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April 25, 2016

Mr. Felix Schirripa  
Chair, VM-22 (A) Subgroup  
Life Actuarial (A) Task Force  
National Association of Insurance Commissioners

Dear Mr. Schirripa:

The American Academy of Actuaries<sup>1</sup> Standard Valuation Law Interest Rate Modernization Work Group appreciates the opportunity to respond to the questions posed by the NAIC's Life Actuarial Task Force VM-22 Subgroup on its March 7 call. We also provide additional information which the subgroup may find useful. Please note that this letter should be read in conjunction with our [report](#) submitted to you in February.

Q1. How is the average age and guarantee period determined for a Single Premium Group Annuity (SPGA)?

A1. Use a weighted average age and guarantee period for the block

- Weight by the benefit amount
- To determine the benefit amount for weighting purposes, use the amount at the earliest possible date at which benefit payments may begin and the annuity form that results in the smallest benefit amount on that date.
  - The work group considered deferred annuitants, different optional forms, inflation adjusted benefits, and benefits with Social Security offsets temporarily increasing as potential complex SPGA forms that can be handled reasonably with the above formulation.
- The work group is not recommending any changes to the definition of guarantee period. The work group understands the guarantee period to generally be zero for forms of SPGAs currently available in the marketplace.

Q2. What amount is used to determine whether the \$100 million threshold for jumbo/non-jumbo is reached?

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<sup>1</sup> The American Academy of Actuaries is an 18,500+ 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.

A2. The work group recommends using premium paid by plan sponsor to the insurance company to take over the liability.

Q3. What is the source of the Treasury rates?

A3. [The U.S. Treasury website](https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield): <https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield>

o The methodology is described as follows from the treasury.gov link above (as of March 9, 2016):

- “Treasury Yield Curve Rates. These rates are commonly referred to as ‘Constant Maturity Treasury’ rates, or CMTs. Yields are interpolated by the Treasury from the daily yield curve. This curve, which relates the yield on a security to its time to maturity is based on the closing market bid yields on actively traded Treasury securities in the over-the-counter market. These market yields are calculated from composites of quotations obtained by the Federal Reserve Bank of New York. The yield values are read from the yield curve at fixed maturities, currently 1, 3 and 6 months and 1, 2, 3, 5, 7, 10, 20, and 30 years. This method provides a yield for a 10 year maturity, for example, even if no outstanding security has exactly 10 years remaining to maturity.”
- “Treasury Yield Curve Methodology. The Treasury yield curve is estimated daily using a cubic spline model. Inputs to the model are primarily bid-side yields for on-the-run Treasury securities.”

Q4. What are the sources for the credit spreads and yields?

A4. The sources are as follows:

- o The quarterly credit spreads are already published by the NAIC for VM-20.
- o For the daily valuation rate, the publicly available Bank of America U.S. corporate effective yields are used. The source of the Bank of America series of rates is the [St. Louis Federal Reserve website](https://research.stlouisfed.org/fred2/categories/32347): <https://research.stlouisfed.org/fred2/categories/32347>
  - To access a specific series, search the St. Louis Fed website for the series name by inputting the name into the Search box in the upper right corner, or input the following web address:  
[https://research.stlouisfed.org/fred2/series/\[replace with series name from below\]](https://research.stlouisfed.org/fred2/series/[replace with series name from below]).

▪ Index Series Names:

<b>Maturity</b>	<b>Series Name</b>
1Y - 3Y	BAMLC1A0C13YEY
3Y - 5Y	BAMLC2A0C35YEY
5Y - 7Y	BAMLC3A0C57YEY
7Y - 10Y	BAMLC4A0C710YEY
10Y - 15Y	BAMLC7A0C1015YEY
15Y+	BAMLC8A0C15PYEY

Q5. Who will publish the valuation rates?

A5. The work group proposes that the NAIC publish the rates, consistent with the publication of the VM-20 rates.

- Alternatively, if public indices are used, companies could calculate the valuation rates themselves. The VM-20 spreads are the average the Bank of America spreads and JP Morgan spreads. The Bank of America spreads<sup>2</sup> (and yields) are publicly available, but the work group is not aware of a publicly available source for the JP Morgan spreads.

Q6. What is the timing of the release of the interest rates each quarter?

A6. Currently the NAIC takes approximately 10-15 days to publish VM-20 rates/spreads and then these are exposed for two to three weeks.

- The work group recommends that the NAIC attempt to develop a more efficient process to be able to release the rates shortly after the quarter ends if the current VM-20 quarterly rates are used.
- Possible Alternatives:
  - Use a publicly available index so that companies may calculate the rates themselves, such as the Bank of America spreads.
  - Use an early cut-off date, such as using the entire quarter except for a short period at the end of the quarter, to allow rates to be released closer to quarter-end.
  - Use a different lag period. Different options considered by the work group include using a one-month, one-quarter, or four-month lag.

Q7. Which date is used for ‘jumbo’ Single Premium Group Annuity business to determine the valuation rates?

A7. The general understanding of the work group is that the Standard Valuation Law requires use of the contract effective date (issue date) to determine the valuation rate. The work group is not proposing a change at this time; this is beyond the scope of the work group’s charge.

Q8. What if the company hedges interest rates between quote date and issue date for a ‘jumbo’ SPGA?

A8. If interest rates decrease from the quote date to the issue date, then the fixed-income assets that would be purchased at or shortly after the issue date would generally reflect the lower interest rates at the time of the issue date. Thus, this lower interest rate should be reflected in the statutory reserve calculation. The change in the value of the hedge would generally offset the additional statutory reserve. The value of the hedge may also provide an additional asset on the statutory balance sheet to offset the higher statutory liability from the reserve, depending on the accounting treatment of the hedge.

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<sup>2</sup> The Bank of America yields are available on the St. Louis Federal Reserve website by either credit quality or maturity bucket, but not both simultaneously. For example, the maturity bucket yields could be used, but the credit quality is simply given as “Investment Grade” with no further breakdown. This is different from the VM-20 spreads which are given by weighted average life and credit quality.

- Q9. Deferred Income Annuities (DIAs): There may be DIA product features that the work group has not considered.
- A9. The work group's recommendation is that the benefit amount purchased should be valued using the interest rate for the quarter when the premium is received for that purchase.
- The work group focused on simple DIAs in which a premium is paid to purchase a benefit starting substantially in the future, where the cost of the benefit is based on then current interest rates.
  - There could be more complex features or types of DIAs not yet considered by the work group.
- Q10. How is reinvestment risk considered?
- A10. The intent is to derive an interest rate that is appropriate for the duration of the liability.
- The fixed income portfolio reflects an overall industry average portfolio using corporate bonds. The expectation is that insurers may often be able to invest in portfolios that have additional yield that is not reflected in the statutory reserve interest rate. This adds an element of conservatism in the portfolio assumed.
  - Using corporate bonds allows for an investment portfolio that could generally be purchased such that reinvestment risk is minimized.
  - There is potential for additional reinvestment risk after the investable universe of corporate bonds, after year 30. Because most SPGA liability cash flows occur prior to year 30, this is a minimal risk for those liabilities.
  - The expectation is that asset adequacy testing / cash flow testing and C3 Phase 1 will reflect reinvestment risk. If a company chooses to invest in an asset portfolio that does not match the liability cash flows well, then additional asset adequacy testing / cash flow testing reserves and C3 phase 1 capital would generally result.
- Q11. Companies may believe it is important to know the valuation rate ahead of time for pricing purposes as it reduces the pricing risk (Note: This is related to the logistical issue of timing of the publication of spreads/rates after the end of the quarter.)
- A11. The current quarter is more precise, but a reduction in pricing risk for companies may be a valid consideration. Using the prior quarter's average would still result in a significant improvement in accuracy relative to the current methodology (see "Analysis" section of the paper). Other alternatives are possible; e.g., a one-month lag or a four-month lag.
- The charge for the work group was interpreted as including an examination of what happens if interest rates drop substantially in a quarter. This was a particular concern for jumbo transactions.
  - By using the current quarter for the valuation rate, the valuation rate better reflects the interest rates that would be earned on fixed income assets purchased by the premiums received in the current quarter. As an extreme example, if Q1 has a 4% interest rate, and Q2 has a 2% interest rate, premiums received in Q2 will be invested in assets that reflect the 2% level of interest rates. Therefore, reflecting the 2% level of interest rates in the statutory reserves is consistent with the yields on the assets that could be purchased when the premiums are received.

- Q12. Is the method principle-based even though all companies would use the same rate for an identical liability?
- A12. The proposed method is “principles-based” in terms of better reflecting the interest rate level at the time contracts are issued and better reflecting the duration characteristics of the liability. These are two “principle-based” improvements.
- The proposed method is not “principle-based” from the perspective of doing more explicit modeling such as asset adequacy testing / cash flow testing.
  - This proposed approach is consistent with the goal of the work group to develop a methodology that is an improvement over the current methodology, while also being able to be implemented quickly.
- Q13. Why not use Treasury rates instead of using an asset portfolio and deducting defaults?
- A13. The proposed method is in line with the current SVL method which is based on a Moody’s bond index.
- The proposed method is also consistent with the deterministic reserve of VM-20. The work group sought consistency with recent statutory reserve frameworks.
  - The total asset requirement would generally be expected to employ more conservative valuation rates. However, consideration of a total balance sheet approach is out of scope of the work group.
- Q14. How does the proposed methodology consider the different liability duration characteristics of different genders, benefit forms, ages, and deferral periods?
- A14. The recommendation attempts to balance simplicity and precision.
- While different ages, genders, benefit forms, and deferral periods can all have an impact on liability duration, age is generally the most important driver. Thus, accounting only for the different liability durations based on issue age is a significant improvement over the current methodology, while also being relatively easy to implement.
- Q15. Provide the impact on historical discount rates if treasuries plus average of AA/A spreads were used.
- A15. While the proposed valuation rates are generally more conservative (i.e., lower) than the current rates, they are less conservative than using the average of AA and A yields after expected defaults and investment expenses (see the table below). The proposed rates are higher than the average of AA and A yields because the average industry portfolio contains a significant amount of BBB securities.

**Comparison of Current Method/Proposed Method/Average of AA and A corporate bond yields**

Quarter	Current	Proposed (including CTE 70 defaults and investment expenses)				Average of A & AA (including Expected Defaults and Investment Expenses)				Proposed - (Avg of A and AA)			
		2Y	5Y	10Y	20Y	2Y	5Y	10Y	20Y	2Y	5Y	10Y	20Y
20061	5.25%	4.75%	4.75%	5.00%	5.50%	4.75%	5.00%	5.00%	5.50%	0.00%	-0.25%	0.00%	0.00%
20062	5.25%	5.00%	5.25%	5.50%	6.00%	5.00%	5.25%	5.75%	6.00%	0.00%	0.00%	-0.25%	0.00%
20063	5.25%	5.00%	5.25%	5.50%	5.75%	5.00%	5.25%	5.50%	5.75%	0.00%	0.00%	0.00%	0.00%
20064	5.25%	4.75%	4.75%	5.25%	5.50%	4.75%	5.00%	5.25%	5.50%	0.00%	-0.25%	0.00%	0.00%
20071	5.50%	4.75%	4.75%	5.25%	5.50%	4.75%	5.00%	5.25%	5.50%	0.00%	-0.25%	0.00%	0.00%
20072	5.50%	5.00%	5.00%	5.50%	5.75%	5.00%	5.00%	5.25%	5.75%	0.00%	0.00%	0.25%	0.00%
20073	5.50%	5.00%	5.25%	5.50%	6.00%	4.75%	5.25%	5.50%	6.00%	0.25%	0.00%	0.00%	0.00%
20074	5.50%	4.50%	5.00%	5.50%	5.75%	4.25%	4.75%	5.25%	5.75%	0.25%	0.25%	0.25%	0.00%
20081	5.50%	4.00%	4.75%	5.50%	6.00%	3.25%	4.25%	5.25%	5.75%	0.75%	0.50%	0.25%	0.25%
20082	5.50%	4.50%	5.25%	6.00%	6.25%	3.75%	4.75%	5.50%	6.00%	0.75%	0.50%	0.50%	0.25%
20083	5.50%	5.25%	5.75%	6.50%	6.75%	4.75%	5.50%	6.00%	6.00%	0.50%	0.25%	0.50%	0.75%
20084	5.50%	8.25%	7.75%	8.25%	8.00%	5.75%	6.50%	6.25%	6.25%	2.50%	1.25%	2.00%	1.75%
20091	6.00%	7.50%	7.00%	7.50%	7.50%	4.25%	4.50%	5.00%	5.75%	3.25%	2.50%	2.50%	1.75%
20092	6.00%	6.00%	6.00%	7.00%	7.00%	3.00%	4.00%	5.00%	6.25%	3.00%	2.00%	2.00%	0.75%
20093	6.00%	3.75%	4.50%	5.75%	6.00%	2.00%	3.75%	5.00%	5.25%	1.75%	0.75%	0.75%	0.75%
20094	6.00%	2.50%	3.75%	5.00%	5.75%	1.50%	3.25%	4.50%	5.50%	1.00%	0.50%	0.50%	0.25%
20101	5.25%	2.00%	3.50%	5.00%	5.75%	1.25%	3.00%	4.50%	5.50%	0.75%	0.50%	0.50%	0.25%
20102	5.25%	2.00%	3.50%	4.75%	5.50%	1.25%	3.00%	4.25%	5.00%	0.75%	0.50%	0.50%	0.50%
20103	5.25%	1.50%	3.00%	4.25%	5.00%	1.00%	2.25%	3.75%	5.25%	0.50%	0.75%	0.50%	-0.25%
20104	5.25%	1.25%	2.75%	4.00%	5.25%	0.75%	2.25%	3.75%	5.00%	0.50%	0.50%	0.25%	0.25%
20111	5.00%	1.50%	3.00%	4.50%	5.50%	1.00%	2.75%	4.25%	5.00%	0.50%	0.25%	0.25%	0.50%
20112	5.00%	1.25%	2.75%	4.25%	5.25%	0.75%	2.50%	4.00%	4.50%	0.50%	0.25%	0.25%	0.75%
20113	5.00%	1.25%	2.75%	4.00%	5.00%	0.75%	2.25%	3.25%	4.75%	0.50%	0.50%	0.75%	0.25%
20114	5.00%	1.75%	3.25%	4.00%	4.75%	1.00%	2.25%	3.25%	4.50%	0.75%	1.00%	0.75%	0.25%
20121	4.25%	1.25%	2.50%	3.75%	4.50%	0.75%	1.75%	3.00%	4.00%	0.50%	0.75%	0.75%	0.50%
20122	4.25%	1.25%	2.25%	3.50%	4.25%	0.75%	1.75%	2.75%	4.00%	0.50%	0.50%	0.75%	0.25%
20123	4.25%	1.00%	2.00%	3.25%	4.00%	0.50%	1.25%	2.25%	3.75%	0.50%	0.75%	1.00%	0.25%
20124	4.25%	0.75%	1.50%	2.75%	3.75%	0.25%	1.25%	2.25%	3.75%	0.50%	0.25%	0.50%	0.00%
20131	4.00%	0.75%	1.50%	3.00%	4.00%	0.25%	1.25%	2.50%	4.00%	0.50%	0.25%	0.50%	0.00%
20132	4.00%	0.75%	1.75%	3.25%	4.25%	0.25%	1.25%	2.75%	4.00%	0.50%	0.50%	0.50%	0.25%
20133	4.00%	1.00%	2.25%	4.00%	4.75%	0.50%	2.00%	3.25%	4.25%	0.50%	0.25%	0.75%	0.50%
20134	4.00%	0.75%	2.25%	3.75%	4.75%	0.50%	1.75%	3.25%	4.25%	0.25%	0.50%	0.50%	0.50%
20141	4.50%	0.50%	2.00%	3.75%	4.50%	0.25%	1.75%	3.25%	4.25%	0.25%	0.25%	0.50%	0.25%
20142	4.50%	0.50%	2.00%	3.50%	4.25%	0.25%	1.75%	3.00%	4.00%	0.25%	0.25%	0.50%	0.25%
20143	4.50%	0.75%	2.00%	3.25%	4.00%	0.50%	2.00%	3.00%	3.75%	0.25%	0.00%	0.25%	0.25%
20144	4.50%	1.00%	2.25%	3.25%	4.00%	0.50%	2.00%	3.00%	3.75%	0.50%	0.25%	0.25%	0.25%
20151	4.00%	1.00%	2.00%	3.00%	3.75%	0.75%	1.75%	2.50%	3.75%	0.25%	0.25%	0.50%	0.00%
20152	4.00%	1.00%	2.00%	3.25%	4.00%	0.75%	1.75%	2.75%	3.75%	0.25%	0.25%	0.50%	0.25%
20153	4.00%	1.25%	2.25%	3.50%	4.25%	1.00%	2.00%	3.00%	4.00%	0.25%	0.25%	0.50%	0.25%

Notes: For the proposed method, Bank of America effective yields were used as a proxy for Treasuries + VM-20 spreads because VM-20 spreads are only available for the most recent four quarters. "Bondsonline" (<http://www.bondsonline.com>) was the source for AA and A spreads by maturity. Due to maturities available from "Bondsonline," duration buckets shown are not exactly the same as proposed in the original paper. Proposed rates shown above, however, are calculated using the same methodology as contained in the original paper.

Q16. Certain Accident and Health claim reserves, e.g., claim reserves for long term disability policies not requiring contract reserves, are a function of the SPIA valuation rate. How would valuation rates for these reserves be handled under the proposal?

A16. Accident and Health claim reserves were not explicitly considered by the SVL work group. Until further analysis of these reserves is undertaken, we recommend that

valuation rates continue to be calculated under the current Single Premium Immediate Annuities methodology for use in the calculation of these claim reserves.

Note: Continued use of the current SPIA methodology in long-term disability claim reserves would require changes to the NAIC Accounting Practices and Procedures Manual Appendix A-010 and the Health Insurance Reserve Model Regulation.

Q17. For group annuities with multiple payments, how should the valuation rate be determined?

A17. If the group annuity contract explicitly states what benefits are being purchased with each payment, we recommend that the reserves for each set of benefits be established using the valuation rate effective when those benefits were purchased; i.e., when the payment for those benefits was received.

In the absence of such language, we recommend that a pro rata share of benefits be assumed to have been purchased with each payment. For example, if 60% of the premium is paid followed by 40% at a later date, then value 60% of the benefits using the valuation rate in effect when the first premium was received and 40% of the benefits using the valuation rate in effect when the second premium was received.

Q18. What is the purpose of the provisions for adverse deviation?

A18. Consistent with the solvency objective of statutory reserves, the provisions for adverse deviation are set at a level such that reserves should be adequate under moderately adverse conditions.

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The work group appreciates the efforts of the VM-22 Subgroup to address the issues related to the statutory regulations regarding the determination of statutory valuation interest rates. If you have any questions or would like to further discuss these topics, please contact Amanda Darlington, life policy analyst, at [darlington@actuary.org](mailto:darlington@actuary.org).

Sincerely,

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