

The VM-22 (A) Subgroup is exposing the Academy Annuity Reserves Work Group (ARWG) presentation on the Preliminary Framework Elements for Fixed Annuity PBR for a 45-day public comment period ending Dec. 14. The ARWG is interested in receiving feedback on the bulleted items below.

- Reinvestment Mix
 - Comments on setting limits to the current VM-22 credit quality mix? (Slide 3)
- Index Credit Hedging Treatment
 - Does modeling breakage hedge expense seem reasonable? (Slide 13)
- Aggregation
 - Any additional principles to include, or suggested modifications or elaboration of principles listed? (Slide 21)
 - Impose differences in aggregation for exclusion testing purposes? (Side 22)
- Exclusion Testing
 - Include testing of longevity risk in the ratio test? (Slide 25)
 - Provide potential deterministic calculation option for policies with limited optionality? (Appendix V)
- Allocation Methodology
 - Any alternative methods to consider? (Slides 27-28, Appendix III)

Please submit comments to Reggie Mazyck (RMazyck@naic.org) by close of business Dec.14.

Preliminary Framework Elements for Fixed Annuity PBR

American Academy of Actuaries Annuity Reserves Work Group (ARWG)

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ARWG Objective

Objective: Propose a new statutory reserve methodology for fixed annuities that uses an actuarial framework to determine reserves based on the level and type of risk inherent in the contract.

ARWG Pillars of Objectiveⁱ

- 1) Appropriate Reflection of Risk – All else equal, greater risk in ***moderately adverse conditions*** requires greater statutory reserves, and vice-versa.
- 2) Comprehensive – The statutory reserve accounts for all ***material risks covered in the Valuation Manual and inherent in product features and potential management actions*** associated with the policies or contracts being valued.
- 3) Consistency Across Products – Statutory reserves between two contracts with ***similar features and risks are consistent*** given the same anticipated experience, regardless of product type.
- 4) Practicality and Appropriateness – ***Balance principles above with an approach that is practical***, auditable, and able to be implemented.



ARWG Vision and Need

Vision: Provide Academy framework on principle-based reserve (PBR) methodology for fixed annuity products and promote consistency with existing PBR frameworks.

How ARWG Plans to Accomplish Vision

- a) Propose a PBR Approach – The ARWG plans to propose a CTE70 stochastic reserve calculation.ⁱ
- b) Develop a Framework Deck – Develop a set of slides laying out various elements of methodology.
- c) Recommend Consistency with VM-21 where Appropriate – Start with VM-21 methodology.

Why Fixed Annuity PBR now?

- Flexible Methodology – As new products introduce greater optionality and reinvestment risk, there is greater need for a reserve methodology that appropriately captures the risks in these products, as well as future products, benefits, and features that emerge.
- Extend Existing PBR Framework – Seek consistency between fixed annuities and life/variable annuities (VM-20/VM-21).

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(i) The ARWG only proposes a PBR modeled reserve and will not include any formulaic or prescriptive floors in its proposal



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Preliminary Timeline

Fall 2019 – Summer 2020

- Develop proposed fixed annuity PBR framework deck
- Begin initial modeling sensitivities for generic FIA w/guarantee

Fall 2020

- ARWG to present framework deck proposal to NAIC

Mid 2021

- Seek LATF endorsement of PBR framework deck (w/feedback addressed)
- Valuation Manual language drafting efforts

Summer 2021

- Begin industry field testing using draft (specifics TBD)

2022 - 2023

- Target adoption of fixed annuity PBR (potentially VM-22)
- Target 1/1/2023 effective date (monitor as progress develops)



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Summary of Preliminary Framework

Methodology Elements of Framework

Scope

- Include account-value based and payout annuities
- Exclude GICs, Synthetic GICs, Guaranteed Separate Accounts, and stable value contracts

Aggregation

- Allow aggregation for contracts in which risks are managed together, following an associated set of additional principles and considerations (based on portfolio, management, administration)

Exclusion Test

- Use VM-20 exclusion test approaches, including ratio test
- If test is passed, then market/liability risk is not significant, and may elect to use pre-PBR reserve

Capital Considerations

- Ultimately coordinate with future principle-based capital methodology
- Not included in fixed annuity PBR proposed framework

Policy Allocation

- Allocate reserves to policy level based on the GPVAD in a moderately adverse single scenario (calibrated to CTE70 level), assuming industry mortality table and immediate guarantee election

Asset Elements of Framework

Discount Rates and Starting Assets

- Follow VM-21 requirements, but consider safe harbor to use reinvestment rate upon depletion of assets in the projection (not for borrowing to address short-term liquidity needs)

Reinvestments and Net Spreads

- Use a reinvestment mix of 5% Treasury, 15% AA, 40% A, 40% BBB consistent with current VM-22 credit quality requirements, and use NAIC Valuation Manual default and reinvestment spreads

Hedging

- Follow VM-21 requirements, but with optional index crediting hedge modeling approach using a breakage expense on interest credited (not requiring “adjusted” CTE run) and no CDHS definition

Economic Scenarios

- Follow VM-21 requirements

Summary of Preliminary Framework

Liability Elements of Framework

Mortality (Modeled Reserve)	<ul style="list-style-type: none">Follow VM-21 requirements
Policyholder Behavior (Modeled Reserve)	<ul style="list-style-type: none">Follow VM-21 requirements, with additional disclosure for dynamic assumptions
Non-Guaranteed Elements	<ul style="list-style-type: none">Follow VM-20 requirements, but with greater focus on index account parameters, rider fees, riders benefit features subject to change, and account value charges
Other Liability Assumptions	<ul style="list-style-type: none">Follow VM-20 for policy loans; follow VM-21 for expenses and account transfers
Reinsurance	<ul style="list-style-type: none">Follow VM-21 requirements

Other Elements of Framework

VM-31 Disclosures	<ul style="list-style-type: none">Start with VM-21 disclosures and make modifications for unique elements of fixed annuity PBR framework, such as exclusion testing, non-guaranteed elements, etc.
Experience Reporting	<ul style="list-style-type: none">Annuity experience data currently not included in VM-50/VM-51If eventually collecting for variable annuities, suggest also collecting for fixed annuities
VM-G Governance	<ul style="list-style-type: none">Follow current VM-G wording, but including fixed annuity PBRAlso include any exclusion tests that use PBR reserves in scope
Tax Considerations	<ul style="list-style-type: none">Expect tax reserves set at 92.81% of NAIC PBR methodology (cap at stat reserves, floor at CSV)Non-life-contingent payout contracts set to 100% of NAIC PBR methodology

Preliminary Framework Methodology Elements

American Academy of Actuaries Annuity Reserves Work Group (ARWG)



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Proposed Elements of Framework

- 1) Scope
- 2) Discount Rates and Starting Assets
- 3) Reinvestments and Asset Assumptions
- 4) Hedging
- 5) Economic Scenarios
- 6) Mortality Assumptions
- 7) Policyholder Behavior Assumptions
- 8) Other Liability Assumptions
- 9) Non-Guaranteed Elements
- 10) Joint Payouts & Supplemental Benefits
- 11) Reinsurance
- 12) Aggregation
- 13) Exclusion Test
- 14) Tax Considerations and Allocation
- 15) Capital Considerations
- 16) VM-31 Disclosures
- 17) Experience Reporting
- 18) VM-G Governance



1 – Product Scope

Products In-Scopeⁱ

Account Value Based Annuities

- Deferred Annuities (SPDA & FPDA)
- Multi-Year Guarantee Annuities (MYGA)
- Fixed Indexed Annuities (FIA)
- Market-Value Adjustments (MVA)
- Two-tiered Annuities
- Guarantees/Riders on Fixed Annuity Contractsⁱⁱ

Payout Annuities

- Single Premium Immediate Annuities (SPIA)
- Deferred Income Annuities (DIA)
- Pension Risk Transfer Annuities (PRT)
- Structured Settlement Contracts (SSC)

Products Out-of-Scopeⁱ

- Guaranteed Investment Contracts (GICs)
- Synthetic GICs and Stable Value Contracts
- Funding Agreements

VM-21 or Fixed Annuity PBRⁱⁱⁱ (TBD)

- Modified Guaranteed Annuities (MGAs)
- Structured Annuities
- Hybrid Variable and Fixed Annuities

Contract Application

- New Business: 3yr optional implementation period
- In Force: Eventual application? (See Appendix IV)

(i) Includes both individual and group annuities (refer to Appendix I for a description of listed product types), as well as supplementary contracts

(ii) Guarantees on fixed annuity contracts with similar downside risk to variable annuities (i.e., principal is not protected) follow VM-21 requirements

(iii) "VM-21 or Fixed Annuity PBR" means that the proposal is for these contracts to fall in at least one of the two (not clear which one at this point)

2 – Discount Rate and Starting Assets

Recommendation: Follow VM 21 requirements, but with possible safe harbor for borrowing upon depletion of assets.

Preliminary Fixed Annuity PBR Methodology (consistent with VM-21)

- a) Discount Net Asset Earned Rate (NAER) (same as VM-21)
 - Determine vector of annual earned rates replicating growth in invested additional asset portfolio to end of projection
 - Calculate present value of accumulated deficiencies by discounting at the NAER
 - Allow “Direct Iteration Method” to solve for starting assets resulting in “defeasement” of future benefits/expenses
- b) Project the Additional Assets (same as VM-21)
 - Project invested additional asset portfolio, outside of starting asset portfolio
 - If there are accumulated deficiencies at end of year, then increase assets and repeat
- c) Borrowing Assumption (same as VM-21, but with update)
 - Consistent with VM-21, generally assume no lower than the rate at which positive cash flows are reinvested in same time period
 - Recommend additional safe harbor to use new money reinvestment rate upon depletion of assets in the projection, which can cause the borrowing rate to unreasonably inflate as assets approach zero (different than borrowing for short-term liquidity needs)
- d) Starting Assets (same as VM-21)
 - Set to separate account plus hedges and book value general account assets, inclusive of IMR



3 – Reinvestments and Asset Assumptions

Recommendation: Use assumptions consistent with VM-20/VM-21, but propose using a reinvestment mix in line with the current VM-22 credit quality mix instead of the current VM-20/VM-21 requirements.

Preliminary Fixed Annuity PBR Methodology (varies from current VM-21 requirements)

a) Reinvestment Mix*

- If prescribing default/reinvestment spread assumptions, then given the emphasis on general account spread for fixed annuity products, suggest revisiting 50% A / 50% AA fixed income reinvestment guardrail (which does not reflect industry experience)
- Propose using a reinvestment mix consistent with the current VM-22 requirements of 5% Treasury, 15% AA, 40% A, 40% BBB¹
 - This credit quality mix is already used in current fixed annuity valuations and better represents average industry holdings

b) Spreads and Defaults

- For default and reinvestment spread assumptions, linearly grade from the current to long-term assumptions in the Valuation Manual over projection years 1 to 4, and reflect initial yields on starting assets (consistent with VM-20/VM-21)

c) No NAIC Designation

- If asset has no NAIC designation, use company-specific prudent estimate assumptions subject to 104% of most applicable Treasury plus 25 bps (consistent with VM-20/VM-21)

*** Rationale:** Fixed annuity contracts contain a greater build-up of general account assets that influence the modeled reserves relative to other risks, whereas this may be to a lesser extent for variable annuities and life insurance (mortality-dependent)

4 – Hedging Requirements

Recommendation: Model future hedging programs if tied directly to contracts whether CDHSⁱ or not. Use VM-21 hedging requirements for GMxB's, with alternative approach and hedge breakage expense permitted if hedging indexed credits.

Preliminary Fixed Annuity PBR Methodology *(consistent with VM-21 except hedges on indexed credits and CDHS)*

- a) No CDHS Qualification – Recommend all future hedging cash flows be reflected, regardless of whether CDHS or not
- b) Hedging Effectiveness – Increase the CTE70 (Best Efforts) by a hedging error term, set to an error factor (5% to 100% based on back-testing) multiplied by the difference between Best Efforts and Adjusted CTE70 amounts, with optional method for indexed credit hedges:
 - For hedges on indexed credits, reflect a hedge breakage expense in CTE70 (Best Efforts) by reducing hedge payoffs relative to modeled index credits using an effectiveness multiple $(1-[E])\%$; Do not require “Adjusted CTE70” run
 - For a proposed minimum hedge breakage expense level and methodology, see point (e) on following slide
- c) Hedging Cost Scope & Documentation – Make consistent with VM-21
- d) Comprehensive Hedging Programs – Allow bifurcation of indexed-credits vs. others if separately identifiable

12 (i) *CDHS = Clearly Defined Hedging Strategy; currently, if conditions meet definition, then may include as part of future hedging in VM-20/VM-21; If CDHS definition goes away, must consider if and what to put in place for defining a “seasoned hedging program”*



4 – Hedging Requirements

Recommendation: Model future hedging programs if tied directly to contracts whether CDHS or not. Use VM-21 hedging requirements for GMxB's, with alternative approach and hedge breakage expense permitted if hedging indexed credits.

Preliminary Fixed Annuity PBR Methodology *(consistent with VM-21 except hedges on indexed credits and CDHS)*

- e) Index Credit Hedge Breakage Expense – Model a breakage expense related to inefficiencies in the company's hedge program and differences between the model and reality, supported by back-testing, length of program history, and variances observed over time. This expense shall be no less than a multiplicative [1]% of the interest credited to derive a prudent estimate assumption (may model as an additional expense or reduction in investment income):
- In absence of sufficient and credible back-testing, the company must reflect a breakage expense of at least [20]% of the interest credited, but must reflect their own experience if less effective
 - Consider costs of both under and over-hedging, as well as possible future market conditions that have not been historically observed; Sensitivity test risks deemed to be material, which may include sustained low interests, credit spreads spikes, and counterparty risk

Conceptual Rationale for Hedge Breakage Expense

- *Hedging programs on index credits are frequently engrained in the product design and, as a result, tend to have lower basis risk and greater effectiveness than GMXB hedging programs*
- *Recommend hedge breakage expense lower than 5% minimum error applicable to GMWB hedging*
- *Consistent with moderately adverse levels in statutory reserves, still reflect a prudent estimate assumption for potential basis risk stemming from persistency and hedge transaction timing.*
- *The minimum hedge error is based on ARWG discussions and will be refined through field testing*



5 – Economic Scenarios

Recommendation: Follow VM-21 requirements for now and defer future ESG decisions to broader NAIC/Academy initiative.

Preliminary Fixed Annuity PBR Methodology *(consistent with VM-21)*

a) VM-21 Requirements

- Use current prescribed Economic Scenario Generator for interest and rate and equity assumptions
- May use a non-prescribed generator if supported by VM-31 documentation and results in reserves that are no less than if using the prescribed generator

b) Current ESG Activities

- Academy and Society of Actuaries have a project oversight group that has been following NAIC updates to the Economic Scenario Generator
- NAIC has been holding separate calls to advance this initiative



6 – Mortality Assumptions (*Modeled Reserve*)

Recommendation: Use the same methodology as VM-21 for Fixed Annuity PBR.

Preliminary Fixed Annuity PBR Methodology (*consistent with VM-21*)

- a) Prudent Estimate Mortality – “Based on facts, circumstances and appropriate actuarial practice”ⁱ with limited unsupported judgement
- b) Determination of Expected Mortality Curves – Develop expected mortality curves based on actual experience if available; in absence of direct data, look to use data from a similar business segment:
 - If there is no data, company should use 2012 IAM Basic Table with Scale G2
 - Apply margins to reflect data uncertainty and credibility
 - Expected mortality curves should not result in lower reserve than using a curve based on actual deaths
 - Age of experience data should be documented
- c) Adjustment for Credibility to Determine Prudent Estimate Mortality – Adjust for credibility by blending expected mortality curves with a mortality table consistent with a statutory valuation mortality table
 - Reflect Scale G2 improvement up to valuation date for company/industry mortality (required if results in higher reserve)
- d) Future Mortality Improvement – Adjust for improvement beyond valuation date if it increases the stochastic reserve
 - If future improvement reduces reserve, such assumptions are not required, but permitted



7 – Policyholder Behavior Assumptions (*Modeled Reserve*)

Recommendation: Use the same methodology as VM-21 for Fixed Annuity PBR.

Preliminary Fixed Annuity PBR Methodology (*consistent with VM-21*)

- a) **General** – For assumption-setting, consider features, elective vs. non-elective benefits, in-the-moneyness, rational vs. irrational behavior
- b) **Margins** – Set prudent estimates independently unless determining appropriate method for aggregate margin of two or more behaviors
- c) **Sensitivity Testing** – Conduct appropriate and robust sensitivity testing, and use higher margins when experience is not credible/relevant
- d) **Specific Considerations and Requirements** – Consider all relevant forms of behavior and differ assumptions by contract attributes
 - Behavior assumptions should be no less conservative than past experience
 - Consider an increase in efficiency over time (unless there is clear evidence to the contrary)
 - Use actual experience data directly applicable to business if available; in absence of data, refer to a similar business segment
- e) **Dynamic Assumptions** – Encourage dynamic assumption-setting and require sensitivity testing if using static assumptions or one-sided dynamic assumptions to demonstrate appropriateness across various types of economic conditions
- f) **Consistency with the CTE Level** – Use prudent estimates that are reasonable and appropriate in scenarios associated with CTE level
- g) **Guaranteed Living Benefits (GLBs)** – When developing experience for policyholder behavior assumptions with contracts that contain GLBs, limit the experience used from contracts without GLBs



8 – Other Liability Assumptions (*Modeled Reserve*)

Policy Loans (*consistent with VM-20*)

Recommendation: Use VM-20 methodology.

Determine cash flows for policy loan assets for each projection interval in one of two ways:

- 1) Model existing loan balances explicitly:
 - Treat policy loan activity as an aspect of policy behavior subject to contractholder behavior requirements
 - Assign loan balances to match each policy's utilization or reflect average utilization over model segment
 - Model policy loan interest in a manner consistent with policy provisions and loan principal repayments, including those that occur automatically on death or surrender
- 2) Substitute assets that are a proxy for policy loans:
 - Demonstrate that the substitution produces reserves are not materially different than modeling policy loans explicitly
 - Must comply with policyholder behavior requirements

Expenses and Account Transfers (*consistent with VM-21*)

Recommendation: Use VM-21 methodology.

- Within materiality considerations, company should consider account transfers (switching/exchanges)
- For account transfers, it may be acceptable to ignore certain items that might otherwise be explicitly modeled in an ideal world, particularly if the inclusion of such items reduces the calculated provisions (e.g., impact of account transfers might be ignored unless required under the terms of the contract)
- If assuming static account allocations with no transfers throughout the projection or another simplification, provide sensitivity testing and rationale that justifies that such is a prudent estimate or does not materially understate the reserve
- For expenses, follow VM-21 requirements, including prudent estimates and allocating fixed maintenance expenses (e.g., overhead) to segments



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9 – Non-Guaranteed Elements

Recommendation: Use the same methodology as VM-20 for Fixed Annuity PBR.

Preliminary Fixed Annuity PBR Methodology *(consistent with VM-20)*

- a) **“Non-guaranteed elements” (NGE)** defined in VM-01 as: dividends under participating policies or contracts; or other elements affecting life insurance or annuity policyholder/contract-holder costs or values that are both established and subject to change at the discretion of the insurer
- b) **NGE determination factors:**
 - The nature of contractual guarantees
 - The company’s past NGE practices and established NGE policies
 - The timing of any change in NGE relative to the date of recognition of a change in experience
 - The benefits and risks to the company of continuing to authorize NGE
- c) **Fixed Annuity PBR NGEs** – Examples include, but not limited to: fixed credited rates, index account parameters (caps, spreads, par rates, etc.) , rider fees, rider benefit features subject to change (rollup rates, rollup period, etc.), account value charges, dividends
- d) **Projected NGE** – Established based on projected experience which is consistent with actual NGE determination
- e) **Prudent Estimates** – Shall reflect margins for adverse deviations and estimation error in prudent estimate assumptions for material risk factors, including NGEs (VM-31 currently contains a NGE margin disclosure)



10 – Joint Payouts & Supplemental Benefits

Recommendation: Reserve for all the available payout options in some reasonable method.

Fixed Annuity PBR Methodology (new)

- a) Require consideration of joint payout options, supplementary benefits, and riders in the modeled reserve with the following principles:
 - Policyholders will generally not take partial withdrawals or other actions that diminish future benefits
 - Contracts with living benefits will generally use the more valuable of living benefits or annuitization
 - When advantageous, expect policyholders commence benefit payouts if not taken yet

- b) Outline principles/guidance for riders and supplemental benefits for annuities in the “Riders and Supplemental Benefits” subsection of Section II of the Valuation Manual, similar to life insurance riders:
 - If premium or features are linked to the base contract after issue, such as riders that accelerate annuity benefits upon a conditional event, must include in the base contract modeled reserve, such as a long term care acceleration benefit
 - If premium or features are not linked to the base contract after issue (other than funding rider fees through base contract account value), may value together or separately from the base contract

AG33 does not explicitly require that joint life benefit options are included in the CARVM calculation, so require consideration of reflecting these features in PBR calculations.



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11 – Reinsurance

Recommendation: Adopt same requirements as VM-21 for purposes of the treatment of reinsurance.

Treatment of Reinsurance in VM-21

- Calculate Pre & Post Reserves – The aggregate reserve shall be determined for both post-reinsurance ceded (net of cash flows associated with any treaties accounted for as reinsurance under statutory requirements) and pre-reinsurance ceded (VM-21 3.B)
- Post-Reinsurance Ceded – To determine the aggregate reserve post-reinsurance ceded, accumulated deficiencies and scenario reserves shall reflect all anticipated reinsurance premiums, costs and recoveries → both premiums and recoveries are determined by recognizing limitations in the treaties, such as caps on recoveries or floors on premiums (VM-21 5.A.2)
- Pre-Reinsurance Ceded – To determine the aggregate reserve pre-reinsurance ceded, accumulated deficiencies and scenario reserves shall ignore any anticipated reinsurance premiums, costs and recoveries (VM-21 5.A.2)

Uses of Reinsurance

Variable Annuities

- Reserve financing excess GMWB reserves
- Prior to VM-21 revisions, helped reduce volatility on statutory net income

Fixed Annuities

- Reserve financing for excess AG33 reserves on GMWBs, similar to variable annuities
- Traditionally used to transfer interest rate risk



12 – Aggregation

Recommendation: Aggregate based on established set of principles related to how risks are managed.

Preliminary Fixed Annuity PBR Methodology (consistent with VM-21)

- a) **List of Principles** – Permit aggregation if the groups of policies follows the below outlined principles:
- Aggregate in a manner that is consistent with risk management strategy and reflects the likelihood of any change in risk offsets that could arise from shifts between product types (consistent with VM-20/VM-21)
 - Do not aggregate for groups of policies for which the business and risks are managed separately or are not part of the same integrated risk management program (consistent with VM-20/VM-21)
 - Using prudent actuarial judgement, consider the following elements when aggregating: whether groups of policies are part of the same portfolio (or different portfolios that interact), same integrated risk management system, administered/managed together
 - Use same aggregation principles for exclusion testing, CTE70 calculation grouping, and comparisons to final reserve components

Possible Examples for Aggregation

Not Aggregating

Group pension risk transfer (PRT) business and individual single premium deferred annuities (SPDAs) are managed in separate departments and priced and administered independently

Aggregating

Single premium income annuities (SPIAs) and fixed indexed annuities (FIAs) with guaranteed living benefits are managed in the same department and follow the same risk management program



13 – Exclusion Test Methodology

Recommendation: Use VM-20 exclusion testing methodology with modifications, consisting of three options: ratio test, demonstration test, and certification. If pass, use pre-PBR CARVM. Same test applicable to all fixed annuity types. No alternative methodology.

Overlying Principles

- a) Policies for which economic/market risks are material are intended to fail the exclusion test
- b) Policies with material policyholder behavior risk that vary with economic scenarios are intended to fail the exclusion test
- c) Such economic/market risks being tested include interest rate risk, equity risk, reinvestment rate risk, asset volatility risk, disintermediation risk, and asset default risk
- d) Guarantees where the expected benefits exceed what is provided for by the account value would fail the exclusion test
- e) Exclusion tests should be based on materiality of risk rather than the size of a company
- f) Perform exclusion test in aggregate (consistent with VM-20), using the same aggregation rules as PBR modeled reserves
- g) Electing to perform the exclusion test should be optional for a group of policies (consistent with VM-20)

Examples of Products that Might Pass or Fail (more principles being developed by ARWG)

Passing

- Short-term payout annuities (e.g., 15-20yr certain)
- Fixed deferred annuities without attached guaranteed minimum benefits

Failing

- Hedge programs supporting guaranteed living benefits
- Long duration SPIAs, PRT, and payout annuities
- Deferred annuities with material guarantees



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Preliminary Fixed Annuity PBR Methodology *(consistent with VM-20)*

- a) **Stochastic Exclusion Ratio Test** – Use same method as VM-20, with the same 16 prescribed scenarios. The difference between the highest reserve and the baseline must be less than a x% of the baseline reserve to pass
- Set x% based on threshold to allow fixed annuities without guaranteed minimum benefits to pass and exclude long-duration and pension risk transfer contracts from passing
 - *Propose not allowing GLBs with greater than 1%-3% roll-up rate to pass*
 - Initially set x% threshold through ARWG preliminary modeling, but eventually establish through field testing.
 - Use unmarginated scenario reserves or leverage Asset Adequacy Testing (AAT) or Cash Flow Testing (CFT) model
 - Similar to VM-20, purpose is to quantify asset volatility & ALM risk

(i) *If passing the exclusion test, then companies may use pre-PBR CARVM of AG33 methodology with type A, B, C rates for SPIAs issued before 2018, AG33 methodology with VM-22 rates for SPIAs issued on/after 2018, and AG33/35 methodology (with interest rate updates for modernization initiatives on new policies) for non-SPIAs.*



13 – Exclusion Test Methodology

Recommendation: Use VM-20 exclusion testing methodology with modifications, consisting of three options: ratio test, demonstration test, and certification. If pass, use pre-PBR CARVMⁱ. Same test applicable to all fixed annuity types. No alternative methodology.

Preliminary Fixed Annuity PBR Methodology *(consistent with VM-20)*

- b) **Stochastic Exclusion Demonstration Test** – Demonstrate that the stochastic reserve is less than AG33 / pre-PBR CARVM
- Similar to VM-20, allow use of a prior valuation within the past 3 years to conduct test
 - May use a subset of policies/scenarios or show substantial elimination of an element that would make CTE70 prevail
 - Compare to AG33 / AG35 / pre-PBR formulaic reserves
- c) **Certification Method** – Subject to regulatory approval, qualified actuary to certify that policies are not subject to material market or asset volatility risk and have limited policyholder optionality
- Demonstrate the AG33 reserve is greater than principle-based reserve under the NY7 or 16 exclusion scenarios
 - May use qualitative risk assessments, showing documentation that supports analysis
 - Not allowed for guaranteed living benefits, pension risk transfer business, or future hedging programs

(i) *If passing the exclusion test, then companies may use pre-PBR CARVM of AG33 methodology with type A, B, C rates for SPIAs issued before 2018, AG33 methodology with VM-22 rates for SPIAs issued on/after 2018, and AG33/35 methodology (with interest rate updates for modernization initiatives on new policies) for non-SPIAs.*



13 – Exclusion Test Methodology

Recommendation: Use VM-20 exclusion testing methodology with modifications, consisting of three options: ratio test, demonstration test, and certification. If pass, use pre-PBR CARVMⁱ. Same test applicable to all fixed annuity types. No alternative methodology.

Additional Considerations (new)

- a) **Economic Scenarios** – For ratio test, use current 16 scenarios for, but different threshold than VM-20 (i.e., 6%) based on field testing
- b) **Longevity Risk** – Include whether longevity risk is material in the exclusion test; All ratio test economic scenarios should be run twice: once with a [5]% increase to mortality and once with a [5]% decrease (but do not shock “baseline scenario”, i.e., Scenario 9)
- c) **Ratio Test Assumptions** – Reflect mortality improvement, no margins, no correlation between longevity and economic risks
- d) **Hedging Programs** – Blocks with any hedging programs that involve the projection of future hedge purchases, sales, or reinvestments, other than those that solely support indexed credits, are not eligible for the stochastic exclusion test
- e) **Open Blocks** – May aggregate newly issued business being valued for the first year with inforce business that has already been valued under PBR, as long as it is in the same model segment; therefore, open blocks are to be continuously tested as new business is added
- f) **Frequency** – Perform exclusion test annually for fixed annuities, except for the demonstration test (every 3 years)
- g) **Reinsurance** – Conduct separate exclusion tests for pre and post reinsurance runs to calculate reserve credit, similar to VM-20. Consider option to only require post-reinsurance exclusion testing for prorata coinsurance with no material changes in risk
- h) **Deterministic Scenario** – Consider allowing a deterministic PBR in specified cases? (see Appendix V)

(i) *If passing the exclusion test, then companies may use pre-PBR CARVM of AG33 methodology with type A, B, C rates for SPIAs issued before 2018, AG33 methodology with VM-22 rates for SPIAs issued on/after 2018, and AG33/35 methodology (with interest rate updates for modernization initiatives on new policies) for non-SPIAs.*



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14 – Capital Considerations

Recommendation: Capital methodology is not included as part of this proposed framework; will be handled separately by C3 Life & Annuities Work Group.

C3 Life and Annuities Work Group Preliminary Plans

- a) **Group Focus** – This proposal does not include considerations for capital and only focuses on reserves at this time. The Academy C3 Life & Annuities Work Group separately plans to explore a C-3 Phase 2 framework for non-variable annuity contracts in the future.
- The idea will be to accommodate the future prescribed economic scenario generator and various VM-22 PBR elements at that time, depending on timing and progress of each initiative
 - This initiative is intending to cover non-variable annuities and products currently in scope of C3 Phase I



15 – Tax Considerations and Allocation

Recommendation: Use a different allocation methodology than VM-21 for Fixed Annuity PBR.

Preliminary Fixed Annuity PBR Methodology

a) Tax Cuts and Jobs Act of 2017 (TCJA)

- Compute preliminary tax reserves using NAIC-prescribed method applicable to the contract at the valuation date
- Fixed, Fixed Indexed Annuities and Life Contingent Payouts preliminary tax reserves are not fully deductible
 - Final tax reserves are 92.81% of preliminary tax reserves, which is then capped at the statutory reserve and floored at CSV
 - Non-life-contingent payout annuity (e.g. annuity certain) final tax reserves are set 100% of preliminary tax reserves if the discount rate is equal to the highest NAIC discount rate at the valuation date
- Variable annuity tax reserves, in contrast, equals the sum of 100% x max(CSV, separate account reserve) and 92.81% x additional excess total contract reserves (such excess reserves may include reserves held in the general or separate accounts)

b) Seriatim Reserves

- TCJA requires tax reserves at the seriatim level for all life insurance and annuity policies
- VM-21 allocates aggregate PBR reserves in excess of the CSV to individual contracts based on a measure of risk relative to CSV
- Under VM-21, companies with identical blocks of variable annuity business could choose different assumptions for measuring risks in determining their tax reserves
- This is a particularly relevant issue for fixed annuities, which may have less deductibility than variable contracts due to differences in methodology and, thus, may warrant a different allocation method



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15 – Tax Considerations and Allocation

Recommendation: Allocate excess policy reserves based on a moderately adverse scenario GPVAD within the NAIC ESG.

Preliminary Fixed Annuity PBR Methodology *(new)*

For the Fixed Annuity PBR, propose a prescribed allocation approach rather than using VM-21 method. Would be interested in hearing any additional proposed methods from regulators/interested parties, but the below is an initial placeholder solution:

- a) Allocate all modeled reserves in excess of the CSV is based on the greatest present value of accumulated deficiencies (GPVAD) under a moderately adverse scenario for each contract (see example of below methodology in Appendix III)
 - Select the scenario from the NAIC economic scenario generator that produces the scenario reserve closest to, but not less, than the CTE70 aggregate reserve
 - For the purposes of allocation, use CSV as the starting asset level and floor the GPVAD at zero
 - Such that a FIA w/GLWB would generally have a higher GPVAD for an FIA w/o GLWB and the same CSV (the contract w/o GLWB may have a negative GPVAD and be floored at zero)
 - A payout annuity would have no CSV, so it would have a higher GPVAD → Makes sense since it does not have a CSV and should contribute directly to the reserve excess over CSV
- b) Assume immediate exercise of guarantees and prescribed mortality under an applicable SOA table
- c) If all policies have “zero” GPVAD in the model segment, use CSV to allocate any reserves in excess of CSV



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16 – VM-31 Disclosures

Recommendation: Use the same section as VM-21, but add specific requirements for fixed annuities.

Preliminary Fixed Annuity PBR Methodology *(consistent with VM-21 except below updates)*

- a) Sections that Do Not Apply – Phase in, Alternative Methodology, and RBC sections do not apply to fixed annuities
- b) New Sections – Add NGE, exclusion test, and sensitivity sections for fixed annuities (not currently in variable annuity VM-31)
- c) General Account Assets – Disclose full reserve calculation using company investment policy vs. applicable VM-22 limits
- d) Hedging – Documentation of index-hedging modeling methodology and back-testing, sensitivity testing, and justification for breakage hedge expense; If CDHS removed, modify hedging disclosures as well (but retain fair value disclosure)
- e) Supplemental Benefits – How joint payout options and other supplemental benefits are being captured, as well as a sensitivity tests
- f) Dynamic Policyholder Behavior – Dynamic lapse, partial withdrawal, and utilization assumptions disclosure and demonstration across scenarios if there are no or only one-sided dynamic components with respect to market rates/in-the-moneyness

If aggregation between fixed and variable annuities are not permitted, then there would be separate VM-31 fixed and variable sub-reports, but may still consider drafting VM-31 requirements in same section as variable annuities to avoid redundancy

17 – Experience Reporting

Recommendation: If VM-50/VM-51 begins to incorporate variable annuities into the NAIC experience data collection process, request to also include fixed annuity data (i.e., indexed, deferred, and payout) as part of the experience data collection.

Preliminary Fixed Annuity PBR Methodology

a) Current NAIC Experience Data Collection Process

- Handled by VM-50 and VM-51 in the NAIC Valuation Manual
- 2021 is the first year that the NAIC will begin to collect industry experience data
- Only focuses on life data experience collection and does not incorporate annuities at this point

b) Current State Experience Collection Process

- NY and KS have collected experience data in past years
- NY will continue to have a separate data collection process, including mortality, policyholder behavior, and SI/GI data
- NY will collect variable annuity experience data for the first time in 2020

c) Future Experience Data Collections

- NAIC has periodically discussed the topic of collecting variable annuity experience data
- If eventually collecting variable annuity data, also requests to collect fixed annuity data



18 – VM-G Governance

Recommendation: Add fixed annuity PBR to the scope of VM-G (including exclusion tests that use unmarginated PBR reserves). No other changes are needed.

Preliminary Fixed Annuity PBR Methodology *(consistent with VM-20 and VM-21)*

- a) Same as current VM-G requirements, but with references to VM-22 added
- b) Also scope in any exclusion testing methods that use PBR calculations, consistent with treatment for VM-20

Possible VM-G Revisions:

The corporate governance guidance provided in VM-G is applicable only to a principle-based valuation calculated according to methods defined in VM-20, ~~and~~ VM-21, and VM-22.

*For a company that does not compute any deterministic or stochastic reserves under VM-20 **or VM-22** as a result of passing the exclusion tests as defined in VM-20 Section 6 **or VM-22 [Section X]**, and it does not calculate any reserves under VM-21, VM-G Sections 2 and 3 below are generally not applicable; the requirements of Section 4 are still applicable.*

*However, if the company calculated the SERT using the deterministic reserve method outlined in VM-20 Section 6.A.2.b.i.a, or the Stochastic Exclusion Demonstration Test outlined in VM-20 Section 6.A.3, **or if the company used the [Ratio Test using unmarginated PBR reserve] or the [Demonstration Test] exclusion tests as defined in VM-22 [Section X]**, then VM-G Sections 2 and 3 are applicable.*



Questions?

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Appendix

Academy of Actuaries Annuity Reserves Work Group (ARWG)



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Appendix I: Product Descriptionsⁱ

Product	Description
Single Premium Deferred Annuity (SPDA)	An annuity with an account value established with a single premium amount that grows with a guaranteed interest rate during the accumulation phase and has guaranteed mortality and interest rates applicable at the time of conversion to the payout phase.
Flexible Premium Deferred Annuity (FPDA)	An annuity with an account value established with a premium amount but allows for additional amounts to be paid in to the annuity over time, resulting in an increase to the account value.
Fixed Indexed Annuity (FIA)	An annuity with an account value where the contractholder has the option for a portion or all of the account value to grow at a rate linked to an external index.
Multiple Year Guarantee Annuity (MYGA)	A type of fixed annuity that provides a pre-determined and contractually guaranteed interest rate for a specified period of time, after which there is typically an annual reset or a renewal of a multiple year guarantee period.
Market-Value Adjustment (MVA) Annuity	An annuity with an account value where withdrawals and full surrenders are subject to adjustments based on interest rates at the time of withdrawal/surrender. There could be ceilings and floors on the amount of the Market Value Adjustment (MVA).
Two-Tiered Annuity	An annuity with two tiers of account values. One, with a higher accumulation interest rate, is only available for annuitization or death. The other typically contains a lower accumulation interest rate, and is only available upon surrender.

(i) *The descriptions contained on these slides are not recommendations of definitions to add to the Valuation Manual or any other regulation or guideline. In addition, these are not official definitions under the Academy or any other formal body. Such descriptions are only provided as a glossary to reference in understanding the acronyms and terms intended to be conveyed in this presentation, and only this presentation.*



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Appendix I: Product Descriptionsⁱ (cont'd)

Product	Description
Single Premium Immediate Annuity (SPIA)	An annuity purchased with a single premium amount which guarantees a periodic payment for life of the annuitant or a term certain and payments begin within one year after (or from) the issue date.
Deferred Income Annuity (DIA)	An annuity which guarantees a periodic payment for the life of the annuitant or a term certain and payments begin one year or later after (or from) the issue date.
Pension Risk Transfer (PRT) Annuity	An annuity (typically group contract) issued by insurance company to cover participants in a retirement plan that guarantees periodic payments to retirement participants. The insurance company holds the assets (general or separate account) and has not only longevity risk but also asset risk (credit and reinvestment).
Structured Settlement Contracts (SSC)	Periodic benefits arise from various types of claims pertaining to court settlements or out-of-court settlements from tort actions, such as arising from accidents or medical malpractice; Adverse mortality may be underwritten
Variable Annuity (VA)	An annuity where benefits or account balance vary according to the investment experience of investment funds in an insurance company separate account.
Term Certain "Annuity"	A contract issued by an insurance company which offers guaranteed periodic payments for a specified period of time, not contingent upon mortality or morbidity of the annuitant.

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Appendix I: Product Descriptionsⁱ (cont'd)

Product	Description
Guaranteed Investment Contract (GIC)	Insurance contract typically issued to a retirement plan (defined contribution) under which the insurer accepts a deposit (or series of deposits) from the purchaser and guarantees to pay a specified interest rate on the funds deposited during a specified period of time.
Synthetic GIC	Contract that simulates the performance of a traditional GIC through a wrapper, swap, or other financial instruments, with the main difference being that the assets are owned by the policyholder or plan trust.
Funding Agreement	A contract issued to an institutional investor (domestic and international non-qualified fixed income investors) that provides fixed or floating interest rate guarantees.
Stable Value Contracts	Provide limited guarantees for stable value fund portfolios (bond portfolios in defined contribution plan that protect against losses/declines in yield), preserving the principal while providing steady, positive returns for participants.
Modified Guaranteed Annuity (MGA)	A type of market-value adjusted annuity contract where the underlying assets are held in an insurance company separate account and the values of which are guaranteed if held for specified periods.
Structured Annuity	Deferred annuity contract, typically sold as a registered product, where the account value is linked to the value of an external index, including potential triggers and floors that may limit a portion of downside (or upside) risk.

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Appendix II: Applicable Actuarial Guidelines

AG's with clear fixed annuity relevance

- 3 – Nonforfeiture for Individual Deferred Annuities
- 8 – SPDA Valuation
- 9 – SPIA Form Classification
- 9A – Structured Settlements: Substandard mortality
- 9B – Clarify Standard Valuation Law: SPIA, DA, Str. Sett
- 9C – SPIA: Substandard mortality
- 10 – Guideline: Standard Nonforfeiture Law for Individual Deferred Annuities
- 13 – Guideline: CARVM
- 33 – CARVM Reserves: Elective Benefits
- 35 – CARVM: Equity Index Annuities
- 41 – CARVM: Projection of Guaranteed Benefits

AG's which may indirectly relate to fixed annuities

- 5 - Approximations for Continuous Functions
- 6 - Use of Single vs. Joint Life Mortality
- 7 - Calculation of Equivalent Level Amounts
- 12 - Interpretation: Valuation and Nonforfeiture Interest Rates
- 22 – Interpretation: Valuation and Nonforfeiture with Indeterminate Premium
- 30 – GICs with Benefit Responsive Payment Provisions
- 40 – Valuation Rate Funding Agreements & GICs with Bail-Out Provisions
- Appendix – Max Reserve Valuation & Nonforfeiture Interest Rates



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Appendix III: Example of Allocation Method

Recommendation: Allocate excess policy reserves based on the Scenario 12 (moderately adverse) GPVAD within the NAIC ESG.

Preliminary Fixed Annuity PBR Methodology

- a) Allocate all modeled reserves in excess of the CSV is based on the greatest present value of accumulated deficiencies (GPVAD) under the scenario from the NAIC economic scenario generator that produces the scenario reserve closest to, but not less, than the CTE70 aggregate reserve
- For the purposes of allocation, use CSV as the starting asset level and floor the GPVAD at zero
 - Assume immediate exercise of guarantees and prescribed mortality under an applicable SOA table

Summary of Results		CSV	GPVAD Single Scenario	GPVAD Single Scenario (floored)	Aggregate Reserve CTE 70	Excess over Aggregate CSV	Allocated Excess Reserve	Total Contract Level Reserve
Contract 1:	FIA w/o GLWB	\$ 90.0	\$ (1.0)	\$ -			\$ -	\$ 90.0
Contract 2:	FIA w/GLWB	\$ 90.0	\$ 14.0	\$ 14.0			\$ 15.2	\$ 105.2
Contract 3:	Fixed Life Payout	\$ -	\$ 78.0	\$ 78.0			\$ 84.8	\$ 84.8
Total		\$ 180.0		\$ 92.0	\$ 280.0	\$ 100.0	\$ 100.0	\$ 280.0



Appendix IV: Prospective vs. Retrospective

Outstanding Issue: Should fixed annuity PBR be retrospective or prospective only?

Prospective

- Only Change VM – Valuation Manual covers contracts issued starting in 2017, which would be sufficient to impose prospective changes
- Ease – More straight-forward and potentially easier to get adopted and implemented
- Similar to VM-20 – Although VM-21 is retrospective, VM-20 is only prospective
- Use Same Inforce Standard – Continue to use the same requirements for inforce contracts. This would allow for easier implementation since inforce would use the same requirements, but may arguably include reserves not as “right-sized” for risk as PBR approach

Retrospective

- Beyond VM – NAIC Valuation Manual only effective 1/1/2017 onward; point to AG33 or other guideline?
- Hedging Allocation – avoids issues of allocating hedges between inforce and new business
- Address Inforce Reserving Issues – Helps fixed current CARVM issues with overstating GLBs and understating payout annuities
- Consistency – Consistent with VM-21
- Capital – Sets up foundational framework for future principle-based capital methodology
- Inforce Aggregation – Could potentially aggregate inforce variable and fixed annuity blocks

Appendix V: Deterministic Certification Option

Possible Recommendation: Allow companies to use fewer prescribed deterministic economic scenarios instead of a CTE70 stochastic calculation if certifying immaterial policyholder optionality (such as certain SPIAⁱ and PRTⁱ contracts).

Preliminary Fixed Annuity PBR Methodology

- a) Deterministic Certification Option – If a company can certify that a group of policies does not contain post-issue contract options for which policyholder behavior is materially influenced by economic conditions, then allow a fewer deterministic scenarios for PBR
- Only permitted if company performs and fails the stochastic exclusion ratio test, thereby disclosing scenario reserve volatility across the prescribed 16 economic scenarios
 - If the economic scenario materially influences anticipated policyholder behavior, then the group of policies is not permitted to use this certification; examples include surrender benefits, premium payments, and guaranteed living benefits
 - Disclose description of contracts and features in detail, along with certification, in VM-31 PBR Actuarial Report
- b) Rationale – The intention is to ease modeling implementation, while still requiring a prudent estimate, principle-based approach on SPIAⁱ and PRTⁱ business without policyholder optionality (which are expected to fail exclusion test)
- Prudent estimates would still be captured through use of margins and prescribed deterministic scenarios
 - Still prudent to use deterministic scenarios, but stochastic calculation less critical due to no optionality to measure stochastically
 - Reflects reinvestment risk by unlocking economic/asset assumptions and reflects company-specific mortality risk

40c) Hedging – Prohibit this option if company reinvestment strategy contains future hedge purchases

(i) SPIA = Single Premium Immediate Annuity; PRT = Pension Risk Transfer