of the projection (the entire yield curve, not just the three points corresponding to the model’s three state variables).
- The correlations between the various equity and bond funds.

### 3. Significant Differences From Previously Prescribed ESG

The ESGWG does not believe the newly proposed ESG needs to be substantially similar to the Academy’s Interest Rate Generator (AIRG). Indeed, the proposed ESG is not. But the ESGWG does believe it is important that regulators and interested parties appreciate just how different the two models are (in both underlying structure and calibration), generally agree that the differences are warranted, and understand the impact the differences will have on the scenario sets produced and the level and volatility of industry reserve and capital levels, including how model dynamics and interrelationships will change in the long term as the current economic environment changes. This will take time and additional documentation, but to start with, the ESGWG would like to highlight the following three significant differences:

- a. **Lack of explicit MRP**—The old model has an explicit and intuitive mean-reversion parameter (MRP) that changes rather slowly according to a specified formula. The new model has no analogous MRP for regulators to explicitly set or control. Instead, NAIC’s vendor, Conning, has agreed to target an MRP by tweaking various parameters during calibration, but as seen in the revised baseline scenario set, this can have unintended consequences given the various linkages in the model. And it remains to be seen how sensitive mean reversion is to the current economic environment—e.g., to the observed yield curve on the valuation date. The ESGWG believes it is important to understand this significant change in the mean-reversion process and resulting impact on the volatility of capital over time.
- b. **Connection Between Interest Rates and Equity Returns**—The old model has no such connection. The simple formulaic connection in the new model (equity risk premium over short Treasury rate) is largely based on actuarial judgment and the goal that the model produces risk-neutral scenarios. Empirical evidence suggests the equity risk premium depends on non-modeled macroeconomic factors (historical correlations have been both highly negative and highly

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<sup>2</sup> This exhibit and subsequent exhibits cited are included in the enclosure to this comment letter.

positive). This has the potential to magnify the tails because calibration points in the new model depend on the starting yield curve in a way that they did not in the past. It also has the potential to make long-duration insurance liabilities dependent on overnight Treasury rates, which seems artificial and counterintuitive. The ESGWG believes it is important to understand this connection that was not in the old model, and to consider the impact the connection has on reserve and capital levels and whether calibration standards may need adjustment in level and/or form as a result.

- c. **Stochastic Modeling of Credit Spreads and Defaults for Bond Fund Returns**—The new ESG simulates bond fund returns by first using a credit model to simulate each of the individual bonds contained in the bond fund; e.g., using stochastic credit spreads, transitions, and defaults. The old ESG uses a simpler approach that does not involve a credit model. To date, the ESGWG simply does not have enough documentation on the new credit model to comment further on the impact this significant change may have and whether it is desirable or not. Until we have complete documentation of the credit model, the ESGWG suggests revisiting whether a simpler approach to simulating bond fund returns (not requiring a credit model) would be more appropriate. Regulators may also wish to consider the degree to which the approach for simulating bond fund returns is consistent with the regulatory framework for modeling insurer general account assets, which requires using deterministic prescribed credit spreads and defaults and could easily lead to calibration inconsistencies.

#### 4. Implementation Timeline

The ESGWG believes the implementation timeline does not leave enough time for regulators and interested parties to:

- a. Review the totality of exposed documentation and adequately understand the newly proposed ESG model and the scenarios it would produce under various initial conditions.
- b. Discuss the properties that scenario sets used for reserves/capital *should have* and evaluate the new ESG and its scenario sets on that basis.
- c. Iterate to desirable field-testing options based on (a) and (b).
- d. Conduct a field test, allowing time for additional/iterative testing (given the likelihood there will be adjustments based on what is learned from prior iterations of testing).

The ESGWG also believes that approval in November/December could present companies and vendors with an insufficient short timeframe to implement the final ESG in their systems.

#### 5. Scenario Sets – Rates

Although the ESGWG may have additional comments as additional missing documentation is exposed, the ESGWG's initial comments on the **baseline scenario set** (exposed 12/18/20) can be found in *Exhibit 5.1: Scenario Sets—Rates*. Key issues include the following:

- a. The exposed scenario set, which is as of 12/31/19, has interest rates as low as -4.8%, which seems quite extreme. The likelihood and magnitude of negative interest rates produced by the model may be even more extreme when calibrated to more recent market conditions.
- b. A comparison of risk-neutral and real-world calibrations implies a negative market price of risk for long-term interest rates.
- c. Equity indices lose all value in some scenarios while increasing hundreds of times in others.
- d. Unreasonable short-end inversions. In nearly all scenarios, the yield curve is inverted between 1-month and 2-year rates (fixed in the revised baseline scenario set).

The ESGWG also reviewed the **revised baseline scenario set** (exposed 2/24/21). Although the addition of a long-term overnight yield target appeared to fix (d) above, *the other issues found in the*

*baseline scenario set are still present, even exacerbated* for example, for (a) negative rates are even more extreme, and for (c) equity indices have even more extreme tails. This highlights how calibrating ESG models can be complicated; i.e., recalibrating to fix a particular issue can easily have unforeseen consequences, often exposing new issues or exacerbating existing issues. The ESGWG suggests discussing the properties that scenario sets used for reserves/capital *should have*, and understanding the degree to which desired scenario set properties can be achieved via recalibration of real-world (RW) and/or risk-neutral (RN) parameters. It may be that certain desired scenario set properties are out of reach given constraints on calibration and/or model structure.

6. Scenario Sets—Accompanying Report

To facilitate reviewing newly published scenario set files, the ESGWG suggests adding: (A) a new section on Model Input, and (B) additional statistics and charts for the existing section on Model Output. Additional detail can be found in *Exhibit 6.1: Scenario Sets—Accompanying Report*.

7. Scenario Sets—File Format

For use in companies' existing models, the ESGWG suggests publishing scenario sets in two alternative .CSV file formats: (A) GEMS .CSV file format, which is currently exposed, and (B) the Academy Interest Rate Generator (AIRG) multiple .CSV file format. Additional detail can be found in *Exhibit 7.1: Scenario Sets—File Format*.

We look forward to further documentation and discussion on the NAIC's ESG project.

Sincerely,

Jason Kehrberg, MAAA, FSA  
Chairperson, Economic Scenarios Work Group  
American Academy of Actuaries

*Enclosures: Exhibits 2.1, 5.1, 6.1 and 7.1*

### **Exhibit 2.1 – ESG Documentation**

There is widespread expectation that the NAIC will be providing sufficient details on the new models so that interested practitioners can attain a complete operational understanding of all aspects of the simulation of model output, calibration of the models, and application of related tools. This expectation was set by the requirement in item I in the Deliverables section of the RFP which states: “[f]ull documentation on the ESG specifications, calibration, and tools.” The requirement of full documentation was reiterated on slide 11 of the October 27, 2020 NAIC presentation of Pat Allison “ESG Implementation Project: Background and Deliverables” which states: “Conning will provide full documentation on specifications, calibration, and tools. This will include: Full documentation of the necessary components used to develop the Basic Data Set.” This is an important commitment since it is the Basic Data Set which is to be prescribed by the NAIC for statutory reporting.

As summarized on slide 7 of the aforementioned October 27, 2020 NAIC presentation, the components of the Basic Data Set are:

- Treasury Yields - 1M, 3M, 6M, 1Y - 30Y by year; Spot and Coupon Yields.
- Bond Returns - Money Market; Short, Intermediate and Long Governments; Short, Intermediate and Long Investment Grade Corporates; High Yield Corporates.
- Equity Returns - S&P 500, Russell Midcap, Russell 2000, NASDAQ, MSCI EAFE and MSCI Emerging Market.

As of the end of February 2021, the NAIC has provided three documents that relate to the models underlying the Basic Data Set:

- NAIC Scenario Set Technical Documentation - Interest Rates Model
- NAIC Scenario Set Technical Documentation - Equity and Dividend Model
- NAIC Scenario Set Technical Documentation - Corporate Yield Model

No specific documentation has been provided on how the bond returns are computed. The NAIC Scenario Set Technical Documentation - Interest Rates Model contains significant information on the treasury interest rate model but does not constitute full documentation. The NAIC Scenario Set Technical Documentation - Equity and Dividend Model provides a sense of how the equity model works but is missing fundamental information. The NAIC Scenario Set Technical Documentation - Corporate Yield Model provides no meaningful details on how the corporate yield model works.

Full documentation must achieve the following outcomes for each of the models used to develop the Basic Data Set.

1. Full specification of model dynamics.
2. Operational description of the calibration process.
3. Mapping of the calibration parameters into the model dynamics.

Full documentation of calibration requires the details of how the parameters for each model are determined and what data is used in the calibration procedure. It is reasonable to expect that someone who has understood the model specification and calibration documents would be able to arrive at similar model parameters. Indeed, the ability to independently reproduce calibration results is an important check and robustness and stability of a model.

Full specification of Treasury model dynamics requires the following:

1. Bond pricing formulas
2. State variable simulation procedure
3. State variable initialization procedure

4. Initial yield curve fitting procedure
5. Explicit mapping between real world and risk neutral model parameters
6. Documentation should use the original standard notation of Cox, Ingersoll, and Ross

Full specification of Equity model dynamics requires the following:

1. Dynamic specification for equity price return
2. Details of jump process for equity index
3. Correlation specifications for diffusion and jump terms across equity indices
4. Dynamic specification for dividend yield process
5. Any adjustments that need to be made to dividend process when very large jumps occur in the equity process
6. Specific linkages between equity returns and interest rates

Full specification of Bond Fund Return model dynamics:

The bond fund returns models appear to be based on a corporate bond pricing model called the corporate yield model. Therefore, to understand the bond fund returns the details of the corporate yield model are needed, including details on credit spreads, credit migration, loss given default and the relationships between rates/spreads and equity/credit. Similar information detail to what is needed for the treasury model is required. NAIC documents and presentations have indicated that the bond fund returns are based on an index of individual bonds. Therefore, the methodology/rules of the index construction are required.

**Exhibit 5.1: Scenario Sets – Rates**

Selected ESG findings on rates baseline scenario set (exposed on 12/18/20):

A. Interest Rate Model

1. Conning's interest rate model structure and calibration (i.e., 1M to 2Y) are inverted in most scenarios nearly immediately and in nearly all scenarios after projection year 5.
2. The **frequency and severity of negative interest rates** in the exposed scenario set are high
  - a. Rates for short-term maturities approach -5%.
  - b. Roughly 20% of the 1Y and 2Y yields are negative between projection years 5 and 15, and those rates are negative in more than 15% scenarios over the longer term.
3. **Insufficiently broad range of rates** or other anomalies / inconsistencies
  - a. 20Y yields were above 8% for much of the period between 1974 and 1990, but exposed 20Y yields are above 8% less than 1% of the time.
  - b. While there are more low-rate scenarios than the AIRG, 20Y rates seldom average below 1% over the 30-year projection (and never average below 70-80 bps).
  - c. In the exposed scenarios, annualized realized volatility for 20Y yields is nearly double the annualized realized volatility for 1Y yields. This is inconsistent with both Conning's 1995+ historical period (where 1Y volatility was lower than 20Y) and LATF's 1953+ historical period (where 1Y volatility was higher than 20Y by ~50%, not double). The relationship between the volatilities for longer and shorter maturities may be contributing to shorter term bond funds having higher volatility and lower returns over the long term.

B. Equity Model

1. Index returns **explode** in both tails. In some scenarios equity *indices* essentially become worthless while other scenarios have indices hundreds of times starting levels by year 30.
2. Other characteristics of the equity distribution also seem to diverge from historical data
  - a. Monthly S&P 500 returns in LATF's exposure have substantially more negative skew and higher kurtosis than history.
  - b. The S&P 500 (price index) has negative returns over 30 years in more than 5% scenarios (even though that has never been observed in history).
  - c. The exposed scenarios set international dividend yields to zero even though EAFE dividends have historically been non-zero.
  - d. SPX / EAFE correlations seem higher than long-term historical data.

C. Corporate Model:

1. **Credit spreads** inferred by taking the difference between annualized corporate and government bond fund income returns suggest that
  - a. LATF's / Conning's proposed long-term credit spread for bonds in the separate account are lower than the prescribed NAIC general account bond fund spreads.
  - b. Extreme credit events in the scenarios appear to be materially higher than historical stresses.
2. Month 1 income returns for government bonds do not seem to align with time 0 government bond yields. (Month 1 Short Gov income return ~ 1Y UST yield. Expected to align with the 50% 1Y / 50% 5Y given the short-term fund definition.)

**Exhibit 6.1: Scenario Sets – Accompanying Report**

To facilitate reviewing newly published scenario set files, the ESWG suggests adding the following to the report accompanying scenario sets.

- A. A new section on Model Input
  - 1. Values of the model parameters used to generate the associated scenario set
  - 2. Starting state variables used to generate the associated scenario set
  
- B. Additional statistics and charts for the existing section on Model Output
  - o Unless otherwise specified
    - Selected key rate tenors: 1M, 3M, 6M, 1Y, 2Y, 3Y, 5Y, 7Y, 10Y, 20Y, 30Y
    - Selected funds: all equity and bond funds included in the published scenarios
    - Selected time points: 0.25, 0.5, 1, 2, 3, 4, 5, 10, 20, 30, 40 and 50 years
    - Selected percentiles: 1, 2.5, 5, 10, 25, 50, 75, 90, 95, 97.5 and 99
    - Selected key rate pairs: 1m2s (2Y rate less 1M rate), 3m10s, 2s10s, 10s30s, 1s20s
    - Selected corp bonds: 1Y A, 5Y A, 10Y A, 30Y A, 1Y BBB, 5Y BBB, 10Y BBB and 30Y BBB
    - Selected yield curve shapes: Normal, Flat, Steep, Inverted, Humped (criteria TBD)
  - 1. Not scenario path dependent
    - a. Distribution of Key Rate Pair Term Spreads
      - o Key rate term spread (y-axis) by selected time points (x-axis)
      - o One chart for each selected key rate pair
      - o Legend: mean, min, max, selected percentiles
    - b. Table on Key Rate Pair Inversions (no chart)

End of proj. mo.	Key Rate Pairs Term Spreads – Percent of Scenarios Where Negative				
	1m2s	3m10s	2s10s	10s30s	1s20s
0	%	%	%	%	%
1	%	%	%	%	%
2	%	%	%	%	%
⋮	⋮	⋮	⋮	⋮	⋮
360	%	%	%	%	%

- c. Median Key Rate Yield Curves
  - o Key rate (y-axis) by key rate tenor (x-axis)
  - o One chart showing median key rate yield curves
  - o Legend: selected time points
- d. Table on Negative Key Rates (no chart)

End of proj. mo.	Key Rates – Percent of Scenarios Where Negative										
	1M	3M	6M	1Y	2Y	3Y	5Y	7Y	10Y	20Y	30Y
0	%	%	%	%	%	%	%	%	%	%	%
1	%	%	%	%	%	%	%	%	%	%	%
2	%	%	%	%	%	%	%	%	%	%	%
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
360	%	%	%	%	%	%	%	%	%	%	%

- e. Distribution of Credit Spreads
    - Credit spread (y-axis) by selected time points (x-axis)
    - Charts: one for each selected corporate bond maturity and credit quality
    - Legend: mean, min, max, percentiles
  - f. Distribution of Default Losses (net of recoveries)
    - Default loss (y-axis) by selected time points (x-axis)
    - Charts: one for each selected corporate bond maturity and credit quality
    - Legend: mean, min, max, percentiles
  - g. Correlation Tables: (for each selected time point)
    - Table of correlations between selected tenors (change in key rates), selected funds (total returns), selected corp bonds (credit spreads), selected corporate bonds (default losses),
    - Table of correlations between a modeled key rate or total fund return and its volatility
    - Table of correlations between 10Y key rate and 2s10s term spreads
    - Table of correlations between 10Y key rate and 10s30s term spreads
  - h. Tables on Frequency of Yield Curve Shapes (TBD) and Transitions Between Shapes
    - Frequencies: At selected time points, over successive 10-year periods, and in total
  - i. Table on speed of reversion to equilibrium/ultimate state
    - Specific metric TBD
  - j. Table on low interest rate persistency (“low for long”)
    - Specific metric TBD
2. Scenario path dependent
- a. Distribution of Cumulative Arithmetic Averages of Key Rates and Total Fund Returns
    - Cumulative arithmetic average (y-axis) by selected time points (x-axis)
    - One chart for each key rate tenor and fund
    - Legend: mean, min, max, selected percentiles
  - b. Distribution of Cumulative Geometric Averages of Key Rates and Total Fund Returns
    - Cumulative geometric average (y-axis) by selected time points (x-axis)
    - One chart for each key rate tenor and fund
    - Legend: mean, min, max, selected percentiles
  - c. Distribution of Volatilities of Key Rates and Total Fund Returns
    - Volatility *along each scenario path* from time 0 to time t (y-axis) by time points (x-axis)
    - One chart for each key rate tenor and fund
    - Legend: mean, min, max, selected percentiles
  - d. Distribution of Cumulative Accumulation Factors of Key Rates and Fund Returns
    - Cumulative accumulation factor (y-axis) by selected time points (x-axis)
    - One chart for each key rate tenor
    - Four charts for each fund
      - i. Total return
      - ii. Price return
      - iii. Dividend return
      - iv. Excess return
        - Equity funds: Relative to the short Treasury rate
        - Bond funds: Relative to the Treasuries used to model the underlying bonds
    - Legend: mean, min, max, selected percentiles

- e. Cumulative Risk/Return Profiles
  - Mean cum volatility (y-axis) by mean cum geometric average total return (x-axis)
  - Charts: one for each selected time point
  - Legend: selected funds

**Exhibit 7.1: Scenario Sets – File Format**

For use in companies' existing models, the ESWG suggests publishing scenario sets in two alternative .CSV file formats:

- A. GEMS .CSV file format, which is currently exposed, but with the following additional fields:
  - 1. Interest Rates – The values of the three state variables and their associated random numbers
  - 2. Equity and Bond Fund Returns – The random deviates for the Wiener process and jumps.
  
- B. AIRG multiple .CSV file format:
  - 1. Interest Rates – One file with spot (annual effective) rates, one file with coupon (BEY) rates, each with the following 12 columns: Scenario, Time, 0.25y, 0.5y, 1y, 2y, 3y, 5y, 7y, 10y, 20y, 30y. The ESWG feels that these 10 points on the yield curve, appropriately interpolated, are adequate when doing projections for principle-based reserve and capital calculations.
  - 2. Equity and Bond Fund Returns – One file for each fund modeled by the ESG, with Time across the columns, Scenarios down the rows, and data showing total return only (not split by price and income).

"The ESWG also notes the current AIRG can produce scenario sets with projection lengths up to 100 years to support insurance products with very long durations, e.g., SPIAs and some life insurance products. Therefore, for the files specified in both A and B above, actuaries will need similarly long projection lengths out of the new ESG."

**Brian Bayerle**  
Senior Actuary

March 24, 2021

Mr. Mike Boerner  
Chair, NAIC Life Actuarial (A) Task Force (LATF)

Mr. Philip Barlow  
Chair, NAIC Life-Risk Based Capital (E) Working Group

Re: ACLI Comments on Economic Scenario Generator Exposure

Dear Messrs. Boerner and Barlow:

The American Council of Life Insurers (ACLI) appreciates the opportunity to provide comments on the exposures related to the economic scenario generator (ESG) project. ACLI is committed to working with regulators on the modifications and implementation of Conning's GEMS as the replacement for the current Academy Interest Rate Generator (AIRG). We acknowledge that the current generator has clear shortcomings and further acknowledge the need to get an improved generator in place as soon as possible.

That said, our initial analysis of the scenario set has surfaced anomalies and scenario results that we consider inappropriate. These anomalies include significant and sustained negative interest rates, a large number of yield curve inversions, extreme equity returns, and low Sharpe ratios for certain equity indices, none of which is consistent with historical experience. The underlying causes of these issues are not currently clear due to the absence of detailed documentation and may be deeply rooted in the model. **For this reason, we request more thorough and comprehensive documentation which will aid in understanding of the model and make the decisioning and testing process more efficient.** While ACLI recognizes the need to get a better generator in place as soon as possible, our observations to date do not give us comfort in the current state of the proposed model which may indicate timeline issues. We believe that the implications of the collective set of decisions must be understood in order to avoid potential unintended consequences (i.e., addressing one concern but creating another). We support a timeline that ensures that the new generator is fit for purpose.

Our letter is organized as follows:

- I. Overarching Comments
  - A. Anomalies in Scenarios

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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.

- B. Needed Additional Documentation
- C. Timeframe Considerations
- II. Comments on Treasury, Corporate, and Equity ESG Goals and Proposed Recommendations
  - A. Areas of Support
  - B. Areas for Additional Dialogue/Documentation
  - C. Areas of Significant Concern
- III. Comments on ESG Scenario Statistics and Reports
- IV. Comments on ESG Scenario Picker Tool, Stochastic Exclusion Ratio Test, and Data Formats
- V. Comments on Other Related Topics
- I. **Overarching Comments**

The Conning model represents a structural change relative to the current model, with interrelationships that should be vetted and understood. The components of GEMS (i.e., interest rate, equity, and corporate models) are linked, and their calibration (e.g., interest rate mean reversion level, volatility, and shift; equity risk premiums; jump parameters) should be evaluated holistically because a decision on one parameter or scenario property may have direct and indirect effects on scenario dynamics for multiple risk factors (e.g. changes to interest rate parameters will affect equity returns) both at a point in time and between reporting periods. In addition, the ESG has a complex relationship to the statutory requirements.

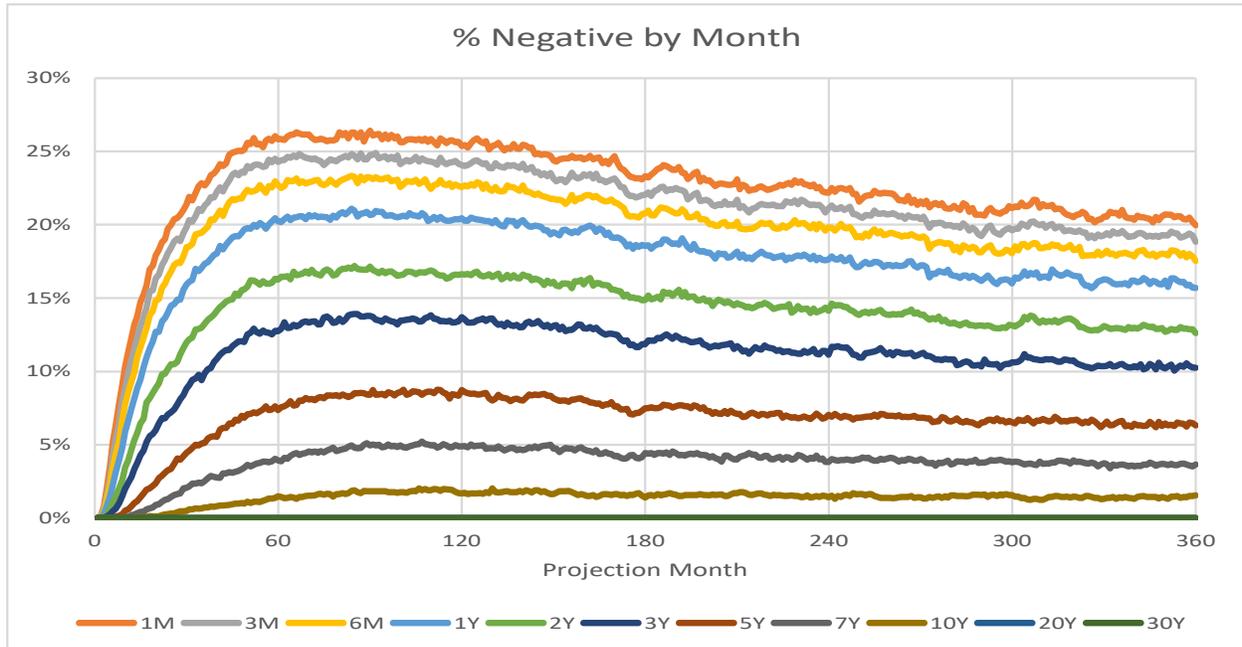
We believe that appropriate vetting and discussion of the key decision points is necessary so that regulators and industry can achieve the goal that the generator is fit for purpose in calculating reserves and capital. The discussion should go beyond individual technical decision points that, in a vacuum, may be reasonable but lead to an unreasonable scenario set. There should be a discussion of stylized facts and expectations around the results and their consistency with the relevant historical period. While the definition of the appropriate historical period can and should be debated, the results produced by the generator should be reasonable through the lens of that historical experience. As a reference to help assist in this discussion, Appendix One of our document outlines desirable attributes for the generator, which are further reflected in our specific comments on the exposures.

The focus of our following comments is the 12/31/2019 revised baseline scenario set and includes preliminary observations on the 12/31/2020 scenario set.

#### **A. Anomalies in Scenarios**

ACLI believes that the scenario generator should create a scenario set that reasonably reflects history, with some allowance for more extreme environments. Our initial analysis of the 12/31/2019 scenario set, however, has revealed several significant concerns. These concerns still appear to be present in the 12/31/2020 scenario set and may be generally exacerbated by lower initial interest rates.

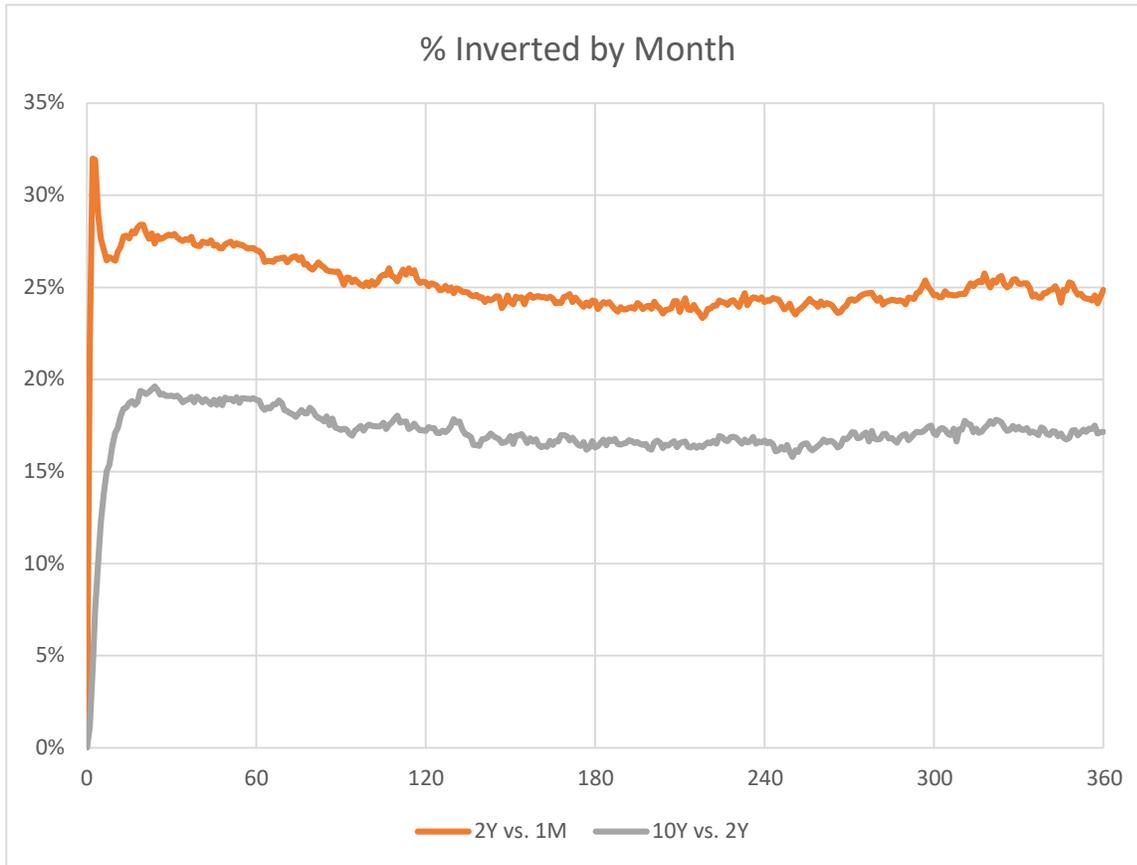
**Negative Rates:** The revised 12/31/19 scenario set is generating significant and sustained negative interest rates. Short-term yields fall as low as -6.2%. Yields for maturities shorter than 1Y are negative during roughly 20% to 25% of the scenarios in projection years 5-15. Those yields are negative in ~15% to 20% of scenarios in the long term as illustrated in the following graph:



The frequency of negative rates is even more extreme (e.g., over 45% of scenarios have negative short-term yields in the first year) in the 12/31/2020 scenarios.

We believe that the projected frequency and severity of negative rates should be more consistent with historical US experience. Historically, no period of negative rates has lasted for a meaningful period of time in the US.

**Yield Curve Inversions/Realized Volatilities:** We are concerned by the number of inversions occurring within the scenarios. Based on our initial analysis of the revised 12/31/19 scenario set, the frequency of yield curve inversions appears elevated vs. history. While the revised baseline calibration addressed the 100% rate inversion problem in the initial set, inversions for short maturities are still relatively frequent (~25% of scenarios) as shown below:



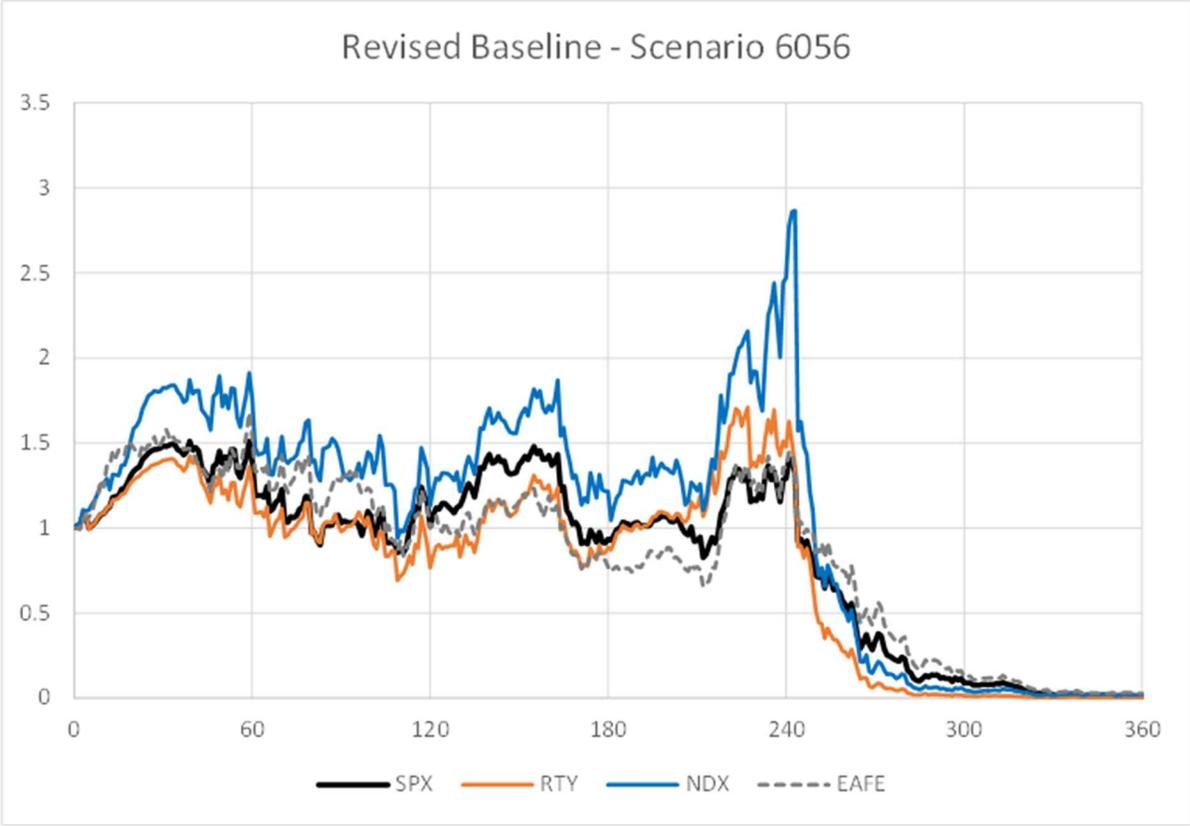
The frequency of short rate inversions also worsens dramatically in the first five years of the 12/31/2020 scenarios.

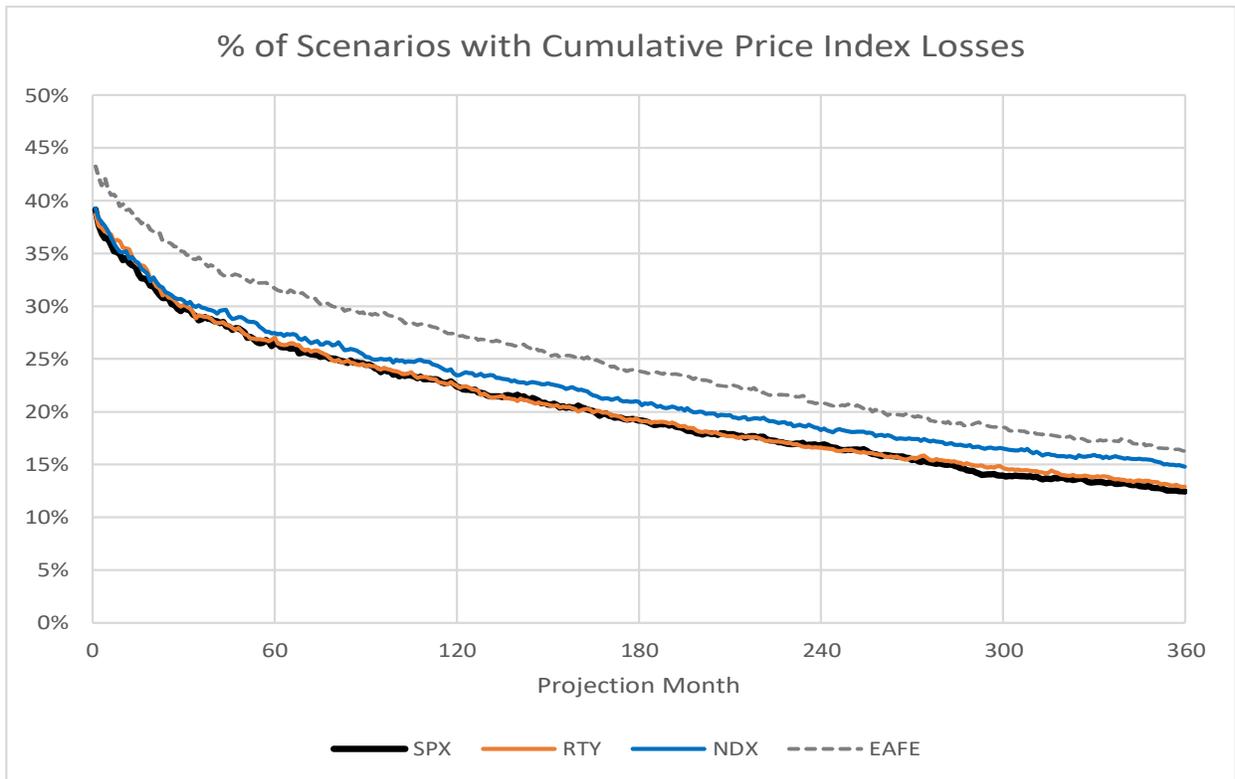
In addition, realized volatilities for short maturities (e.g., 1-year rates) are roughly double the realized volatilities for long maturities (20-year rates). This is inconsistent with the historical data set used in Conning’s calibration and may also be contributing to other concerns with the scenario distribution we have observed (e.g., the ability to produce interest rate dynamics in recent history as well as the 1970s / 1980s, unintuitive long-term risk/reward relationships between bond funds).

We believe the yield inversions and realized volatilities should be more consistent with observable historical data.

**Extreme Equity Returns:** We have observed, as shown below, unusual distribution characteristics and jumps in the initial scenario set, the cause of which is unclear. At the extremes, there are scenarios that assume that equity indices essentially become worthless (see chart below for an example). The original baseline also includes indices that are 1000+ times (>100,000%) higher by year 30. We would like a better understanding of jump process / parameters & comparison of returns after jumps vs. history (which includes strong market recovery in a relatively short time period after jump down). The S&P 500 (price index) has negative returns over 30 years in 12% of scenarios even though this has never been observed in history. In the over 90 years of S&P 500 (SPX) data since 1928, monthly losses larger than

25% and 20% have only occurred once (Great Depression) and 3 times (1929, 1932, 2008), respectively. Monthly declines of more than 25% occur in over 14% of Conning's 30-year scenarios.





Mean Equity Returns / Return Relationships: Conning’s recommended calibration has a significantly lower view of long-term equity returns relative both to history and the AIRG. The model returns should be calibrated similarly to the AIRG, with the addition of recent history. In particular, low EAFE returns and higher SPX/EAFE correlations may be contributing to inconsistencies in the risk return relationship between different equity indices. We observe that the average Sharpe Ratio over 30 years for EAFE is ~18% vs. ~33% for S&P 500 in revised baseline scenario set as of 12/31/2019.

**B. Needed Additional Documentation**

Additional documentation will help enable industry to provide more constructive insights for a higher quality generator and a more efficient process. There are gaps in the interest rate model documentation (e.g., determination of the state variables), with more significant gaps noted in the equity model documentation (e.g., EAFE model, distribution, and correlation of jump processes) and the corporate / credit model. We note that the corporate model drives bond fund returns in the Basic Data Set, so while companies may not need the granular credit output in the Robust Data Set on an ongoing basis, the information is needed to appropriately vet the Basic Data Set.

We request the following additional documentation to assist in our review, noting while some of this may have been included in the March 18<sup>th</sup> exposures, the materials do not appear to substantively address the issues outlined below:

- Explanations of model selection considerations and theoretical justification for model choices (e.g., 3-factor vs. 2-factor model, formulaic equity risk premium relationship) as

these decisions determine fundamental scenario properties and their suitability for purpose.

- Direct and indirect relationships (e.g., equity risk premium, equity/credit, rate/spread relationships), including formulas, correlations, and any relationships imposed via judgment
- Methodology and formulas used to determine fund returns, including the composition of bond indices and derivation of bond fund returns, use / modeling of exchange rates in international equity returns
- State process information, including all distributions and correlations
- Calibration information, including model parameters and calibration targets at multiple points in time, methodologies for setting initial values and long-term targets, how and where historical data is used and the benchmarks used, the process and judgment used when a calibration fails, and identification of the values that would be updated at each reporting period, regularly, or based only on triggering events
- The criteria for evaluating the reasonability of each published scenario distribution (beyond validating that targets are reproduced)

In addition to documentation for Conning's model and calibration, LATF should develop and document target scenario properties or stylized facts which can be done on a parallel track as documentation becomes available. Targets such as the original C-3 Phase 2 equity calibration points may be useful. It is important to confirm that the Conning generator and calibration can meet those targets under an appropriate range of market conditions and other sensitivities.

### **C. Timeframe Considerations**

We encourage the Task Force to regularly assess the status of the timeline in light of the many steps to be completed prior to implementation. ACLI suggests the following considerations for additional milestones or adjustments for the expected timeframe of existing milestones:

- Additional time may be necessary to understand and confirm the suitability of the model and its calibration. Considerations include availability of documentation and adequate time to understand it, deliberation of key calibration decisions, adequate time to test impacts of changes, sensitivity testing and forecasting, and implementation to valuation systems and other processes. Additionally, smaller companies could be put at a disadvantage due to fewer resources to test and implement the change.
- Additional education sessions for regulators and interested parties may be necessary once more documentation is available to thoroughly understand the generator.
- The field testing start date may already be coming under pressure due to the lack of adequate documentation. There is currently no viable candidate for field testing as there are significant concerns with the revised baseline as noted in 'Anomalies in Scenarios'.
- The timeline should provide time for consideration of reassessing generator modification(s) and parameters after the assessment of the field study results.
- Consideration in the implementation timeline should also contemplate time for companies to evaluate the potential impact of the new ESG on statutory reporting, risk management & hedging (due to changes in economic sensitivities), and system implementation.

We encourage the regulators to regularly assess the status of the timeline since failure to meet current and suggested milestones may adversely impact the timeline.

## II. Comments on Treasury, Corporate, and Equity ESG Goals and Proposed Recommendations

ACLI agrees with many of the stated goals for the generator and notes the importance of a holistic view of how these come together for a generator that is deemed to be fit for purpose. This holistic view of the exposed scenario sets (which are based on "mixing and matching" of the Conning Standard Calibration parameters with the selected adjustments and overrides presented in the list of "ESG Goals") gives us some concerns about the viability of these recommendations and may require a fundamental or first principles recalibration of Conning's model or selected model refinements to resolve these concerns. We have broken down our comments into three categories: areas of support, areas for improvement with additional dialogue or documentation, and areas of significant concerns:

### A. Areas of Support

Treasury goal #1 (Initial Yield Curve): We support the goal that the model's starting yield curve should match the actual starting yield curve as closely as possible. Our initial analysis suggests that the model would have had difficulty fitting historical rate curves. Based on our analysis to date, adjustments to the model beyond the grading period recommendation may be needed to fulfill this objective.

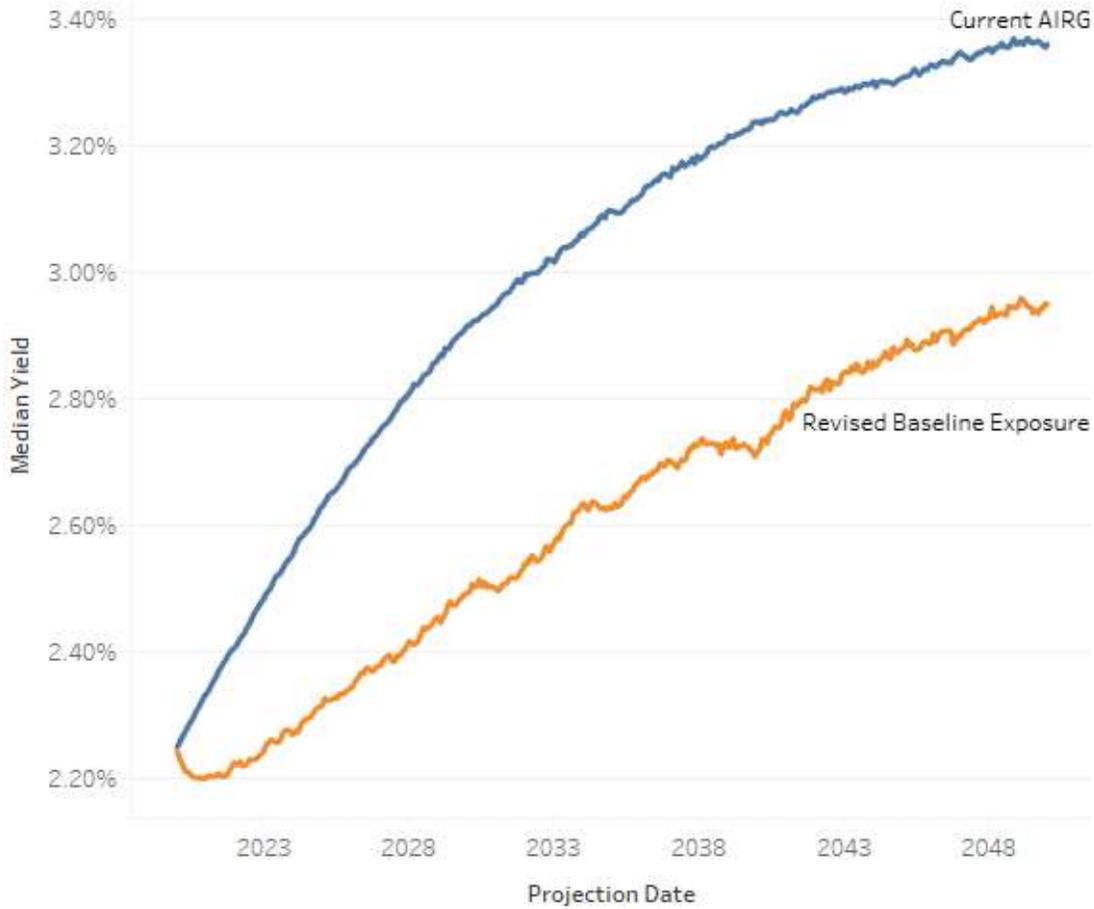
Treasury goal #4 (Range of Results): We support the goal that the model should be capable of producing a reasonable range of results for very long simulations. Based on our analysis to date, adjustments to the recommendation may be needed to fulfill this objective.

Treasury goal #5 (Sustained Low Rates): We support the goal that the ESG should be capable of producing low interest rates for an extended period of time. The definition of "low for long" should be based on plausible expectations and should be considered in conjunction with the broader scenario distribution. We observe that lowering the mean reversion point alone is not sufficient to achieve this goal. The structure of the mean reversion point, the mean reversion speed or strength, and volatility need to come into play so that scenarios have the appropriate degree of dispersion.

Regarding the speed of mean reversion, **we observe that the exposed scenarios do not appear to be consistent with the recommendation of alignment with the current Academy scenarios.** The GEMS scenarios (both original and Revised Baseline exposures) have significantly slower median reversion than the current Academy scenarios (as observed in the following chart). This difference may reflect structural differences between GEMS and the AIRG. Starting from 12/31/2019 initial conditions, median long-term rates in the Conning generator are 40 basis points below the corresponding AIRG median after 30 years. When mean yields do not approach their target within a typical projection period, it effectively results in an inadvertently lower target in today's low-rate environment. Additionally, mean long-term yields decrease for

the first several months in the Conning generator. It is unclear if this is intended or an unintentional side effect of the model calibration.

### Median 20-year Yield - Coupon: 12/31/2019 Projection



Equity and corporate goal #1 (Returns are Representative): We support the goal that returns should be provided for the types of funds representative of those offered in U.S. insurance products.

#### **B. Areas for Additional Dialogue/Documentation**

Treasury goal #2 (Variety of Curve Shapes—also see above): We support the goal that the model should produce a variety of yield curve shapes, and they should change over time. We recommend additional review of the appropriateness of yield curve shapes and the acceptable frequency of specific shapes (e.g., frequency of yield curve inversions, consideration of limitation of time for inverted curves).

Treasury goal #6 (Sustained Volatility): We support the goal that the model should produce interest rate levels that fluctuate significantly over long periods. Currently, we do not yet support the recommendation to use the GEMS volatility estimate. The volatilities from the initial scenario

set do not look to be related to the relevant historical period and are not explained by the available documentation. The volatilities may also be a source of the anomalies described above.

Treasury goal #8 (Historical Data Period): We support the goal that the ESG should be calibrated using an appropriate historical period. We would support consistency with the Academy generator's historical period (starting in the 1950s), extended to include the most recent available data. Critical to this goal, the historical period should be consistently applied across the underlying calibration of state variables. Since Conning has effectively locked in significant aspects of their 1995+ based standard calibration (e.g., risk-neutral parameters, volatilities), it is unclear where they have reflected the data since 1953 in their calibration (other than when superimposing the mean reversion target). Using interest rate volatilities based on data since 1995 (generally a lower rate and lower volatility period) may lead to an insufficiently broad range of rates, which may not sufficiently capture disintermediation risk (from high-rate scenarios), and lead to other anomalies / inconsistencies.

Equity and Corporate Goals #2 (Calibrated to Historical Period): We support the goal that the ESG should be calibrated using an appropriate historical period. From the available documentation, it is not clear what historical period is currently being used by Conning. Consistent with Treasury goal #8, we believe the Academy generator's historical period extended to include more recent data would be an appropriate period. Further, the scenarios that are generated by the model should be reasonable compared to the historical period results. The examples illustrated previously suggest areas where the revised baseline scenarios may be unreasonable (such as severely negative cumulative returns).

Equity and Corporate Goals #3 (Stochastic Volatility): We do not oppose the goal that the equity model should have stochastic volatility and that the initial volatility should be updated periodically. However, realized equity volatility appears to be higher in the Conning scenarios than in the Academy scenarios, and we do not have sufficient documentation to opine on the underlying rationale for this observed higher volatility. Stochastic volatility, if it exists, needs to decline over time to avoid arbitrage within the scenario sets. While we believe that there should be a defined process for updating initial volatility, the frequency and basis for the updates will need to be considered in conjunction with Conning's jump process since the linkage between volatility and the jump process may increase the risk of procyclicality (e.g., higher likelihood of market stresses after a recent drop).

Equity and Corporate Goals #6 (Higher Correlation in Tail): We believe correlations between equity indices in stressed markets should be consistent with relevant historical data. We do not have sufficient documentation to opine on whether Conning's approach is reasonable. Given the complexity of Conning's model, we would like to understand Conning's theoretical approach rather than focus on the results from any given scenario set.

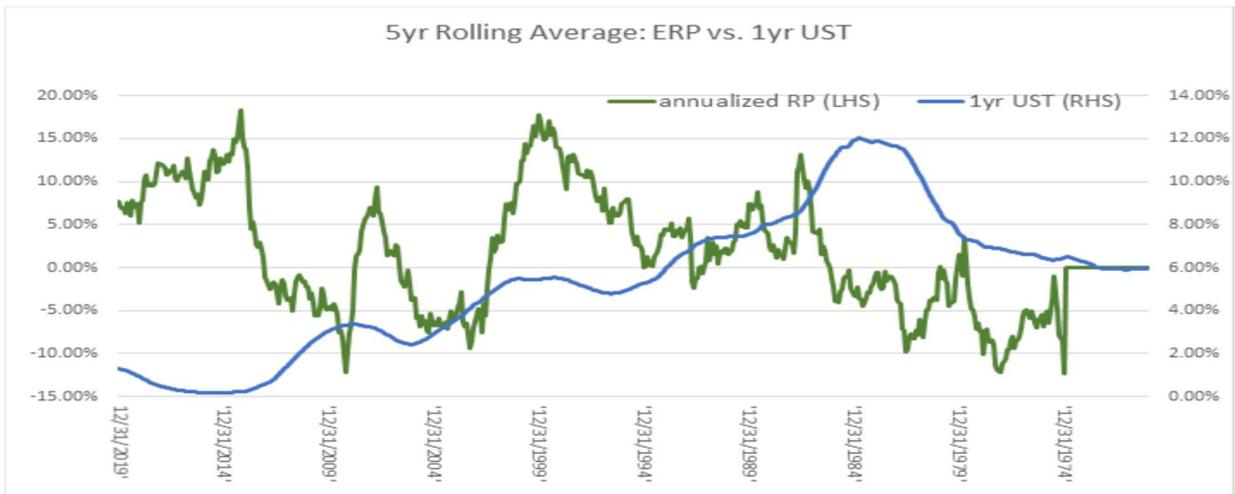
Equity and Corporate Goals #8-11 (Model for Returns, Separate Yield Curves by Rating, Stochastic Spreads, Dynamic Bond Credit Transitions): Conceptually, we support the goals to have stochastic spreads, credit migration, granular credit modeling, and consistency between basic and robust data sets. However, we have several concerns:

1. We lack sufficient documentation on GEMS' underlying credit model, assumptions, or existing calibration.
2. We would like to understand the basis and consequences of discrepancies between prescribed general account credit assumptions and Conning's assumptions and resulting credit scenarios.
3. It is unclear whether the tradeoff of a more sophisticated model is worthwhile relative to the increased complexity and lack of transparency (i.e., a significant amount of critical information only available in the Robust Data Set).

### **C. Areas of Significant Concern**

Treasury goal #3 (Negative Rates—also see above): We do not inherently oppose the concept of negative interest rates. That said, we believe that the projected frequency and severity of negative rates should be similar to historical US experience and not be unduly influenced by experience in other economies outside the US. Historically, no period of negative rates in the US has lasted for a meaningful period of time. Negative rates are influenced by many model parameters, and each may entail different, potentially undesirable tradeoffs. In addition, the use of arbitrage-free scenarios may be contributing to the disconnect between the model and historical experience. While arbitrage-free scenarios are desirable (Treasury goal #7), a compromise may be preferable if necessary to prevent unrealistic scenario properties.

Equity and Corporate Goals #7 (Link between Equity and Treasury): We do not support the formulaic linkage between equity returns and Treasury yields given the lack of historical evidence. The existing approach in the AIRG allows for varying levels of correlation between rates and equities. At the same time, the correlations in the AIRG average close to zero across the entire distribution and have a historical basis. The selection of a strict formulaic relationship between equity returns and Treasury yields in every period appears to be driven by operational considerations (i.e., ability to simultaneously generate risk-neutral scenarios) unrelated to the NAIC's objective, fundamentally changes the nature of the scenarios, and is not supported by historical data. Intuitively, this relationship has not held in every period due to other macroeconomic factors. If it did, the late 70s and early 80s would have had high returns for equities, and the current low interest rate environment would have had poor returns. Equity risk premium relationships have varied significantly over time in a manner that is unlikely to be well represented by the current recommendation.



The proposed relationship is also likely to be a source of non-economic volatility. Reserves and capital will be sensitive to changes in overnight interest rates even though the underlying insurance liabilities generally would not be. This relationship may create an incentive to hedge against changes to the overnight rate due to the artificial dependency in the ESG. We note how Conning’s adjustment to target overnight rates in the revised baseline reduced equity returns by roughly 40% by year 30. Changes in actual overnight rates would also affect equity return paths in a manner that is unlikely to be offset by changes in other scenario parameters. For example, in the 2020 scenario set, equity index levels were approximately 10% lower at year 30 relative to the 2019 scenario set due to the lower initial overnight rates. However, the relationship varies at different periods, so any attempt to compensate for the change via high level adjustments to the equity risk premium would under/overcorrect depending on the product, introducing unintuitive results and volatility.

The revised baseline changes also illustrate how the explicit linkage may force unnecessary compromises between rate and equity distributions. The change to address a rate shortcoming in the original 12/31/19 baseline scenarios appears to have created or exacerbated inappropriate equity return distributions. Overall, we suggest an approach closer to the one used by the existing AIRG.

Equity and Corporate Goals #4 (Model Jumps): We do not oppose the goal of the ESG having the ability to generate very large losses and gains in short periods of time (i.e., jumps), but we have potential concerns about the recommendation to use Conning’s existing calibration given the extreme results observed in the upside and downside tails previously noted and so cannot yet support this recommendation. Additional information will help us assess the appropriateness of the existing calibration.

Equity and Corporate Goals #5 (Long Recoveries): While we do not oppose the goal of having some equity scenarios reflect the possibility of a very long recovery after a period of losses, we have observed that a large portion of 30-year returns for indices in the revised baseline scenario set seemed highly adverse (see comments on extreme equity returns above). Additional

documentation may help us understand the drivers of these outcomes. We believe that recovery scenarios should be calibrated to appropriate history.

### III. **Comments on ESG Scenario Statistics and Reports**

We suggest that the generator produce the following additional statistics. Note that we may request additional statistics once we have sufficient documentation to better understand the GEMS model.

- Additional percentiles, particularly in the tail in the fan charts (or supporting data tables)
- Period-over-period (i.e., between reporting date) comparisons in the fan charts
- A distribution (fan chart) of cumulative average interest rate paths
- A distribution (fan chart) of total and price return accumulation factors for all equity and bond funds
- A distribution (fan chart) of credit spreads and default losses driving the Basic Data Set bond fund returns
- A graph of the percentage of scenarios with negative rates (at the key 10-11 points on the yield curve) or inverted yield curves (for selected rate pairs) by projection month
- Information on the prevalence of other yield curve shapes (e.g., normal, steep, inverted, humped)
- Realized interest rate volatility statistics for short and long maturities
- Equity return volatility, skew, and kurtosis statistics
- A distribution (fan chart) of equity risk premiums
- A table showing the distribution of correlations between equity returns and bond funds, interest rates and equity returns, credit spreads and equity returns over the scenario projection (correlations should be over the scenario or meaningful periods, not individual years).

### IV. **Comments on ESG Scenario Picker Tool, Stochastic Exclusion Ratio Test, and Data Formats**

We suggest deferring discussion of these items until the scenario set itself is determined. In the meantime, we offer the following considerations:

- Since scenario selection will only be available as posted files and not a tool, clarification on how scenario selection will be implemented for companies licensing the API should be provided.
- Documentation on how the new SERT percentiles are applied (e.g., to return vs. accumulation factor distributions, the conditional versions of those distributions based on the GEMS cascade structure (and therefore available only to Conning) and whether the approach captures the range of scenario outcomes intended for SERT (e.g., low rates/high equity leads to low rates/high equity given low rates (= lower equity)).

### V. **Comments on Other Related Topics**

- **Governance:** We agree with Conning on the importance of appropriate governance in this process. We would encourage as much of the ESG specifications to be incorporated into the Valuation Manual as possible. Appropriate items to consider include the setting

## Desirable Properties of the Economic Scenario Generator

### **Stochastic Scenario Properties**

- A single set of economic scenario requirements should apply to all products for which stochastic modeling is required.
- The prescribed scenario generator should be “fit for purpose” and produce a reasonable baseline set of economic scenarios. There should be a balance between complexity, transparency, and ease of use, and stability of scenario generator parameters.
- The scenario generator should have a sound fundamental basis. The generator parameterization should be based on relevant historical experience and produce a realistic distribution of real-world scenarios, including plausible and coherent tail stresses.
- The scenario generator should be based on best estimate assumptions to avoid unintended consequences between different products. For example, FIAs may have upside risk that would not be captured if the scenario parameters reflect additional margins geared towards products more sensitive to downside risk, such as VA GMxBs.
- The scenario generator should be viewed holistically, rather than focusing on narrow aspects of the generator. Refinements to the scenario generator should not be biased in one direction.
- Economic elements should be internally consistent. Bond fund returns should be consistent with the stochastic generator’s interest rate and credit assumptions or guidance.
- Updated generator parameterizations and their impacts on scenarios and results should be intuitive/explainable. The parameterizations should be stable.
- The scenarios should reflect initial market conditions where applicable and should not be disproportionately impacted in the long-term by initial market conditions. For example, the generator starts at the initial actual treasury rate curve and credit spreads when projecting both interest rates and bond fund returns.

### **Stochastic Scenario Governance**

- Governance rules should be established for both routine updates (i.e. updating starting yield curve with recent actual results, calibration criteria, etc.) and periodic holistic review/validation of the generator.
  - Reviews and updates should be performed by a third party, vetted for complex interactions between the parameters and potentially significant impacts, and documented in sufficient detail for independent review.
  - The initial development process of the scenario generator should allow adequate time and resources for field testing to ensure all intended stochastic scenario properties are met.
  - Updates should allow for attributions, and field testing should be considered for more substantial changes.
- Non-prescribed generators should be permitted, subject to appropriate governance. Calibration criteria should be developed by the vendor so that the prescribed generator and non-prescribed

generators can be validated based on scenarios produced rather than reserve and capital results. Different scenario generators and/or parameters may produce a materially similar distribution of scenarios and results.

- Other stochastic scenario uses (e.g., hedging, ALM, risk management) may require more sophisticated economic scenario modeling (e.g., explicit credit spread, default, and migration modeling). Allowing companies to use their risk management generators for stat valuation, provided the scenarios meet specific criteria for all elements included in the prescribed scenario generator, promotes better risk management without imposing unnecessary complexity on all statutory scenario stakeholders (i.e., companies and regulators).

#### **Production Implementation Requirements**

- The prescribed generator must automatically output prescribed scenarios in a common electronic format.
- The prescribed generator should be open source and sufficiently documented so that companies can call or otherwise implement the generator in their valuation, projections/forecasting, or risk management models. Providing just pre-generated scenarios on a quarterly basis is not sufficient to satisfy all of these purposes.
- Additional scenario tools should also be considered for development.
  - Representative scenario picking tool
  - Tool that generates the VM-21 Company-Specific Market Path method scenarios
  - Tool to generate scenarios for stochastic exclusion test
  - Tools to generate statistics on intermediate and final output of the generator.

of parameters, distribution properties, validation of results, and how the scenarios evolve through time. This will ensure appropriate controls of ESG changes and codify formulaic requirements and decision points that may be revisited over time. This work can begin while we are waiting on additional documentation.

- Scenario timing: We request assurance that the generator will be able to produce scenarios on the first day of each month, regardless of whether this falls on a weekend since many valuation processes commence based on a calendar day schedule.
- Projection Period: The projection period of the scenarios should be at least 70 years.
- Sensitivity testing and forecasting: It is unclear how scenarios for VM-20, VM-21, and VM-31 sensitivity testing requirements and potential attributions in Model Audit Rule key controls will be supported by the proposed process. For example, will additional scenario sets be generated and posted, or will companies be required to license the Conning API or full system to meet regulatory requirements or to understand and prudently manage their reserves and capital? The impact of changing economic conditions on the resulting scenario distribution will be vital for companies to understand for multiple reasons, including risk management & capital planning.
- C-3 Phase 1 (C3P1) RBC testing: Methodology clarifications will be needed if C3P1 is included in the ESG field study. Given the ongoing VM-22 discussions and their potential impact on C3P1 methodology, there are additional issues that may need to be addressed as part of the VM-22 field testing.
- C-3 Phase 2 (C3P2) CTE Level: We note that the revisions to C3P2 included the consideration of a scenario set with higher volatility, which was accompanied by a lower suggested CTE level (this is the CTE 95 vs CTE 98 discussion related to C3P2 TAR). Given that these decision points were contemplated as a package, the required CTE levels may need to be reconsidered in light of changes to the ESG.

We look forward to a discussion on this important initiative.

Sincerely,



cc: Reggie Mazyck, NAIC  
Dave Fleming, NAIC



# EQUITABLE

DATE: March 22, 2021

FROM: Aaron Sarfatti, Chief Risk Officer; Steve Tizzoni, Head of Actuarial Regulatory Affairs

SUBJECT: Equitable Comments on Economic Scenario Generator (ESG) Proposal

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## Executive Summary

Equitable appreciates the opportunity to comment on the Economic Scenario Generator exposures. The table below summarizes our viewpoints and comments on the exposed 12/31/19 scenario set, with more detail on select items following in the remainder of this letter.

	Topic	Equitable Position	Rationale / Commentary
Modeling methodology	GEMS Interest Rate Model (Form)	Favorable	<ul style="list-style-type: none"> <li>+ GEMS functional form enables tailoring of distributions and is superior to current ESG</li> <li>+ Enables arbitrage-free (or close to), which is appropriate for interest rates</li> </ul>
	GEMS Interest Rate Model (Calibration)	Adequate distribution of rates in 12/31/19 set, but select rates are “too negative”	<ul style="list-style-type: none"> <li>+ Adequate share of low-for-long in the 12/31/19 scenario set</li> <li>- Rates as low as -6% are too extreme (Europe since 2008 a better downside benchmark)</li> </ul>
	Equity Return Model (Form)	Favorable	<ul style="list-style-type: none"> <li>+ GEMS functional form enables tailoring of distribution to stylized facts and historical equity markets</li> <li>+ Ability to reflect market jumps and volatility clustering</li> </ul>
	Equity Return Model (Calibration)	Some concern regarding distribution of returns	<ul style="list-style-type: none"> <li>- EAFE index returns meaningfully below US returns on a risk-adjusted basis</li> <li>- Wide equity tails will disadvantage equity risk vs. correlated long-term credit risk</li> </ul>
	Alternate starting environments	Favorable properties should be verified in alternate starting environments	<ul style="list-style-type: none"> <li>• Recommend releasing scenarios under other conditions beyond 12/31/19 and 12/31/20</li> <li>• Purpose is to 1) verify that favorable properties hold in other market conditions and 2) understand how scenarios react to different starting market conditions</li> </ul>
Process and documentation	ESG Summary Reports	Addition of select exhibits will facilitate effective review	<ul style="list-style-type: none"> <li>• Recommend exhibits summarizing distribution of average long-term UST rates and cumulative equity returns (see below)</li> </ul>
	Documentation	Continue expanding documentation	<ul style="list-style-type: none"> <li>• Recommend additional documentation as delineated in ACLI comment letter</li> </ul>

**Technical Review of Scenario Sets #1 (Original) and #2 (Revised Baseline):** Equitable has reviewed the original 12/31/19 scenario set (exposed in December 2020) as well as the revised 12/31/19 baseline set (exposed in February 2021) and offers the following feedback:

*Distribution of Interest Rate Scenarios:* Equitable believes that it is critical to have an appropriate distribution of interest rate scenarios in order for this initiative to be successful. This includes appropriate (1) low interest rate levels; (2) negative interest rate levels/amounts; and (3) interest rate shapes.

- (1) *Low Interest Rates:* The original and revised baseline interest rate scenarios, both as of 12/31/19, were calibrated using the mean reversion parameter (MRP) from the current Academy Interest Rate Generator (AIRG) but using the substantially higher GEMS volatility. This calibration significantly increases the number of sustained low interest rate scenarios. Under this calibration, approximately one fifth of scenarios have an average 20-year treasury rate at or below 2%, below the actual 20-year treasury rate of 2.25% at 12/31/19. In contrast, under the current AIRG, less than 2% of scenarios have an average 20-year treasury rate at or below 2%. Equitable commends the NAIC on the increase in low interest rate scenarios, as we believe the current AIRG is woefully insufficient in this regard.
- (2) *Negative Interest Rates:* Equitable reviewed the scenarios for negative interest rates and found that the minimum short-term interest rates approached -4.8% (original scenario set) and -6.2% (revised baseline), which is extreme and would likely lead market participants to take extreme actions (e.g. physical cash hoarding, etc.) if they persisted for any meaningful amount of time. Equitable believes that the recent European experience with negative rates is a reasonable benchmark to establish a lower bound on negative rates.
- (3) *Term Structure of Interest Rates:* Equitable observed a significant number of scenarios with inverted yield curves, especially at the shorter maturities, which seems anomalous. Under the revised scenario set, we observed a 1-month UST rate above the 2-yr UST rate in approximately 25% of time steps across all scenarios. While the revised scenarios are significantly improved vs. the original scenarios in this regard, the amount of yield curve inversions is still above what one would expect based on historical experience. Equitable encourages further discussion between industry and regulators on this topic.

#### *Equity Returns:*

Equitable supports most aspects of the equity return distributions but observes select deviations in the Sharpe Ratio “return-for-risk” principle in select areas. Our specific comments are noted below:

- (1) Equitable observed a significant increase in the range of 30-yr annualized equity returns to the downside vs. those in the current AIRG. In particular, under the revised scenario set, approximately 5% of the observed 30-yr annualized equity returns for the S&P 500 were negative. While we believe such a distribution is within the realm of plausibility, we highlight that combined with a CTE 98 capital requirement (which considers the worst 2% of scenarios) this will ultimately require companies either to (a) capitalize for equity risk far more than for equivalent levels of credit risk (a correlated exposure to equities) or (b) increase equity hedging considerably in their CDHS. We observe the US has not witnessed a period of negative 30-yr equity returns in modern history, inclusive of the Great Depression, although such conditions did arise in Japan.
- (2) Equitable also observed extreme results for the international equity index (EAFE), where over 10% of the observed scenarios exhibited negative 30-yr annualized returns and the average 30-yr

annualized equity return was only 3.5% - ostensibly a violation of the VM-21 Section 8.C guidance regarding consistency in the Market Price of Risk across indices. Equitable suggests more supporting documentation and discussion on the EAFE equity returns.

- (3) Equitable supports the structural linkage between interest rates and equity returns via an equity risk premium as utilized in the exposed GEMS scenarios. We understand that in the current model, equity returns are based on short-term interest rates, which could potentially lead to some of the more extreme equity return scenarios noted above. We would invite the consideration of expressing equity returns as a function of longer-term interest rates (e.g. 10-yr or 20-yr US Treasury rates) as that could help stabilize equity returns from calibration to calibration. In addition, we believe more information regarding how the equity risk premia for each equity index are calibrated is necessary to enable more robust understanding of the GEMS calibration.

**ESG Scenario Statistics and Reports:** Equitable appreciates the opportunity to provide suggestions for the ESG scenario analytics. We believe it is important to look at the distribution of average long-term (e.g. 20 yr.) treasury rates across each scenario in determining the appropriateness of the resulting interest rate scenarios and the extent to which “low for long” interest rate scenarios are reflected. To that end, we suggest the inclusion of bar charts showing the number of scenarios exhibiting average 20-yr US Treasury rate within each of the various ranges shown on the chart. In addition, we believe the following statistics would be helpful to quickly understand future scenario sets:

- (1) Inversion statistics: comparing points on the yield curve such as the 10Y vs. 2Y rates and 2Y vs. 1-Mo. rates to understand how many scenarios produce inverted yield curves
- (2) Negative interest rate statistics: examining the frequency / magnitude of negative interest rates
- (3) Percentile analysis of the 30-year average annualized equity returns across each of the 10,000 scenarios. It is important to look at the *cumulative* equity return across each scenario as the cumulative return is more impactful to the valuation of long-term insurance liabilities vs. the distribution of returns in any one given year.

**Sensitivity Testing:** Equitable appreciates the ESG parameter sensitivity testing supplied by Conning in February. However, we believe more sensitivity testing of various initial market conditions should be performed, including both upward and downward shocks to the initial yield curve and initial equity volatility parameters. Testing the generator under a variety of economic conditions will allow industry and regulators to better understand the potential movements of the scenarios, which is critical considering the impact the scenarios can have to a company’s balance sheet. While Equitable appreciates that the NAIC will release other scenarios for testing purposes, Equitable suggests making these available as soon as practicable to (1) allow industry to understand how the proposed ESG performs under a range of market conditions and (2) enable robust field testing.

**Initial Review of 12/31/2020 baseline scenario set:** Equitable is currently reviewing the 12/31/2020 scenario set released on March 18<sup>th</sup> and appreciates the release of this scenario set in response to our inquiry. Our preliminary indication is that the majority of our comments above are still relevant to the 12/31/2020 scenario set with the key exception that “low for long” scenarios are not as well reflected in this scenario set. Specifically, in the 2019 set, approximately one fifth of scenarios had an average 20-year treasury rate at or below the 2.25% 20-year treasury rate on 12/31/19. In contrast, in the 12/31/20 scenario set, only 6% of scenarios have an average 20-year treasury rate below the 1.45% 20-year treasury rate on 12/31/20. Equitable recommends that the scenario calibration approach should ensure a meaningful percentage of scenarios reflecting average long term rates *below* the current rate on the valuation date regardless of starting conditions. Assigning a 6% probability that interest rates stay at or below current levels appears low given the high degree of uncertainty in accurately forecasting interest rates.

**Timeline/Effective Date:** Equitable is aligned with the NAIC's urgency on this matter and current goal for 1/1/2022 implementation. However, developing and calibrating a scenario generator is proving to be a very complex task and ensuring the new ESG is appropriately calibrated and fit for purpose is paramount and potentially may require additional time beyond the current timeline.

**Conclusion:** Equitable appreciates the opportunity to comment on the ESG proposal and we look forward to working with industry and regulators to develop an appropriate economic scenario generator. We are available to discuss our comments further at your convenience.

Sincerely,



Aaron Sarfatti, Chief Risk Officer and Chief Strategy Officer

  
Stephen M. Tizzoni, FSA, MAAA

Stephen Tizzoni, Head of Actuarial Regulatory Affairs

March 25, 2021

Mr. Mike Boerner

Chair, Life Actuarial (A) Task Force

National Association of Insurance Commissioners

Dear Mr. Boerner:

We appreciate the opportunity to offer comments on LATF's Economic Scenario Generator (ESG) exposures including **Scenario Exposure 3.18.21**.

In our opinion, the interest rate scenarios that have been released exhibit some peculiar features. Two features of these scenarios we consider troublesome are the magnitude of negative interest rates and the shape and frequency of yield curve inversion. As you know, a generally accepted rule of thumb in economic scenario generation is that a good economic scenario generator should generate some "extreme but plausible scenarios" with the practical application of this rule guided by the historical record. Negative interest rates with a magnitude of -5% are not compatible with any reasonable interpretation of the historical record.

The new NAIC interest rate model is based on the three-factor Cox, Ingersoll, and Ross framework which has the potential to provide great educational value for the industry, the peculiarity of the exposed scenarios notwithstanding. The Cox, Ingersoll, and Ross model was the first interest rate model to be based on a general equilibrium economy and featured volatility increasing with interest rate levels and the absence of negative interest rates - a condition previously viewed as a desirable feature.

We believe the NAIC should seize the opportunity to guide the insurance industry to a practical understanding of the financial economics modeling literature and its application to insurance risk management. In order for industry to understand these models, it is vital that "[f]ull documentation on the ESG specifications, calibration, and tools" be provided as the NAIC stipulated in section II.A.I of the March 4, 2020 RFP and was reiterated in Pat Allison's NAIC presentation of October 27, 2020 as "[f]ull documentation of the necessary components used to develop the Basic Data Set." We do not know precisely what the NAIC means by "full documentation". However, we respectfully submit that it should mean that sufficient details are provided so that a determined risk management professional is able to fully understand the model dynamics and be able to approximately reproduce the model output and calibration parameters through a scientific process. We believe this is a requirement for best practice and is essential for the industry to gain confidence in any suite of models serving a fundamental role in the management of an insurance business.

The "NAIC Scenario Set Technical Documentation Interest Rates Model" provides bond pricing formulas but does not mention market price of risk parameters and their role in the model nor how the initial state variables are selected. These two specifications are vital in understanding the model. Market price of risk parameters are typically an essential aspect of this class of interest rate model and are

fundamental in controlling the behavior and performance of the model. The “NAIC Scenario Set Technical Documentation Equity and Dividend Model” provides an equation for the equity dynamics but does not explain how the variable jump sizes in the equity and dividend processes are modeled. These are surely fundamental components of the model and represent a very significant change from the equity model currently in use. The nature of the “government bond yield” used in the dividend process is not stipulated. The means by which equity returns and jumps are correlated/related across the S&P 500, Russell Midcap, Russell 2000, NASDAQ, MSCI EAFE and MSCI Emerging Market indices are not explained. These specifications are vital in understanding the model. The “NAIC Scenario Set Technical Documentation Corporate Yield Model” is introductory, with no meaningful specification of the model given.

Guiding the insurance industry to a working understanding of modern interest rate modeling is a valuable service to the industry and we are hopeful that it will be one of the successful outcomes of the NAIC’s new model.

Yours truly,

Mark Tenney

Hal Pedersen, ASA, MAAA, PhD

PS This letter represents our personal opinions and not those of the Academy of Actuaries or our employers.

March 22, 2021

Comment on Conning GEMS ESG

Mr. Mike Boerner

Chair, Life Actuarial (A) Task Force

National Association of Insurance Commissioners

Dear Mr. Boerner:

We appreciate the opportunity to offer comments on LATF's Economic Scenario Generator (ESG) exposures including Scenario Exposure 3.18.21.

The Conning GEMS model based on the 3 factor Cox, Ingersoll, and Ross model is a very awkward basis for an economic scenario generator. We developed the original economic scenario generator in the 1990s. Papers on multiple factor CIR models already existed at that time.

Mark and I did not pursue those for the original ESG work because those models are very limited in their relation to other variables. The 3 factors of the CIR model are not even correlated to each other. How they are correlated to equity portfolio returns is problematic, this is also true for credit models. So far, this has not been disclosed by Conning.

An approach that would retain more of the benefits of our original ESG work would be one based on the ideas in the Double Mean Reverting Process. In the DMRP, the short rate is mean reverting to a moving target. The moving target moves towards a fixed target. An analogy is the following. The dog chases the rabbit which tries to get to the hole. But both are on ice, so they skid around randomly. Further developments along this line would give more flexibility both as to an interest rate model and for correlation to equity returns. This type of generator is very flexible and allows the attachment of additional economic series, such as stock, credit, inflation, mortgage and GDP.

We respectfully suggest that the NAIC look in this direction instead of the Conning GEMS model. We believe the Conning model will put the NAIC into the wrong hole at a time when the industry can't afford another skid.

Sincerely yours,

Steven Craighead

Mark Tenney

PS. This represents our opinions as individuals and not the Academy of Actuaries or any employer.

Hello all –

Scott, thanks very much for the response below about longer projection periods, which was Question 2 of Section F of the 3/10/2021 ESG Q&A. The response also relates somewhat to Question 6 about stratification. We appreciate the enhancement mentioned below to use the stratification process, rather than the response to Question 6 which suggested using the first so many scenarios. One further comment with respect to stratification is that if the smallest stratification was a 40 scenario subset, rather than 50, it would be a subset of the 200 scenario set and the 1000 scenario set. This could be beneficial for instances where people want to evaluate something that is too computationally intensive to do on, say, the 1000 scenario set, such as nested reserve or RBC calculations or some structured security projection models. The “subset property” would enable people to see the effects of the computationally intensive item across the full spectrum of outcomes for a larger set. This could be helpful in estimating effects across all scenarios. In addition, a 50 scenario set is likely not adequate on its own for estimating metrics such as CTE 90 or CTE 98. Thus we would suggest consideration of changing the 50 scenario subset to a 40 scenario subset.

Question 2 related to formatting. Here it may be helpful to have scenarios available in the current format, as suggested, but it is also helpful to the additional indices and data points available for the “full Conning format”. Thus we would suggest consideration of providing two scenario formats. It would also be helpful to have some sort of format identification number, so that people can code up checks on what format they have. Here it would also be helpful to assign a new identification number any time a format is changed.

Lastly, we believe a 9/30/2020 valuation date would be a good choice for the “next additional valuation date”, as this is the date most common to CFT and C-3 Phase 1 testing.

Thanks,  
Link

Hi Reggie,

Thank you for all of your efforts to date in working with Moody's Analytics and Conning to respond to our comments and questions.

We have some additional concerns below specific to the Scenario Picker Tool and Stochastic Exclusion Ratio Test (SERT) scenarios that have been exposed:

**Scenario Picker Tool:**

Two issues are preventing us from reconciling to the scenarios that Conning picked in the latest Dec. 2020 sample set:

1. Conning ranked significance measures from low to high before picking. The picking method embedded in the Academy's Excel tool ranks from high to low. This opposite ranking order results in different scenario #'s being picked (i.e. ranked scenarios #5, 15, 25, ... 9995 for the subset of 1,000 scenarios).
2. Conning calculated significance measure using some unrounded data. We calculated significance measures using the level of accuracy provided in the static CSV files, which has Treasury rates rounded to 5 decimal places. In the Dec. 2020 sample subset of 1,000 picked scenarios (exposed March 18<sup>th</sup>), the rounding impacts resulted in only 890 of the 1,000 scenarios matching. 110 scenarios change if you use rounded data vs. unrounded data.

The second issue is of greater importance because end users will not have access to the unrounded data. We believe it would be beneficial to the industry if both of these issues could be resolved, for consistency and validation purposes.

**Stochastic Exclusion Ratio Test:**

We are concerned about the practicality of the targeted percentile approach for dynamically generating these scenarios at future points in time. Is this something that the API can currently do, and if so, how efficient is the runtime? Being able to dynamically project scenario #12 for the calculation of future VM-20 Deterministic Reserves is of particular concern.

We have been able to reconcile some of the data that has been provided in the sample files, but in other areas we would like to request further documentation:

1. Can you confirm that for native equity funds, the target percentiles are applied to wealth accumulation factors at each projection month?
2. For the additional equity funds and corporate bond funds, can you provide documentation about how the "GEMS User Path Technology" calculates these returns based on the user-specified inputs to Treasury and native equity funds?
3. For the inverted yield curve scenario #10, can you provide further documentation about how the targeted percentiles are applied to the spread between short and long term rates? Is the 20 year long rate set to the 50<sup>th</sup> percentile, with the targeted spread applied to the 1 year short rate?

Additionally, we would note that there appears to be a mistake in the generation of scenario #14 and #15:

4. Scenario #14 is supposed to be a delayed pop up interest / low equity scenario, but appears to be a delayed pop down interest / low equity scenario, making it a duplicate of scenario #16
5. Scenario #15 is supposed to be a delayed pop down interest / high equity scenario, but appears to be a delayed pop up interest / low equity scenario, making it a duplicate of scenario #13

Thanks again for your consideration of our comments and questions.

Regards,

**Matt Kauffman, FSA**

Assc Director-Sr. Programmer & Actuary  
416.250.2058 tel  
[Matt.Kauffman@moodys.com](mailto:Matt.Kauffman@moodys.com)

## Agenda Item 6

Hear an Update on SOA Research and Education

# Society of Actuaries Research Update to LATF

R. DALE HALL, FSA, MAAA, CERA, CFA

Managing Director of Research

April 8, 2021



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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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## Group Life COVID-19 Mortality Survey



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## Group Life COVID-19 Mortality Survey

- Survey of claims experience of 20 of top 21 U.S. Group Term Life insurers during the COVID-19 pandemic
- Data through October 2020 (report to be updated in June)
- Measured overall excess mortality and portion of excess mortality due to COVID
- Analyzed results by geographic region, industry, and against the U.S. population as a whole
  - <https://www.soa.org/resources/experience-studies/2020/group-life-covid-mort-survey/>



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## Group Life COVID-19 Mortality Survey

### • Survey Highlights

- Q2 & Q3 2020 incurred incidence compared to corresponding quarters of 2017-2019
  - By count: 12.9% increase
  - By amount: 23.8% increase
  - 16,740 COVID claims, totaling \$662 million
- Q2 & Q3 2020 reported incidence compared to corresponding quarters of 2017-2019
  - By count: 8.5% increase
  - By amount: 20.1% increase
  - 14,513 COVID claims, totaling \$564 million



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## Group Life COVID-19 Mortality Survey

### • Survey Highlights

- 8% of all reported Group Life claims with death dates in April-August 2020 were determined to have a cause of death of COVID-19
- Blue Collar group has seen the smallest increase in mortality (monthly 3% - 10%). White Collar and Grey Collar have had higher increases (monthly 10% - 30%)
- Regional patterns have changed over time
  - Northeast region affected greatest in Q2
  - Southeast region affected greatest in Q3
- Percentage of Group Life excess deaths approximately 50% - 70% of the percentage of U.S. population excess deaths



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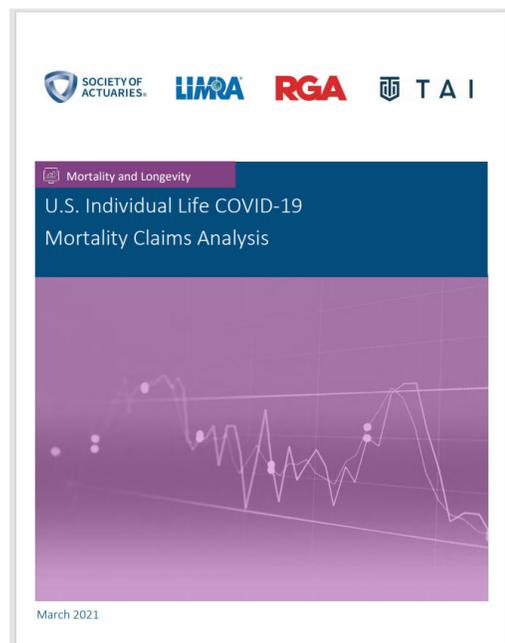
# Individual Life COVID-19 Claims Analysis



7

## Individual Life COVID-19 Mortality Claims Analysis

- Data
  - 27 companies' experience
  - 55% industry
  - 2.5 million claims from 2015 through Q2 2020; 239k in 2020, 11.6k COVID claims
- Analyses
  - 2020 Q1 & Q2 actual claims vs average of 2015-2019 experience
    - Attained age, sex, region, underwriting class, smoker status, face amount, cause of death
  - 2020 Q1 & Q2 actual claims vs U.S. population
    - Attained age, sex, region, cause of death
- <https://www.soa.org/resources/experience-studies/2021/us-individual-life-covid-19/>



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# Individual Life Mortality Claims Analysis – Some Highlights

- Overall Actual to Expected
  - Similar ratios in 2020 Q1
  - Individual life lower in 2020 Q2

Actual to Expected	Individual Life	U.S. Population (excess death)
2020 Q1	93-99%	97-101%
2020 Q2	110-113%	118-123%

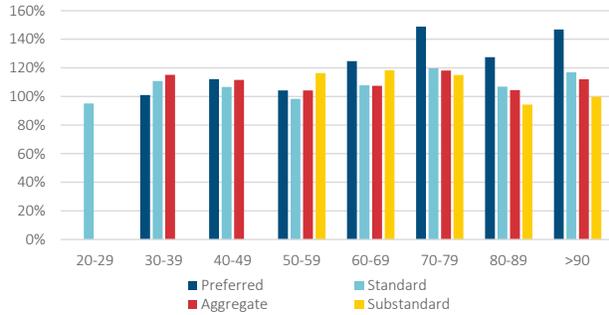
- Average Age @ Death
  - Individual life is older
  - COVID vs non-COVID greater in population

Average Age @ Death	Individual Life	U.S. Population
COVID claims	79.5	76.1
Non-COVID claims	78.9	73.1

## Underwriting Class Actual to Expected

- Preferred A/E > other classes at older ages

2020 Q2 ALL-CAUSE CLAIMS RELATIVE TO 2015-2019 Q2 AVERAGE CLAIMS BY UNDERWRITING CLASS



# US Population Mortality



## 2020 Excess Deaths in the US General Population by Age and Sex

- Expands on CDC excess death analysis
    - shows results by age group and sex breakdowns
  - Enables better comparisons of population to insured experience
    - Can now adjust for age/sex differences
- ★ Interesting finding: Ages 35-54 have the highest actual/expected values

• <https://www.soa.org/resources/research-reports/2021/excess-deaths-gen-population/>

Actual to Expected Deaths: Mar 22, 2020 to Dec 26, 2020 as of Feb 03, 2021

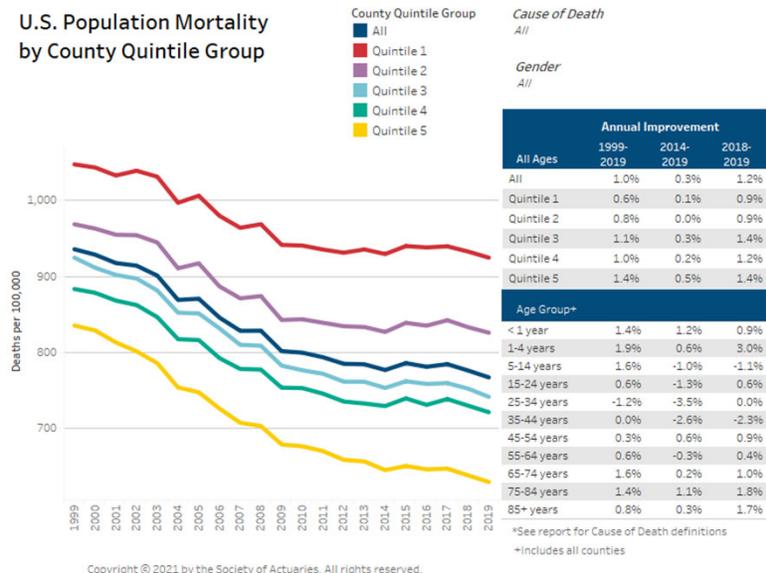
Age	Female	Male
< 1	92.8%	90.6%
1-4	86.8%	94.2%
5-14	94.1%	104.6%
15-24	117.0%	123.1%
25-34	116.6%	120.4%
<b>35-44</b>	<b>122.0%</b>	<b>126.9%</b>
<b>45-54</b>	<b>121.0%</b>	<b>126.9%</b>
55-64	114.9%	119.7%
65-74	119.1%	121.4%
75-84	119.9%	122.2%
> 84	118.4%	118.4%
<b>All Ages</b>	<b>118.4%</b>	<b>120.9%</b>



## U.S. Population Mortality Observations – Updated with 2019 Experience

- 1.2% annual improvement in 2019
- ★ New feature - Results by 5 socioeconomic groups
- Cause of death analyses
- <https://www.soa.org/resources/research-reports/2021/us-population-mortality/>

U.S. Population Mortality by County Quintile Group



# Additional SOA Life Research



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## SOA Experience Studies

Project Name	Objective	Expected Completion Date
COVID-19 Individual Life Mortality Study - Report	Complete a mortality study assessing the impact of COVID-19 on Individual Life Insurance.	Complete. On SOA web site. <sup>1</sup>
Emerging Issues in Underwriting Survey	Provide insight into emerging issues in underwriting and their impact on processes and practices.	Complete. On SOA web site. <sup>2</sup>
US Population Mortality Improvement including COVID-19	Review data for U.S. population mortality improvement trends.	Complete. On SOA web site. <sup>3</sup>
US Population Mortality Observations: Updated with 2019 Experience	Explore observations from the release of the 2019 U.S. population mortality data.	Complete. On SOA web site. <sup>4</sup>
2000-2017 Post Level Term Mortality and Lapse - Report	Complete a study of mortality and lapse on term policies in the post level premium period.	4/15/2021
2000-2017 Post Level Term Mortality and Lapse - Machine Learning Report	Draft a report regarding the PLT machine learning analysis that was done; this report will supplement the main report.	4/30/2021
2009-16 Individual Life Mortality Study	Complete the next in a series of experience analysis of individual ordinary life insurance mortality.	4/30/2021
2018 Variable Annuity Guaranteed Living Benefit Utilization Study	Examine the utilization of guaranteed living benefit options on variable annuity policies under a Joint SOA/LIMRA project.	5/31/2021
Group Life COVID-19 Mortality Survey Update - Report	Complete an update on a mortality study assessing the impact of COVID-19 on Group Life Insurance.	6/15/2021
2000-2011 LTC Lapse and Mortality Valuation Assumptions	Develop a replacement mortality LTC valuation table and a proposal to replace the current LTC voluntary lapse parameters. Work done in conjunction with the AAA.	6/30/2021
Mortality Improvement Survey	Complete a survey to learn how companies are reacting to the slowdown in the level of mortality improvement within the general population.	6/30/2021

<sup>1</sup> <https://www.soa.org/resources/experience-studies/2021/us-individual-life-covid-19/>

<sup>2</sup> <https://www.soa.org/resources/research-reports/2021/emerging-issues-underwriting-survey/>

<sup>3</sup> <https://www.soa.org/resources/research-reports/2021/population-mortality-comparisons/>

<sup>4</sup> <https://www.soa.org/resources/research-reports/2021/us-population-mortality/>



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## SOA Practice Research & Data Driven In-house Research

Project Name	Objective	Expected Completion Date
2020 Emerging Risks Survey-Key Findings	Provide highlights of the 2020 Emerging Risk Survey that tracks the trends and thoughts of risk managers across time.	Complete. On SOA web site. <sup>1</sup>
2020 Excess Deaths in the U.S. General Population by Age and Sex	Actual to Expected Population Mortality during the COVID era.	Complete. On SOA web site. <sup>2</sup>
Insurance Policies on Human Genetics Primer	Draft a primer paper that discusses the issues surrounding human genetics and how they are and will impact the insurance industry.	Complete. On SOA web site. <sup>3</sup>
US Mortality by Socioeconomic Category - Update	Update the set of detailed life tables by socioeconomic category across all U.S. counties.	Complete. On SOA web site. <sup>4</sup>
Complex Model Evaluation	Review existing literature on GLMs, discuss actuarial standards for using complex models outside of actuary's initial expertise, develop case studies for demonstrating methods of evaluating the validation of complex	3/31/2021
Human Mortality Database - 2019 Projects	Enhance the Human Mortality Database by focusing on state level mortality tables and expanding causes of death mortality tables for more countries.	4/30/2021
InsurTech White Paper	Write a white paper covering the InsurTech landscape in the U.S. and discuss how actuaries will be impacted.	4/30/2021
Modelling and Forecasting Cause-of-Death Mortality by Socio-Economic Factors	Develop a mortality projection model to analyze and forecast mortality by cause of death and socio-economic factors.	4/30/2021
Deep Learning for Liability-Driven Investments	Explore the possibility of using deep learning and reinforcement learning techniques to improve investment decision-making for pension funds and life insurance companies.	5/30/2021
Managing Investment Risks of Insurance/Annuity Contractual Designs	Develop a framework for quantifying and analyzing various forms of contractual designs and their risk management techniques.	5/30/2021
2020 Emerging Risks Survey - Final Report	Track the trends and thoughts of risk managers on emerging risks across time.	6/30/2021
Predictive Analytics for Early Detection of Insurer Insolvency	Develop a market-based insolvency prediction model to detect financially distressed insurers at an early stage.	6/30/2021

<sup>1</sup> <https://www.soa.org/resources/research-reports/2021/14th-annual-survey/>  
<sup>2</sup> <https://www.soa.org/resources/research-reports/2021/excess-deaths-gen-population/>  
<sup>3</sup> <https://www.soa.org/resources/research-reports/2021/primer-ins-policies-genetics/>  
<sup>4</sup> <https://www.soa.org/resources/research-reports/2020/us-mort-rate-socioeconomic/>



## Questions





Agenda Item 7

Hear an Update from the American Academy of Actuaries (Academy)

Life Practice Council

Materials to be provided in a supplemental packet at a later date

## Agenda Item 8

Consider Exposure or Adoption of Valuation Manual Amendment Proposals

<b>Dates:</b> Received	Reviewed by Staff	Distributed	Considered
12/7/20	RM		
<b>Notes:</b> APF 2020-13			

### 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:**

Dany Provencher, Appointed Actuary, Industrial Alliance group of companies

**Title of the issue:**

Asset collar when modeled reserve is negative

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 2020 Edition  
VM-20 Section 7.D.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.)

If for all model segments combined, the aggregate annual statement value of the final starting assets, less the corresponding PIMR balance, is

- (a) less than ~~98% of the modeled reserve~~; or
  - (i) 98% of the modeled reserve if modeled reserve is positive;
  - (ii) 102% of the modeled reserve if modeled reserve is negative; or
- (b) greater than the largest of:
  - (i) 102% of the modeled reserve;
  - (ii) the NPR for the same set of policies, net of due and deferred premiums thereon;
  - and
  - (iii) zero,

then the company shall provide documentation in the PBR Actuarial Report that provides reasonable assurance that the modeled reserve is not materially understated as a result of the estimate of the amount of starting assets.

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

If modeled reserve is negative, using assets corresponding to 100% of modeled reserve, would not fall within the asset collar.

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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.

Dates: Received	Reviewed by Staff	Distributed	Considered
11/16/20	RM		
<b>Notes:</b> APF 2020-12 revised 4/2/21			

**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:**

Rachel Hemphill and Karen Jiang, Texas Department of Insurance

**Title of the Issue:**

Create consistency between CDHS determination in VM-20 and VM-21. Revise hedge modeling to only require CDHS if modeling future hedging reduces the reserves under VM-20 or TAR under VM-21.

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-20 Section 6.A.1.b, VM-20 Section 7.E.1.g, VM-20 Section 7.K, VM-20 Section 7.L, VM-21 Section 1.D.2, VM-21 Section 4.A.4, VM-21 Section 4.D.4.b, VM-21 Section 6.B.3.a.ii, VM-21 Section 6.B.3.b.ii, VM-21 Section 6.B.5, VM-21 Section 9, VM-31 Section 3.C.5, VM-31 Section 3.D.6.f, VM-31 Section 3.D.14.a and 3.D.14.b, VM-31 Section 3.E.5, VM-31 Section 3.F.8, VM-31 Section 3.F.12.c, VM-31 Section 3.F.16.a and Section 3.F.16.b

January 1, 2021 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.)

**Summary of 4/2/2021 Updates:**

1. Revisions were made to VM-20 Section 7.K.4 (add “supporting the policies”) and VM-21 Section 9.A.6 (add “supporting the contracts”) in response to Nationwide’s comments.
2. We added a definition for “hedging transactions,” taken from the APPM but modified slightly to be consistent with Valuation Manual terminology in response to Will Wilton’s comments.
3. We have updated the list of CDHS criteria in response to Will Wilton’s comments where we agreed:
  - a. Added “significant” before risks in item (c) of the CDHS definition.
  - b. Combined items (f) – (h) in the CDHS definition.
  - c. Change “person or persons” to “group or area, including whether internal or external,” in item (j) of the CDHS definition.
  - d. We did not remove items (k) or (l) as suggested by Will Wilton, as we find this information useful to regulators. Given that these are retained, and because we were uncertain what else would be included in the new “primary risks” item suggested by Will Wilton, we have not added it. If we can be provided additional information on the risks to be reflected under this new item, an edit could be made.
4. We modified the definition of a SHS to clarify “normally modelled” in response to the ACLI comment and clarify what may be a SHS in response to Will Wilton’s comment (e.g., a single bond would not be a SHS).

We have added comment bubbles in the draft below to flag where we have made edits or chosen not to make edits and why.

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We propose having consistent requirements for a CDHS in VM-20 and VM-21, as well as any future work on VM-22, and consolidating these requirements in the VM-01 definition of a CDHS. This involves adding two criteria to VM-21's definition of CDHS that currently exist for VM-20:

- Areas where basis, gap or assumption risk related to the hedging strategy have been identified.
- The circumstances under which hedging strategy will not be effective in hedging the risks.

These criteria are both reasonable and apply in principle to VM-21, and to any future work on VM-22, as well as VM-20.

Further, we propose revising the requirement for hedging to be a CDHS in order for future hedging to be modeled under VM-20, VM-21, and LR027's C-3 RBC Amount calculation to only apply when modeling such hedging reduces the life reserve level or variable annuity Total Asset Requirement (TAR) level.

The current regulatory requirements for hedging to be a CDHS in order for future hedging to be modeled under VM-20, modeled under VM-21, modeled for the C-3 RBC Amount calculation for variable annuities, and to be eligible for SSAP 108 treatment are all logical requirements when one considers whether hedging should be allowed to reduce the life reserve level or variable annuity TAR level, or whether any mismatch between movements in hedge assets and movements in the corresponding reserve levels should be allowed to be amortized over time.

However, this same requirement has led to a situation of there being unintended optionality in whether a hedging strategy that is like a CDHS is modeled or is not modeled, since a company may choose to satisfy or not satisfy certain of the criteria. This has been especially relevant for cases where modeling a company's hedging strategy would increase reserves or variable annuity TAR.

As noted in the current guidance note in VM-20 Section 7.K.1 in the 2021 *Valuation Manual*:

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*"The prohibition in these modeled reserve requirements against projecting future hedging transactions other than those associated with a clearly defined hedging strategy is intended to address initial concerns expressed by various parties that reserves could be unduly reduced by reflection of programs whose future execution and performance may have greater uncertainty. The prohibition appears, however, to be in conflict with Principle 2 listed in VM-21. Companies may actually execute and reflect in their risk assessment and evaluation processes hedging strategies similar in many ways to clearly defined hedging strategies but lack sufficient clarity in one or more of the qualification criteria. By excluding the associated derivative instruments, the investment strategy that is modeled may also not reflect the investment strategy the company actually uses. Further, because the future hedging transactions may be a net cost to the company in some scenarios and a net benefit in other scenarios, the exclusion of such transactions can result in a modeled reserve that is either lower or higher than it would have been if the transactions were not excluded. The direction of such impact on the reserves could also change from period to period as the actual and projected paths of economic conditions change. A more graded approach to recognition of non-qualifying hedging strategies may be more theoretically consistent with Principle 2. It is recommended that as greater experience is gained by actuaries and state insurance regulators with the principle-based approach and as industry hedging programs mature, the various requirements of this section be reviewed."*

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We propose to continue addressing the regulatory concern that reserves could be unduly reduced by reflection of programs whose future execution and performance may have greater uncertainty, by continuing to only allowing hedging strategies that qualify as a CDHS to reduce life reserves and variable annuity TAR. However, we propose that the treatment of CDHS be made more principles-based and less

subject to manipulation. To accomplish this, the proposal requires that any hedging strategy **that is a part of the investment strategy** supporting the policies and is **normally modeled as part of the company's risk assessment and evaluation processes** be modeled as if it were a CDHS if doing so results in an increase in life reserves or variable annuity TAR.

That is, CDHS becomes a requirement solely for hedging strategies that reduce life reserves or variable annuity TAR, and so becomes a more clear regulatory guardrail requiring that hedging strategies that reduce life reserves or variable annuity TAR must be clearly defined.

We continue to need the concept of a CDHS. A CDHS simply formally documents items that a company should be able to document for a robust, well-defined hedging strategy. It requires that the following be identified:

- a. The specific risks being hedged (e.g., cash flow, policy interest credits, delta, rho, vega, etc.).
- b. The hedge objectives.
- c. The risks that are not hedged (e.g., variation from expected mortality, withdrawal, and other utilization or decrement rates assumed in the hedging strategy, etc.).
- d. The financial instruments used to hedge the risks.
- e. The hedge trading rules, including the permitted tolerances from hedging objectives.
- f. The metrics for measuring hedging effectiveness.
- g. The criteria used to measure hedging effectiveness.
- h. The frequency of measuring hedging effectiveness.
- i. The conditions under which hedging will not take place.
- j. The person or persons responsible for implementing the hedging strategy.
- k. Areas where basis, gap or assumption risk related to the hedging strategy have been identified.
- l. The circumstances under which hedging strategy will not be effective in hedging the risks.

While the last two criteria have historically applied for life but not variable annuities, these are all reasonable documentation items that for a robust, well-defined hedging strategy regardless of whether the product is life or variable annuity.

The concept of a CDHS is used for accounting in SSAP 108. SSAP 108 allows companies to set up a deferred asset or liability to amortize the mismatch between changes in the value of the liability and changes in the value of the hedging instruments attributable to the hedged risk underlying a highly effective CDHS modeled for VM-21. Allowing this treatment encourages companies to reduce risk through robust, well-defined and highly effective hedging. Without having the hedging strategy be well-defined, regulators could not rely on past effectiveness being indicative of future effectiveness, and so could not offer companies the benefit of SSAP 108 treatment. Once we recognize the need for a concept of a well-defined hedging strategy, the only question is what criteria would need to be met to be considered well-defined – that is, what criteria should be required to be considered a CDHS. This is a distinct question from whether the concept of a CDHS is needed. We have not heard critiques of individual criteria in the CDHS definition, but consideration of the criteria is appropriate as we go forward to make the definitions in VM-20 and VM-21 consistent. Similarly, in reserve and capital calculations, we rely on the concept of historical effectiveness to determine an error factor. If modeling hedging reduces the reserve or capital amount, the error factor determines the magnitude to which this is reflected. However, this use of the historical effectiveness relies on the hedging strategy being well-documented and comparable between historical hedging and planned future hedging. So, again, a need for hedging strategies to be well-defined presents itself – a CDHS concept is needed.

Finally, edits to VM-31 are needed to reflect these updates and bring VM-20 and VM-21 reporting requirements more in line with one another where appropriate.

**Note on Coordination with RBC and APPM:** We have reviewed, and with these edits there are no corresponding edits necessary for LR027 for RBC but corresponding edits are necessary for SSAP 108. A referral to SAPWG is to be concurrently considered with this APF.

## VM-01

- The term “clearly defined hedging strategy” (CDHS) means a strategy undertaken by a company to manage risks through the future purchase or sale of hedging instruments and the opening and closing of hedging positions that meet the criteria specified in the applicable reserve requirement section of the Valuation Manual. A CDHS must identify:
  - a. The specific risks being hedged (e.g., cash flow, policy interest credits, delta, rho, vega, etc.).
  - b. The hedge objectives.
  - c. The significant [RH1] risks that are not hedged (e.g., variation from expected mortality, withdrawal, and other utilization or decrement rates assumed in the hedging strategy, etc.).
  - d. The financial instruments used to hedge the risks.
  - e. The hedge trading rules, including the permitted tolerances from hedging objectives.
  - f. The metrics, criteria, and frequency [RH2] for measuring hedging effectiveness.
  - g. The conditions under which hedging will not take place.
  - h. The group or area, including whether internal or external, [RH3] responsible for implementing the hedging strategy.
  - i. Areas where basis, gap or assumption risk related to the hedging strategy have been identified. [RH4]
  - j. The circumstances under which hedging strategy will not be effective in hedging the risks. [RH5]

The hedge strategy may be dynamic, static or a combination thereof. A strategy involving the offsetting of the risks associated with products falling under the scope of different requirements within the Valuation Manual (e.g., VM-20, VM-21, or VM-22) does not qualify as CDHS. A CDHS must meet all of the principles outlined in VM-21 Section 1.B (the most relevant of which may be Principle 5).

<p><b>Guidance Note:</b> For purposes of the above criteria, “effectiveness” need not be measured in a manner as defined in SSAP No. 86—Derivatives in the AP&amp;P Manual.</p>
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- The term “hedging transaction” means a derivative(s) transaction which is entered into and maintained to reduce:
  - a. The risk of a change in the fair value or cash flow of assets and liabilities which the company has acquired or incurred or has a firm commitment to acquire or incur or for which the company has a forecasted acquisition or incurrence; or
  - b. The currency exchange rate risk or the degree of foreign currency exposure in assets and liabilities which the company has acquired or incurred or has a firm commitment to acquire or incur or for which the company has forecasted acquisition or incurrence. [RH6]
- The term “Seasoned Hedging Strategy” (SHS) means a hedging strategy that is part of the company’s investment strategy and for which future hedging transactions are [RH7] normally modeled as part of the company’s risk assessment and evaluation process. A SHS may or may not be a CDHS.

The hedge strategy may be dynamic, static, or a combination thereof. A strategy involving the offsetting of the risks associated with products falling under the scope of different requirements within the Valuation Manual (e.g., VM-20, VM-21, or VM-22) does not qualify as SHS. A SHS must meet all of the principles outlined in VM-21 Section 1.B (the most relevant of which may be Principle 5).

### **VM-20 Section 6.A.1.b**

A company may not exclude a group of policies for which there is one or more ~~clearly defined hedging strategies~~CDHS or one or more SHS required to be modeled pursuant to Section 7.K.4 from stochastic reserve requirements, except in the case where all ~~clearly defined hedging strategies~~CDHS and all SHS required to be modeled pursuant to Section 7.K.4 are solely associated with product features that are determined to not be material under Section 7.B.1 due to low utilization.

### **VM-20 Section 7.E.1.g**

Notwithstanding the above requirements, the modeled reserve shall be the higher of that produced by the model investment strategy and that produced by substituting an alternative investment strategy in which the fixed income reinvestment assets have the same weighted average life (WAL) as the reinvestment assets in the model investment strategy and are all public non-callable corporate bonds with gross asset spreads, asset default costs and investment expenses by projection year that are consistent with a credit quality blend of 50% PBR credit rating 6 (A2/A) and 50% PBR credit rating 3 (Aa2/AA).

Policy loans, equities and derivative instruments associated with the execution of a ~~clearly defined hedging strategy~~CDHS (in compliance with the definition of CDHS in VM-01-Section 7.L) or a SHS that is required to be modeled pursuant to Section 7.K.4 are not affected by this requirement.

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

#### K. Modeling of Derivative Programs

1. When determining the deterministic reserve and the stochastic reserve, the company shall include in the projections the appropriate costs and benefits of derivative instruments that are currently held by the company in support of the policies subject to these requirements. The company shall also include the appropriate costs and benefits of anticipated future derivative instrument transactions associated with the execution of a ~~clearly defined hedging strategy~~CDHS or a SHS that is required to be modeled pursuant to Section 7.K.4, as well as the appropriate costs and benefits of anticipated future derivative instrument transactions associated with non-hedging derivative programs (e.g., replication, income generation) undertaken as part of the investment strategy supporting the policies, provided they are normally modeled as part of the company's risk assessment and evaluation processes.

~~**Guidance Note:** The requirements stated here for handling hedging strategies are essentially consistent with those included in the CTE methodology of VM 21 and the five principles spelled out there. The prohibition in these modeled reserve requirements against projecting future hedging transactions other than those associated with a clearly defined hedging strategy is intended to address initial concerns expressed by various parties that reserves could be unduly reduced by reflection of programs whose future execution and performance may have greater uncertainty. The prohibition appears, however, to be in conflict with Principle 2 listed in VM 21. Companies may actually execute and reflect in their risk assessment and evaluation processes hedging strategies similar in many ways to clearly defined hedging strategies but lack sufficient clarity in one or more of the qualification criteria. By excluding the associated derivative instruments, the investment strategy that is modeled may also not reflect the investment strategy the company actually uses. Further, because the future hedging transactions may be a net cost to the company in some scenarios and a net benefit in other scenarios, the exclusion of such transactions can result in a modeled reserve that is either lower or higher than it would have been if the transactions were not excluded. The direction of such impact on the reserves could also change from period to period as the actual and projected paths of economic conditions change. A more graded approach to recognition of non-qualifying hedging strategies may be more theoretically consistent with Principle 2. It is recommended that as greater experience is gained by actuaries and state insurance regulators with the principle based approach and as industry hedging programs mature, the various requirements of this section be reviewed.~~

2. For each derivative program that is modeled, the company shall reflect the company's established investment policy and procedures for that program; project expected program performance along each scenario; and recognize all benefits, residual risks and associated frictional costs. The residual risks include, but are not limited to: basis, gap, price, parameter estimation and variation in assumptions (mortality, persistency, withdrawal, etc.). Frictional costs include, but are not limited to: transaction, margin (opportunity costs associated with margin requirements) and administration. For ~~clearly defined hedging strategies~~ CDHS or SHS required to be modeled pursuant to Section 7.K.4, the company may not assume that residual risks and frictional costs have a value of zero, unless the company demonstrates in the PBR Actuarial Report that "zero" is an appropriate expectation.
  
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 such risk factors by increasing the stochastic reserve as described in Section 5.E.
  
- ~~3.4. If a SHS supporting the policies [RH8] is not a CDHS but modeling it would result in an increase to the company's minimum reserve, then the company shall model the SHS as if it were a CDHS when calculating reserves under VM-20.~~

## VM-20 Section 7.L (Remove entire Section 7.L)

### ~~L. Clearly Defined Hedging Strategy~~

- ~~1. A clearly defined hedging strategy must identify:
  - a. The specific risks being hedged (e.g., cash flow, policy interest credits, delta, rho, vega, etc.).
  - b. The hedge objectives.
  - c. The risks that are not hedged (e.g., variation from expected mortality, withdrawal, and other utilization or decrement rates assumed in the hedging strategy, etc.).
  - d. The financial instruments used to hedge the risks.
  - e. The hedge trading rules, including the permitted tolerances from hedging objectives.
  - f. The metrics for measuring hedging effectiveness.
  - g. The criteria used to measure hedging effectiveness.
  - h. The frequency of measuring hedging effectiveness.
  - i. The conditions under which hedging will not take place.
  - j. The person or persons responsible for implementing the hedging strategy.
  - k. Areas where basis, gap or assumption risk related to the hedging strategy have been identified.
  - l. The circumstances under which hedging strategy will not be effective in hedging the risks.~~

~~Hedging strategies involving the offsetting of the risks associated with other products outside of the scope of these requirements is not a clearly defined hedging strategy.~~

~~**Guidance Note:** For purposes of the above criteria, "effectiveness" need not be measured in a manner as defined in *SSAP No. 86 - Derivatives* in the AP&P Manual.~~

**VM-21 Section 1.D.2 (Delete entire definition and renumber subsequent sections VM-21 Section 1.D.3 and VM-21 Section 1.D.4)**

~~The term “clearly defined hedging strategy” (CDHS) is defined in VM 01. In order to be designated as a CDHS, the strategy must meet the principles outlined in Section 1.B (particularly Principle 5) and shall, at a minimum, identify:~~

- ~~a. The specific risks being hedged (e.g., delta, rho, vega, etc.).~~
- ~~a. The hedge objectives.~~
- ~~b. The risks not being hedged (e.g., variation from expected mortality, withdrawal, and other utilization or decrement rates assumed in the hedging strategy, etc.).~~
- ~~e. The financial instruments that will be used to hedge the risks.~~
- ~~d. The hedge trading rules, including the permitted tolerances from hedging objectives.~~
- ~~e. The metric(s) for measuring hedging effectiveness.~~
- ~~f. The criteria that will be used to measure hedging effectiveness.~~
- ~~g. The frequency of measuring hedging effectiveness.~~
- ~~h. The conditions under which hedging will not take place.~~
- ~~i. The person or persons responsible for implementing the hedging strategy.~~

~~**Guidance Note:** It is important to note that strategies involving the offsetting of the risks associated with VA guarantees with other products outside of the scope of these requirements (e.g., equity-indexed annuities) do not currently qualify as a clearly defined hedging strategy under these requirements.~~

**VM-21 Section 4.A.4**

Modeling of Hedges

- a. For a company that does not have a CDHS or a SHS that is required to be modeled pursuant to Section 9.A.6:
  - i. The company shall not consider the cash flows from any future hedge purchases or any rebalancing of existing hedge assets in its modeling.
  - 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. The hedge assets may then be considered in one of two ways:
    - a) Include the asset cash flows from any contractual payments and maturity values in the projection model;
    - b) No hedge positions – in which case the hedge positions held on the valuation date are replaced with cash and/or other general account assets in an amount equal to the aggregate market value of these hedge positions.

**Guidance Note:** If the hedge positions held on the valuation date are replaced with cash, then as with any other cash, such amounts may then be invested following the company’s investment strategy.

A company may switch from method a) to method b) at any time, but it may only change from b) to a) with the approval of the domiciliary commissioner.

- b. For a company with a CDHS or a SHS that is required to be modeled pursuant to Section 9.A.6, the detailed requirements for the modeling of hedges are defined in Section 9. The following paragraphs are a high-level summary and do not supersede the detailed requirements.

- i. 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 stochastic reserve.
- ii. 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 CDHS or the SHS that is required to be modeled pursuant to Section 9.A.6. 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 stochastic reserve as the weighted average of two CTE70 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 no future hedge purchases. These are discussed in greater detail in Section 9. The stochastic reserve shall be the weighted average of the two CTE70 values, where the weights reflect the error factor (E) determined following the guidance of Section 9.C.4.
- iii. The company is responsible for verifying compliance with CDHS requirements, or SHS requirements if required to be modeled pursuant to Section 9.A.6, and any other requirements in Section 9 for all hedging instruments included in the projections.
- iv. 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.

#### **VM-21 Section 4.D.4.b**

Notwithstanding the above requirements, the model investment strategy and any non-prescribed asset spreads shall be adjusted as necessary so that the aggregate reserve is not less than that which would be obtained by substituting an alternative investment strategy in which all fixed income reinvestment assets are public non-callable corporate bonds with gross asset spreads, asset default costs, and investment expenses by projection year that are consistent with a credit quality blend of 50% PBR credit rating 6 (A2/A) and 50% PBR credit rating 3 (Aa2/AA).

Policy loans, equities and derivative instruments associated with the execution of a clearly defined hedging strategy CDHS (in compliance with the definition of CDHS in VM-01) or a SHS that is required to be modeled pursuant to Section 9.A.6 are not affected by this requirement.

#### **VM-21 Section 6.B.3.a.ii – Footnote (Footnote at Bottom of Page 21-22)**

Throughout this Section 6, references to CTE70 (adjusted) shall also mean the Stochastic Reserve for a company that does not have a CDHS or a SHS that is required to be modeled pursuant to Section 9.A.6 as discussed in Section 4.A.4.a.

#### **VM-21 Section 6.B.3.b.ii**

Calculate the Prescribed Projections Amount as the CTE70 (adjusted) using the same method as that outlined in Section 9.C (which is the same as the stochastic reserves following Section 4.A.4.a for a company that does not have a CDHS or a SHS that is required to be modeled pursuant to Section 9.A.6) but substituting the assumptions prescribed by Section 6.C. The calculation of this Prescribed Projections Amount also requires that the scenario reserve for any given scenario be equal to or in excess of the cash surrender value in aggregate on the valuation date for the group of contracts modeled in the projection.

#### **VM-21 Section 6.B.5**

Cash flows associated with hedging shall be projected in the same manner as that used in the calculation of the CTE70 (adjusted) as discussed in Section 9.C or Section 4.A.4.a for a company without a CDHS or a SHS that is required to be modeled pursuant to Section 9.A.6.

## **VM-21 Section 9**

### **Section 9: Modeling of Hedges under a CDHS**

#### **A. Initial Considerations**

1. 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 stochastic reserve, determined in accordance with Section 3.D and Section 4.D.
2. If the company is following a CDHS, in accordance with an investment policy adopted by the board of directors, or a committee of board members, the company shall take into account the costs and benefits of hedge positions expected to be held by the company in the future along each scenario based on the execution of the hedging strategy, and it is eligible to reduce the amount of the stochastic reserve using projections otherwise calculated. The investment policy must clearly articulate the company's hedging objectives, including the metrics that drive rebalancing/trading. This specification could include maximum tolerable values for investment losses, earnings, volatility, exposure, etc. in either absolute or relative terms over one or more investment horizons vis-à-vis the chance of occurrence. Company management is responsible for developing, documenting, executing and evaluating the investment strategy, including the hedging strategy, used to implement the investment policy.
3. For this purpose, the investment assets refer to all the assets, including derivatives supporting covered products and guarantees. This also is referred to as the investment portfolio. The investment strategy is the set of all asset holdings at all points in time in all scenarios. The hedging portfolio, which also is referred to as the hedging assets, is a subset of the investment assets. The hedging strategy is the hedging asset holdings at all points in time in all scenarios. There is no attempt to distinguish what is the hedging portfolio and what is the investment portfolio in this section. Nor is the distinction between investment strategy and hedging strategy formally made here. Where necessary to give effect to the intent of this section, the requirements applicable to the hedging portfolio or the hedging strategy are to apply to the overall investment portfolio and investment strategy.
4. This particularly applies to restrictions on the reasonableness or acceptability of the models that make up the stochastic cash-flow model used to perform the projections, since these restrictions are inherently restrictions on the joint modeling of the hedging and non-hedging portfolio. To give effect to these requirements, they must apply to the overall investment strategy and investment portfolio.
5. Before either a new or revised hedging strategy can be used to reduce the amount of the stochastic reserve otherwise calculated, the hedging strategy should be in place (i.e., effectively implemented by the company) for at least three months. The company may meet the time requirement by having evaluated the effective implementation of the hedging strategy for at least three months without actually having executed the trades indicated by the hedging strategy (e.g., mock testing or by having effectively implemented the strategy with similar annuity products for at least three months).
6. If a SHS supporting the contracts [RH9] is not a CDHS but modeling it as if it were a CDHS would result in an increase in the company's TAR, then the company shall model the SHS as if it were a CDHS when calculating reserves under AG43 and/or VM-21 and when calculating the C-3 RBC Amount under LR027. The company shall not treat the SHS as a CDHS for purposes of SSAP 108.

#### **B. Modeling Approaches**

1. The analysis of the impact of the hedging strategy on cash flows is typically performed using either one of two types of methods as described below. Although a hedging strategy normally would be expected to reduce risk provisions, the nature of the hedging strategy and the costs to implement the strategy may result in an increase in the amount of the stochastic reserve otherwise calculated.
2. The fundamental characteristic of the first type of method, referred to as the “explicit method,” is that hedging positions and their resulting cash flows are included in the stochastic cash-flow model used to determine the scenario reserve, as discussed in Section 3.D, for each scenario.
3. The fundamental characteristic of the second type of method, referred to as the “implicit method,” is that the effectiveness of the current hedging strategy on future cash flows is evaluated, in part or in whole, outside of the stochastic cash-flow model. There are multiple ways that this type of modeling can be implemented. In this case, the reduction to the stochastic reserve otherwise calculated should be commensurate with the degree of effectiveness of the hedging strategy in reducing accumulated deficiencies otherwise calculated.
4. Regardless of the methodology used by the company, the ultimate effect of the current hedging strategy (including currently held hedge positions) on the stochastic reserve needs to recognize all risks, associated costs, imperfections in the hedges and hedging mismatch tolerances associated with the hedging strategy. The risks include, but are not limited to: basis, gap, price, parameter estimation and variation in assumptions (mortality, persistency, withdrawal, annuitization, etc.). Costs include, but are not limited to: transaction, margin (opportunity costs associated with margin requirements) and administration. In addition, the reduction to the stochastic reserve attributable to the hedging strategy may need to be limited due to the uncertainty associated with the company’s ability to implement the hedging strategy in a timely and effective manner. The level of operational uncertainty varies indirectly with the amount of time that the new or revised strategy has been in effect or mock tested.

**Guidance Note:** No hedging strategy is perfect. A given hedging strategy may eliminate or reduce some but not all risks, transform some risks into others, introduce new risks, or have other imperfections. For example, a delta-only hedging strategy does not adequately hedge the risks measured by the “Greeks” other than delta. Another example is that financial indices underlying typical hedging instruments typically do not perform exactly like the separate account funds, and hence the use of hedging instruments has the potential for introducing basis risk

5. A safe harbor approach is permitted for CDHS reflection for those companies whose modeled hedge assets comprise only linear instruments not sensitive to implied volatility. For companies with option-based hedge strategies, electing this approach would require representing the option-based portion of the strategy as a delta-rho two-Greek hedge program. The normally modeled option portfolio would be replaced with a set of linear instruments that have the same first-order Greeks as the original option portfolio.

#### C. Calculation of Stochastic Reserve (Reported)

1. The company shall calculate CTE70 (best efforts)—the results obtained when the CTE70 is based on incorporating the CDHS (including both currently held and future hedge positions) into the stochastic cash-flow model on a best efforts basis, including all of the factors and assumptions needed to execute the CDHS (e.g., stochastic implied volatility). The determination of CTE70 (best efforts) may utilize either explicit or implicit modeling techniques.
2. The company shall calculate a CTE70 (adjusted) by recalculating the CTE70 assuming the company has no CDHS, therefore following the requirements of Section 4.A.4.a.
3. Because most models will include at least some approximations or idealistic assumptions, CTE70 (best efforts) may overstate the impact of the hedging strategy. To compensate for potential overstatement of the impact of the hedging strategy, the value for the stochastic reserve is given by:  
$$\text{Stochastic reserve} = \text{CTE70 (best efforts)} + E \times \max[0, \text{CTE70 (adjusted)} - \text{CTE70 (best efforts)}]$$

4. The company shall specify a value for  $E$  (the “error factor”) in the range from 5% to 100% to reflect the company’s view of the potential error resulting from the level of sophistication of the stochastic cash-flow model and its ability to properly reflect the parameters of the hedging strategy (i.e., the Greeks being covered by the strategy), as well as the associated costs, risks and benefits. The greater the ability of the stochastic model to capture all risks and uncertainties, the lower the value of  $E$ . The value of  $E$  may be as low as 5% only if the model used to determine the CTE70 (best efforts) effectively reflects all of the parameters used in the hedging strategy. If certain economic risks are not hedged, yet the model does not generate scenarios that sufficiently capture those risks,  $E$  must be in the higher end of the range, reflecting the greater likelihood of error. Likewise, simplistic hedge cash-flow models shall assume a higher likelihood of error.
5. The company shall conduct a formal back-test, based on an analysis of at least the most recent 12 months, to assess how well the model is able to replicate the hedging strategy in a way that supports the determination of the value used for  $E$ .
6. Such a back-test shall involve one of the following analyses:
  - a. For companies that model hedge cash flows directly (“explicit method”), replace the stochastic scenarios used in calculating the CTE70 (best efforts) with a single scenario that represents the market path that actually manifested over the selected back-testing period and compare the projected hedge asset gains and losses against the actual hedge asset gains and losses – both realized and unrealized – observed over the same time period. For this calculation, the model assumptions may be replaced with parameters that reflect actual experience during the back-testing period. In order to isolate the comparison between the modeled hedge strategy and actual hedge results for this calculation, the projected liabilities should accurately reflect the actual liabilities throughout the back-testing period; therefore, adjustments that facilitate this accuracy (e.g. reflecting actual experience instead of model assumptions, including new business, etc.) are permissible.

To support the choice of a low value of  $E$ , the company should ascertain that the projected hedge asset gains and losses are within close range of 100% (e.g., 80–125%) of the actual hedge asset gains and losses. The company may also support the choice of a low value of  $E$  by achieving a high R-squared (e.g., 0.80 or higher) when using a regression analysis technique.

- b. For companies that model hedge cash flows implicitly by quantifying the cost and benefit of hedging using the fair value of the hedged item (an “implicit method” or “cost of reinsurance method”), calculate the delta, rho and vega coverage ratios in each month over the selected back-testing period in the following manner:

- i. Determine the hedge asset gains and losses—both realized and unrealized—incurred over the month attributable to equity, interest rate, and implied volatility movements.

- ii. Determine the change in the fair value of the hedged item over the month attributable to equity, interest rate, and implied volatility movements. The hedged item should be defined in a manner that reflects the proportion of risks hedged (e.g., if a company elects to hedge 50% of a contract’s market risks, it should quantify the fair value of the hedged item as 50% of the fair value of the contract).

- iii. Calculate the delta coverage ratio as the ratio between (i) and (ii) attributable to equity movements.

- iv. Calculate the rho coverage ratio as the ratio between (i) and (ii) attributable to interest rate movements.

- v. Calculate the vega coverage ratio as the ratio between (i) and (ii) attributable to implied volatility movements.

- vi. To support the company’s choice of a low value of  $E$ , the company should be able to demonstrate that the delta and rho coverage ratios are both within close range of 100 % (e.g., 80–125%) consistently across the back-testing period.

vii. In addition, the company should be able to demonstrate that the vega coverage ratio is within close range of 100 % in order to use the prevailing implied volatility levels as of the valuation date in quantifying the fair value of the hedged item for the purpose of calculating CTE70 (best efforts). Otherwise, the company shall quantify the fair value of the hedged item for the purpose of calculating CTE70 (best efforts) in a manner consistent with the realized volatility of the scenarios captured in the CTE (best efforts).

c. Companies that do not model hedge cash flows explicitly, but that also do not use the implicit method as outlined in Section 9.C.6.b above, shall conduct the formal back-test in a manner that allows the company to clearly illustrate the appropriateness of the selected method for reflecting the cost and benefit of hedging, as well as the value used for E.

7. A company that does not have 12 months of experience to date shall set E to a value that reflects the amount of experience available, and the degree and nature of any change to the hedge program. For a material change in strategy, with no history, E should be at least 0.50. However, E may be lower than 0.50 if some reliable experience is available and/or if the change in strategy is a refinement rather than a substantial change in strategy.

**Guidance Note:** The following examples are provided as guidance for determining the E factor when there has been a change to the hedge program:

- The error factor should be temporarily large (e.g.,  $\geq 50\%$ ) for substantial changes in hedge methodology (e.g., moving from a fair-value based strategy to a stop-loss strategy) where the company has not been able to provide a meaningful simulation of hedge performance based on the new strategy.
- A temporary moderate increase (e.g., 15–30%) in error factor should be used for substantial modifications to hedge programs or CDHS modeling where meaningful simulation has not been created (e.g., adding second-order hedging, such as gamma or rate convexity).
- No increase in the error factor may be used for incremental modifications to the hedge strategy (e.g., adding death benefits to a program that previously covered only living benefits, or moving from swaps to Treasury Department futures).

#### D. Additional Considerations for CTE70 (best efforts)

If the company is following a CDHS, the fair value of the portfolio of contracts falling within the scope of these requirements shall be computed and compared to the CTE70 (best efforts) and CTE70 (adjusted). If the CTE70 (best efforts) is below both the fair value and CTE70 (adjusted), the company should be prepared to explain why that result is reasonable.

For the purposes of this analysis, the stochastic reserve and fair value calculations shall be done without requiring the scenario reserve for any given scenario to be equal to or in excess of the cash surrender value in aggregate for the group of contracts modeled in the projection.

#### E. Specific Considerations and Requirements

1. As part of the process of choosing a methodology and assumptions for estimating the future effectiveness of the current hedging strategy (including currently held hedge positions) for purposes of reducing the stochastic reserve, the company should review actual historical hedging effectiveness. The company shall evaluate the appropriateness of the assumptions on future trading, transaction costs, other elements of the model, the strategy, the mix of business and other items that are likely to result in materially adverse results. This includes an analysis of model assumptions that, when combined with the reliance on the hedging strategy, are likely to result in adverse results relative to those modeled. The parameters and assumptions shall be adjusted (based on testing contingent on the strategy used and other assumptions) to levels that fully reflect the risk based on historical ranges and foreseeable future ranges of the assumptions and parameters. If this is not possible by parameter adjustment, the model shall be modified to reflect them at either anticipated experience or adverse estimates of the parameters.
2. A discontinuous hedging strategy is a hedging strategy where the relationships between the sensitivities to equity markets and interest rates (commonly referred to as the Greeks) associated with the guaranteed

contract holder options embedded in the variable annuities and other in-scope products and these same sensitivities associated with the hedging assets are subject to material discontinuities. This includes, but is not limited to, a hedging strategy where material hedging assets will be obtained when the variable annuity account balances reach a predetermined level in relationship to the guarantees. Any hedging strategy, including a delta hedging strategy, can be a discontinuous hedging strategy if implementation of the strategy permits material discontinuities between the sensitivities to equity markets and interest rates associated with the guaranteed contract holder options embedded in the variable annuities and other in-scope products and these same sensitivities associated with the hedging assets. There may be scenarios that are particularly costly to discontinuous hedging strategies, especially where those result in large discontinuous changes in sensitivities (Greeks) associated with the hedging assets. Where discontinuous hedging strategies contribute materially to a reduction in the stochastic reserve, the company must evaluate the interaction of future trigger definitions and the discontinuous hedging strategy, in addition to the items mentioned in the previous paragraph. This includes an analysis of model assumptions that, when combined with the reliance on the discontinuous hedging strategy, may result in adverse results relative to those modeled.

3. A strategy that has a strong dependence on acquiring hedging assets at specific times that depend on specific values of an index or other market indicators may not be implemented as precisely as planned.
4. The combination of elements of the stochastic cash-flow model—including the initial actual market asset prices, prices for trading at future dates, transaction costs and other assumptions—should be analyzed by the company as to whether the stochastic cash-flow model permits hedging strategies that make money in some scenarios without losing a reasonable amount in some other scenarios. This includes, but is not limited to:
  - a. Hedging strategies with no initial investment that never lose money in any scenario and in some scenarios make money.
  - b. Hedging strategies that, with a given amount of initial money, never make less than accumulation at the one-period risk-free rates in any scenario but make more than this in one or more scenarios.
5. If the stochastic cash-flow model allows for such situations, the company should be satisfied that the results do not materially rely directly or indirectly on the use of such strategies. If the results do materially rely directly or indirectly on the use of such strategies, the strategies may not be used to reduce the stochastic reserve otherwise calculated.
6. In addition to the above, the method used to determine prices of financial instruments for trading in scenarios should be compared to actual initial market prices. In addition to comparisons to initial market prices, there should be testing of the pricing models that are used to determine subsequent prices when scenarios involve trading financial instruments. This testing should consider historical relationships. For example, if a method is used where recent volatility in the scenario is one of the determinants of prices for trading in that scenario, then that model should approximate actual historic prices in similar circumstances in history.

### **VM-31 Section 3.C.5**

Assets and Risk Management – A brief description of the asset portfolio, and the approach used to model risk management strategies, such as hedging, and other derivative programs, including a description of any ~~clearly defined hedging strategies~~ CDHS and any SHS that is required to be modeled pursuant to VM-20 Section 7.K.4.

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

Risk Management – Detailed description of model risk management strategies, such as hedging and other derivative programs, ~~including any clearly defined hedging strategies~~, specific to the groups of policies covered in this sub-report and not discussed in the Life Summary Section 3.C.5. This should include documentation for any hedging strategy that meets the requirements to be a CDHS. It should also include, for any SHS that is required to be modeled pursuant to VM-20 Section 7.K.4, documentation of any CDHS criteria met, listing of CDHS criteria not met, and documentation of the reserve level with and without the SHS being modeled as if it were a CDHS.

### **VM-31 Section 3.D.14.a and 3.D.14.b**

- a. Investment Officer on Investments – A certification from a duly authorized investment officer that the modeled company investment strategy, including any CDHS and any SHS that is required to be modeled pursuant to VM-20 Section 7.K.4, is representative of and consistent with the company’s investment policy.
- b. Qualified Actuary on Investments – A certification by a qualified actuary, not necessarily the same qualified actuary that has been assigned responsibility for the PBR Actuarial Report or this sub-report, that the modeling of any ~~clearly defined hedging strategies~~ CDHS and any SHS that is required to be modeled pursuant to VM-20 Section 7.K.4 was performed in accordance with VM-20 and in compliance with all applicable ASOPs, and the alternative investment strategy as defined in VM-20 Section 7.E.1.g reflects the prescribed mix of assets with the same WAL as the reinvestment assets in the company investment strategy.

### **VM-31 Section 3.E.5**

Assets and Risk Management – A brief description of the general account asset portfolio, and the approach used to model risk management strategies, such as hedging and other derivative programs, including a description of any CDHS or any SHS that is required to be modeled pursuant to VM-21 Section 9.A.6 ~~clearly defined hedging strategies~~, and any material changes to the hedging strategy from the prior year.

### **VM-31 Section 3.F.8**

Hedging and Risk Management – The following information regarding the hedging and risk management assumptions used by the company in performing a principle-based valuation under VM-21:

- a. Strategies – Detailed description of risk management strategies, such as hedging and other derivative programs, including any CDHS or any SHS that is required to be modeled pursuant to VM-21 Section 9.A.6, specific to the groups of contracts covered in this sub-report.
  - 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.
- b. CDHS – Documentation for any hedging strategy that meets the requirements to be a CDHS.
- c. Other Modeled Hedging Strategies – Documentation for any SHS that is required to be modeled pursuant to VM-21 Section 9.A.6, including documentation of any CDHS criteria met, listing of CDHS criteria not met, and documentation of the TAR level with and without the SHS being modeled as if it were a CDHS.
- ~~e.d.~~ 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.
- ~~d.e.~~ Hedge Modeling – Description of how the hedge strategy was incorporated into modeling, including:
  - i. Differences in timing between model and actual strategy implementation.
  - ii. For a company that does not have a CDHS or a SHS that is required to be modeled pursuant to VM-21 Section 9.A.6, disclosure of the method used to consider hedge assets included in the starting assets, either (1) including the asset cash flows in the projection model; or (2) replacing the hedge positions with cash and/or other general account assets in an amount equal to the market value of the hedge positions, as discussed in VM-21 Section 4.A.4.a.
  - iii. 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.
  - iv. 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.

- v. Any discontinuous hedging strategies modeled, and where such discontinuous hedging strategies contribute materially to a reduction in the stochastic reserve, 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.
  - vi. Disclosure of any situations where the modeled hedging strategies make money in some scenarios without losing a reasonable amount in some other scenarios, and an explanation of why the situations are not material for determining the CTE 70 (best efforts).
  - vii. Results of any testing of the method used to determine prices of financial instruments for trading in scenarios against actual initial market prices, including how the testing considered historical relationships. If there are substantial discrepancies, disclosure of the substantial discrepancies and documentation as to why the model-based prices are appropriate for determining the stochastic reserve.
  - viii. Any model adjustments made when calculating CTE 70 (adjusted), in particular, any liquidation or substitution of assets for currently held hedges.
- e. Error Factor (*E*) and Back-Testing – Description of *E*, the error factor, and formal back-tests performed, including:
- i. The value of *E*, and the approach and rationale for the value of *E* used in the reserve calculation.
  - ii. For companies that model hedge cash flows using the explicit method, as described in VM-21 Section 9.C.6.a, and have 12 months of experience, an analysis of at least the most recent 12 months of experience and the results of a back-test showing that the model is able to replicate the hedging results experienced in a way that justifies the value used for *E*. Include at least a ratio of the actual change in market value of the hedges to the modeled change in market value of the hedges at least quarterly.
  - iii. For companies that model hedge cash flows using the implicit method, and have 12 months of experience, as described in VM-21 Section 9.C.6.b, the results of a back-test in which (a) actual hedge asset gains and losses are compared against (b) proportional fair value movements in hedged liability, including:
    - a) Delta, rho and vega coverage ratios in each month over the back-testing period, which may be presented in a chart or graph.
    - b) The implied volatility level used to quantify the fair value of the hedged item, as well as the methodology undertaken to determine the appropriate level used.
  - iv. For companies that do not model hedge cash flows using either the explicit method or the implicit method, as described in VM-21 Section 9.C.6.c, and have 12 months of experience, the results of the formal back-test conducted to validate the appropriateness of the selected method and value used for *E*.
  - v. For companies that do not have 12 months of experience, the basis for the value of *E* is chosen based on the guidance provided in VM-21 Section 9.C.7, considering the actual history available and the degree and nature of any changes made to the hedge strategy.
- f. Safe Harbor for CDHS – If electing the safe harbor approach for CDHS, as discussed in VM-21 Section 9.C.8, a description of the linear instruments used to model the option portfolio.
- g. Hedge Model Results – Disclosure of whether the calculated CTE 70 (best efforts) is below both the fair value and CTE 70 (adjusted), and if so, justification for why that result is reasonable, as discussed in VM-21 Section 9.D.

### **VM-31 Section 3.F.12.c**

CTEPA – If using the CTEPA method, a summary including:

- i. Disclosure (in tabular form) of the scenario reserves using the same method and assumptions as those used by the company to calculate CTE 70 (adjusted) as outlined in VM-21 Section 9.C (or the stochastic reserves following VM-21 Section 4.A.4.a for a company that does not have a CDHS or a SHS that is required to

be modeled pursuant to VM-21 Section 9.A.6), as well as the corresponding scenarios reserves substituting the assumptions prescribed by VM-21 Section 6.C.

- ii. Summary of results from a cumulative decrement projection along the scenario whose reserve value is closest to the CTE 70 (adjusted), as outlined in VM-21 Section 9.C (or the stochastic reserves following VM-21 Section 4.A.4.a for a company that does not have a CDHS or a SHS that is required to be modeled pursuant to VM-21 Section 9.A.6), under the assumptions outlined in VM-21 Section 6.C. Such a cumulative decrement projection shall include, at the end of each projection year, the projected proportion (expressed as a percent of the total projected account value) of persisting contracts as well as the allocation of projected decrements across death, full surrender, account value depletion, elective annuitization, and other benefit election.
- iii. Summary of results from a cumulative decrement projection, identical to (ii) above, but replacing all assumptions outlined in VM-21 Section 6.C with the corresponding assumptions used in calculating the stochastic reserve.

### **VM-31 Section 3.F.16.a and Section 3.F.16.b**

- a. Investment Officer on Investments – A certification from a duly authorized investment officer that the modeled asset investment strategy, including any CDHS and any SHS that is required to be modeled pursuant to VM-21 Section 9.A.6, is consistent with the company’s current investment strategy except where the modeled reinvestment strategy may have been substituted with the alternative investment strategy, and also any CDHS meets the requirements of a CDHS.
- b. Qualified Actuary on Investments – A certification by a qualified actuary, not necessarily the same qualified actuary that has been assigned responsibility for the PBR Actuarial Report or this sub-report, that the modeling of any ~~clearly defined hedging strategies~~ CDHS and any SHS that is required to be modeled pursuant to VM-21 Section 9.A.6 was performed in accordance with VM-21 and in compliance with all applicable ASOPs.



**Brian Bayerle**  
Senior Actuary

March 26, 2020

Mr. Mike Boerner  
Chair, NAIC Life Actuarial Task Force (LATF)

Re: APF 2020-12

Dear Mr. Boerner:

The American Council of Life Insurers (ACLI) appreciates the opportunity to submit the following comments on the exposed APF 2020-12. The APF seeks to align and consolidate hedging requirements across Valuation Manual sections, address a drafting note within VM-20, and eliminate perceived company optionality with regard to the reflection of hedging in PBR requirements.

We support the goal of aligning and consolidating hedging requirements and are not opposed to addressing the VM-20 drafting note. We also acknowledge the legitimate regulatory concerns around perceived company optionality. At the same time, APF 2020-12 raises a number of questions and potential concerns. We believe that there is a lack of understanding among all parties of the industry's hedging strategies, the way in which those hedging strategies are reflected in PBR modeling, and the intent and potential effects of the APF. At the extreme, we believe the APF could create a regulatory disincentive to undertake certain strategies and would lead to resource-intensive reconsideration of and revisions to hedging programs.

We suggest that an important next step involves a broad survey of the industry's hedging programs. The proprietary nature of hedging programs makes it difficult for the industry to collect the information about the strategies employed by the industry. Therefore, a regulator survey might be a preferable vehicle. The survey could explore the landscape of hedging programs, their intent, their treatment within PBR modeling, whether or not such programs are considered a CDHS (and if not, why not), and the potential impact of APF 2020-12. The survey itself would promote a consistent understanding of the APF and a mutual understanding of whether the APF would lead to unintended consequences.

Regarding the understanding of the APF, our discussions have surfaced different interpretations of the language, which has potentially led to some misperceptions. For example, the phrase "normally modeled as part of a company's risk assessment and evaluation processes" can be interpreted very broadly or narrowly. These varying interpretations have led to inconsistent understandings and interpretations of the impact of the APF among our member companies.

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

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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 95 percent of industry assets in the United States.

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

Because we believe there are potential unintended consequences with APF 2020-12, we believe that it may be beneficial to consider alternative solutions. ACLI believes once we have a greater mutual understanding we can work with regulators to develop an alternative that provides for enhanced regulatory oversight while addressing many of our concerns.

Finally, we would like to share the following preliminary concerns with APF 2020-12. Again, these concerns may reflect an incomplete understanding of the APF:

1. *It may create a disincentive to hedge*

One of the crowning achievements of the new VA framework is that it has removed previous disincentives to hedge risks due to the non-economic nature of the statutory framework. APF 2020-12 might unfortunately move in the opposite direction by reintroducing non-economic disincentives into the framework. Under the proposal, hedges that are deemed to be an SHS may produce unreasonable results in statutory modeling. For SHS strategies, the company would be required to reflect the more adverse of the with-hedging and without-hedging results, thus eliminating any regulatory benefit of undertaking such a strategy. Because hedging inevitably comes with an attendant cost, the framework would effectively be signaling that insurers should not be undertaking SHS strategies. We believe that this is contrary to the interests of regulators, companies, and policyholders.

2. *It may create excessive complexity*

APF 2020-12 could be interpreted to apply broadly to hedging strategies and, if implemented, could lead to significant questions and complications. Macro hedges might need to be allocated to the product level which could create significant practical challenges. Further, hedging programs that are established to manage statutory outcomes would lead to circularity, due to the interplay in the valuation of the reserve and the hedge. In addition, situations could arise in which multiple hedging programs would need to be reflected, creating additional layers of complexity and complication.

In addition, we believe the APF raises various other technical and practical questions. For instance, the APF is currently silent on treatment of reinsurance, which could affect how the requirements are interpreted and applied. In addition, the APF requires modeling a SHS if doing such increases the reserve but does not clarify the treatment if modeling a SHS decreases the reserve. Further to that point, if the intent is one-sided then the APF would create challenges as there would potentially be period-to-period changes in whether strategies should be reflected. This toggling would create new challenges for both companies and regulators.

We believe that industry and regulators may be better served by a different solution. Therefore, in addition to an improved understanding of the landscape of hedging programs, we believe that alternative proposals should be considered.

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

Sincerely,

A handwritten signature in black ink, appearing to read "B. Banerji". The signature is written in a cursive style with a large, stylized initial "B".

cc:Reggie Mazyck, NAIC

William H. Wilton  
[Wilton579@sbcglobal.net](mailto:Wilton579@sbcglobal.net)

March 26, 2021

Reggie Mazyck  
National Association of Insurance Commissioners  
1100 Walnut Street – Suite 1500  
Kansas City, MO 64106-2197

Re: APF 2020-12, CDHS

I appreciate the opportunity to provide comments on the Amendment Proposal Form 2020-12 submitted by Rachel Hemphill and Karen Jiang of the Texas Department of Insurance.

After 15 years, it would be nice if we could eliminate the CDHS concept as it was first introduced with C3-Phase II as a temporary measure until the regulators could become comfortable with the inclusion of hedge strategies that could potentially reduce capital requirements.

Since it appears the regulators are not quite ready to remove this requirement, it is important that the changes being made continue to move us closer to a principal-based approach as opposed to implementing additional regulatory restrictions and confusion as to what the valuation manual says and what is intended by the changes.

Although my preference is to remove the CDHS concept from the valuation manual, I believe the overall reason for the proposed amendment is fine. And although I generally agree conceptually with the proposal, I disagree with the changes proposed and the introduction of now another term “Seasoned Hedging Strategy”.

Theoretically, under a principle-based approach, the company should be reflecting how it is managing and how it intends to manage the assets and liabilities being modeled. This includes the investment strategy irrespective of the instruments being used. To the extent that regulators want to limit credit for certain activities, that is fine, but they need to articulate (devise rules) on what those activities are.

What does “a strategy undertaken by a company to manage risks through the future purchase or sale of hedging instruments” really mean?

So what activities constitute hedging? Can this be adequately and appropriately defined? Is the purchase of a 100-year bond as part of the company’s investment strategy also subject to CDHS requirements? Is a 100-year bond a hedging instrument? What about floating rate bonds? Would

this be exempt from a CDHS but if a fixed income bond was purchased and swapped for floating, the CDHS requirements would need to be met?

We need to remember, that CDHS was first introduced where the line between investment strategy and hedging was easier to draw because 15 years ago the strategies employed for variable annuities were distinctive and easily identified. As we move to cover more product types from fixed life and annuities to equity-indexed life and annuities to structured annuities, the distinction between investment strategy and hedging gets harder to distinguish.

For this reason, I prefer to move closer to a principle-based approach that reflects the investments the company has and anticipates to have in the future with disclosure as to the strategies employed and the risks involved.

With respect to CDHS if we retain the concept I would propose:

- a. The specific risks being hedged (e.g., cash flow, policy interest credits, delta, rho, vega, etc.).
- b. The hedge objectives.
- ~~c. The risks that are not hedged (e.g., variation from expected mortality, withdrawal, and other utilization or decrement rates assumed in the hedging strategy, etc.).~~
- d. The financial instruments used to hedge the risks.
- e. The hedge trading rules, including the permitted tolerances from hedging objectives.
- f. The metrics, criteria, and frequency for measuring hedging effectiveness.
- ~~g. The criteria used to measure hedging effectiveness.~~
- ~~h. The frequency of measuring hedging effectiveness.~~
- ~~i. The conditions under which hedging will not take place.~~
- ~~j. The person or persons responsible for implementing the hedging strategy.~~
- ~~k. Areas where basis, gap or assumption risk related to the hedging strategy have been identified.~~
- ~~l. The circumstances under which hedging strategy will not be effective in hedging the risks.~~
- m. Discussion of primary risks associated with the strategy employed.**

As to the items I propose removing; in general, I think it is hard to document infinite lists such as what risk are not hedged, conditions when hedging will not take place, and circumstances under which the hedging strategy will not be effective in hedging the risks. I do agree that as much information about the strategy should be discussed, and therefore propose discussion of the risks, but I do not believe endless lists are appropriate or should be required.

As to person or persons responsible for “implementing” the hedging strategy, do you really mean “executing” the hedging strategy? I would claim this is the company’s responsibility and the “person or persons” is irrelevant and will quickly become stale in the documentation of strategies.

Lastly, areas where basis, gap or assumption risk has been identified. For variable annuities this should all be part of documenting and quantifying CTE(Best-efforts) versus CTE(Adjusted). From VM-21, Section 9.B.4.

“Regardless of the methodology used by the company, the ultimate effect of the current hedging strategy (including currently held hedge positions) on the stochastic reserve needs to recognize all risks, associated costs, imperfections in the hedges and hedging mismatch tolerances associated with the hedging strategy. The risks include, but are not limited to: basis, gap, price, parameter estimation and variation in assumptions (mortality, persistency, withdrawal, annuitization, etc.).”

I believe this alternative is conceptually consistent with the objectives of the APF. Disclosure of investment strategies and risks are required and more conservative assumptions can be used if they produce a greater reserve or capital requirement. (I.e. Disclosure of CDHS items is required to reduce requirement.) If we keep the CDHS terminology we still need to make sure we can articulate when is a strategy subject to these CDHS requirements. Is it only when we utilize hedge accounting? Is it only when derivatives (excluding mortgage derivatives) are used? Is it only when the variability of potential outcomes exceeds a specific tolerance (i.e. strategies with greater uncertainty)? However, I believe this moves us closer to a principle-based approach and therefore will be more robust and infuse less confusion in the modeling of investments and strategies for a variety of products.

Sincerely,



William H. Wilton, CFA, FSA, MAAA



March 26, 2021

Mr. Mike Boerner  
Chair, NAIC Life Actuarial Task Force

Re: APF 2020-12

Dear Mike:

Nationwide appreciates the opportunity to comment on APF 2020-12 regarding Clearly Defined Hedging Strategies (CDHS). We are supportive of the goals of this APF to:

1. Create consistency in the hedging requirements across chapters within the Valuation Manual (VM), and
2. Encourage more consistent inclusion of hedging strategies within the VM calculation requirements.

The APF accomplishes its goals by moving hedging definitions to VM-01 and by including the newly defined Seasoned Hedging Strategies (SHS) in the VM requirements.

On page 2 of the APF in the “State the reason for the proposed amendment” section the concept of the SHS is given as:

“To accomplish this, the proposal requires that any hedging strategy **that is a part of the investment strategy** supporting the policies and is **normally modeled as part of the company’s risk assessment and evaluation processes** be modeled as if it were a CDHS if doing so results in an increase in life reserves or variable annuity TAR.”

However, the proposed definition of SHS in the APF uses slightly different language as follows:

“The term “Seasoned Hedging Strategy” (SHS) means a hedging strategy that is part of the company’s investment strategy and is normally modeled as part of the company’s risk assessment and evaluation process. A SHS may or may not be a CDHS.”

We prefer the SHS definition given on page 2 of the APF as it clearly indicates that the hedging strategy needs to be part of the investment strategy which supports the policies subject to the VM calculation requirements. We would recommend changing the SHS definition to be consistent with the language given on page 2 of the APF.

In addition, our interpretation of this APF is that it excludes company level “macro” hedges which we support. We believe that the page 2 SHS definition more clearly supports the exclusion of company level “macro” hedges from the VM calculation requirements. Company level “macro” hedges are meant to manage aggregate company level risks and not product specific risks. As such, we believe that it would not be appropriate to include them in product specific VM calculation requirements.

However, if the APF does intend to include company level “macro” hedges in the requirements, then we believe that the APF will need to be significantly expanded to include language on how this is to be accomplished. For example, how would these “macro” hedges be allocated to specific product calculation requirements across multiple chapters of the VM?

We appreciate your consideration of our comments.

Sincerely,

Philip Wunderlich, FSA, MAAA  
Associate Vice President, Appointed Actuary  
Nationwide Financial

Brian J. Wagner, FSA, MAAA  
Associate Vice President, Actuary  
Nationwide Financial

Jay Hines, FSA, MAAA  
Senior Actuary, Annuity Valuation  
Nationwide Financial

cc Reggie Mazyck, NAIC  
Pete Weber, Ohio Department of Insurance



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TO: Dale Bruggeman (OH), Chair of the Statutory Accounting Principles (E) Working Group  
FROM: Mike Boerner, (TX), Chair of the Life Actuarial (A) Task Force  
DATE: **TBD**  
RE: Clearly Defined Hedging Strategy (CDHS) Requirements

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This referral has been provided to notify the Working Group of revisions to the *Valuation Manual* approved by the Life Actuarial (A) Task Force during the **TBD** Meeting on APF 2020-12, regarding CDHS. The proposed revisions in APF 2020-12 would require an update to SSAP 108 to maintain consistency between the *Valuation Manual* and the *Accounting Practices and Procedures Manual*.

APF 2020-12 under consideration by Life Actuarial (A) Task Force:

- 1) Moves the definition of a CDHS from VM-21 to VM-01;
- 2) Adds two criteria from the VM-20 CDHS definition that had not been in the VM-21 CDHS definition to the final definition in VM-01 that applies to both VM-20 and VM-21;
- 3) Consolidates three criteria in the CDHS definition;
- 4) Adds "significant" to the risks to be identified that are not hedged;
- 5) Requires that companies model hedging strategies that do not meet the definition of a CDHS under VM-21 if they increase TAR. However, it is noted in the *Valuation Manual* that this does not impact the treatment of such non-CDHS hedging strategies under SSAP 108.

For coordination between the *Valuation Manual* and the *Accounting Practices and Procedures Manual*, proposed edits to SSAP 108 are shown in the attached Appendix. Please contact NAIC staff of the Life Actuarial (A) Task Force with any questions on this proposal. Also attached is a copy of LATF APF 2020-12.

cc Julie Gann, Robin Marcotte, Dave Fleming, Reggie Mazyck, Pat Allison

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**Proposed edit to SSAP 108, Paragraph 6.b.ii**

Certification by a financial officer of the company (CFO, treasurer, CIO, or designated person with authority over the actual trading of assets and derivatives) that the hedging strategy meets the definition of a Clearly Defined Hedging Strategy within ~~VM-21~~VM-01 and that the Clearly Defined Hedging Strategy is the hedging strategy being used by the company in its actual day-to-day risk mitigation efforts. This provision does not require reporting entities to use a hedging strategy in determining VM-21 reserves, nor does it require entities to use the special accounting provision within this standard. However, it does require reporting entities that use the special accounting provisions within this standard to certify that the hedging strategy within scope of this standard is a Clearly Defined Hedging Strategy and is reflected in the establishment of VM-21 reserves.

**Proposed edit to SSAP 108, Paragraph 7**

As identified in paragraph 2, eligibility for the special accounting provision within this standard is strictly limited to variable annuity contracts and other contracts involving certain guaranteed benefits similar to those offered with variable annuities that are reserved for in accordance with VM-21. This special accounting provision requires the reporting entity to engage in highly effective fair value hedges that follow a Clearly Defined Hedging Strategy, as defined in ~~VM-21~~VM-01, meeting all required provisions of VM-21 allowing the reporting entity to reduce the amount of the Conditional Tail Expectation (CTE) Amount. In order to qualify as a Clearly Defined Hedging Strategy (which may be dynamic, static, or a combination thereof), the strategy must meet the principles outlined in VM-21, be in place (implemented) for at least three months<sup>4</sup>, and shall at a minimum, identify:

- a. Specific risks being hedged<sup>5</sup>,
- b. Hedge objectives,
- c. ~~Significant R~~risks not being hedged,
- d. Financial instruments that will be used to hedge the risks,
- e. Hedge trading rules, including permitted tolerances from hedging objectives,
- f. Metric(s) ~~used for measuring hedging effectiveness,~~
- ~~g. Criteria criteri~~that will be used to measure effectiveness, ~~and~~
- ~~h. F~~frequency ~~of for~~ measuring hedging effectiveness,
- ~~ig.~~ Conditions under which hedging will not take place, ~~and~~
- ~~hj.~~ The ~~individuals~~ group or area, including whether internal or external, responsible for implementing the hedging strategy,
- ~~ik.~~ Areas where basis, gap or assumption risk related to the hedging strategy have been identified, ~~and~~
- ~~jl.~~ The circumstances under which hedging strategy will not be effective in hedging the risks.

**Proposed edit to SSAP 108, Paragraph 23.a**

Discussion of hedged item, including information on the guarantees sensitive to interest rate risk, along with information on the designated hedging instruments being used to hedge the risk. Discussion of the hedging instruments shall identify whether a hedging instrument is a single instrument or portfolio, as well as information on the hedging strategy (including whether there have been changes in strategy from the prior reporting period, along with detailed information on the changes), and assessment of hedging effectiveness and compliance with the “Clearly Defined Hedging Strategy” of ~~VM-21~~VM-01. Identification shall occur on whether the hedged item is intended to be fully hedged under the hedging strategy, or if the strategy is only focused on a portion of the liability characteristics or a portion of the interest rate sensitivity. Hedging strategies shall be identified as highly effective or not highly effective. If the strategy for a particular hedging relationship excludes a specific component of the gain or loss, or related cash flows, from the assessment of hedge effectiveness, details on the excluded components shall be disclosed.

<b>Dates:</b> Received	Reviewed by Staff	Distributed	Considered
	RM		
<b>Notes:</b> APF 2021-03			

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

- Identify yourself, your affiliation and a very brief description (title) of the issue.  
  
American Academy of Actuaries, Variable Annuity Reserves & Capital Work Group  
  
Update the reference to the required minimum distribution (RMD) age in the VM-21 Standard Projection Amount for the Setting Every Community Up for Retirement Enhancement (SECURE) Act change.
- 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, 2021, version of the Valuation Manual
- 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.)

**In VM-21, Section 6.C.5:**

i. For tax-qualified contracts, add the following to the revised  $GAPV^2$  corresponding to an initial withdrawal age of ~~71~~ the federal required minimum distribution (RMD) age.

$$0.50 \times \left\{ \begin{array}{l} 0.95 - \sum_{i=Issue\ Age}^{Initial\ WD\ Age} GAPV^2_{Adjusted, Scaled} \text{ , if contract is a tax - qualified GMWB} \\ 0.85 - \sum_{i=Issue\ Age}^{Initial\ WD\ Age} GAPV^2_{Adjusted, Scaled} \text{ , if contract is a tax - qualified hybrid GMIB} \end{array} \right.$$

j. Scale the revised  $GAPV^2$  values at all future initial withdrawal ages—i.e., all ages greater than ~~71~~ the federal required minimum distribution (RMD) age, as identified in the preceding step—such that the sum of the revised  $GAPV^2$  values equals 0.95 for tax-qualified GMWB contracts and 0.85 for tax-qualified hybrid GMIB contracts again.

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

The Standard Projection’s withdrawal delay cohort method includes an adjustment at the required minimum distribution (RMD) age. The SECURE Act changed the RMD age from 70.5 to 72. This proposed amendment implements the change by directly referencing the RMD age. The direct reference will reduce Valuation Manual maintenance for any future changes.

\* 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\

Dates: Received	Reviewed by Staff	Distributed	Considered
3/19/20			
APF 2021-04			

**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 – edits adopted changes to VM-02 for improved clarity and to remove potential circularity.

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, 2021 edition), VM-02 Section 3.A

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.)

Subsequent the adopted changes to the federal tax code (IRC S. 7702), this proposed change would clarify the language in the previously adopted edits to VM-02 to avoid any potential circularity.

**Valuation Manual VM-20**

**Section 3: Interest**

- A. The nonforfeiture interest rate for any life insurance policy issued in a particular calendar year beginning on and after the operative date of the Valuation Manual shall be equal to 125% of the calendar year statutory valuation interest rate defined for the NPR in the Valuation Manual for a life insurance policy with nonforfeiture values, whether or not such sections apply to such policy for valuation purposes, rounded to the nearer one-quarter of 1%, provided, however, that the nonforfeiture interest rate shall not be less than the Applicable Accumulation Test Minimum Rate ~~applicable interest rate prescribed to meet the definition of life insurance~~ in the Cash Value Accumulation Test under Section 7702 (Life Insurance Contract Defined) of the U.S. Internal Revenue Code.

**Guidance Note:** For flexible premium universal life insurance policies as defined in Section 3.D of the *Universal Life Insurance Model Regulation* (#585), this is not intended to prevent an interest rate guarantee less than the nonforfeiture interest rate.

## Agenda Item 9

Discuss Any Other Matter Brought Before the Task Force

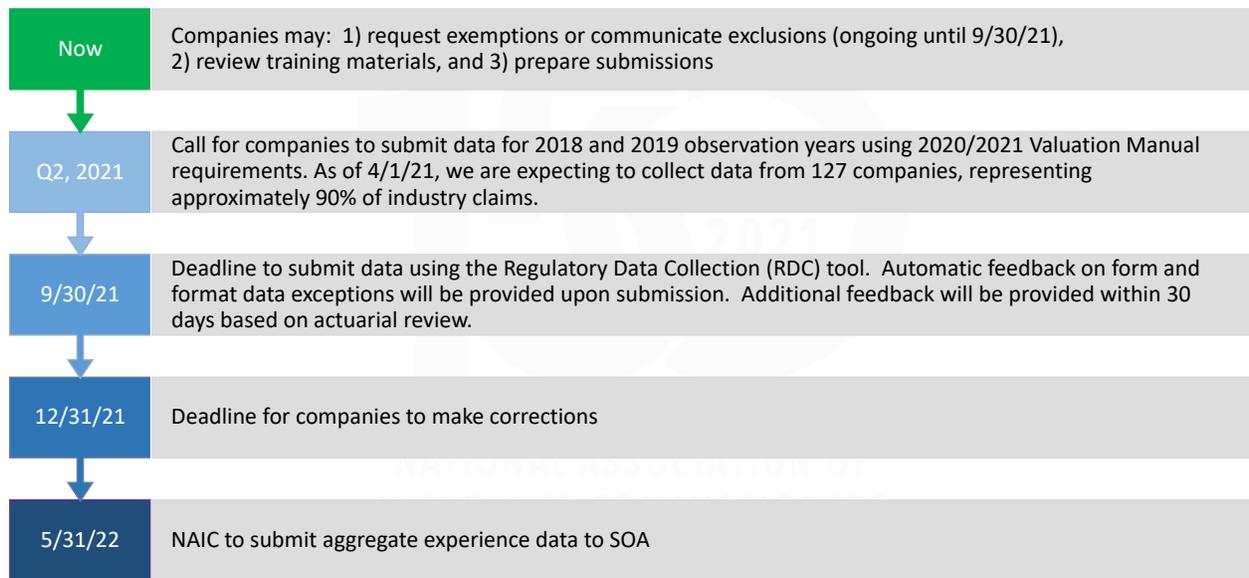
# Mortality Data Collection: Upcoming Events

Pat Allison, FSA, MAAA  
April 8, 2021



1

## 2021 Experience Data Collection Timeline



2

## Topics for Future Meetings with Companies

- Kick-off Meeting: Overview of data collection process, resources, and steps companies need to take prior to the data call
- Data validation and reasonability checks the NAIC will perform
- Walk-through of sample control total and reconciliation templates
- Communications with companies
- Policy for data submission by a reinsurer or third-party administrator
- How to submit data using the RDC Tool