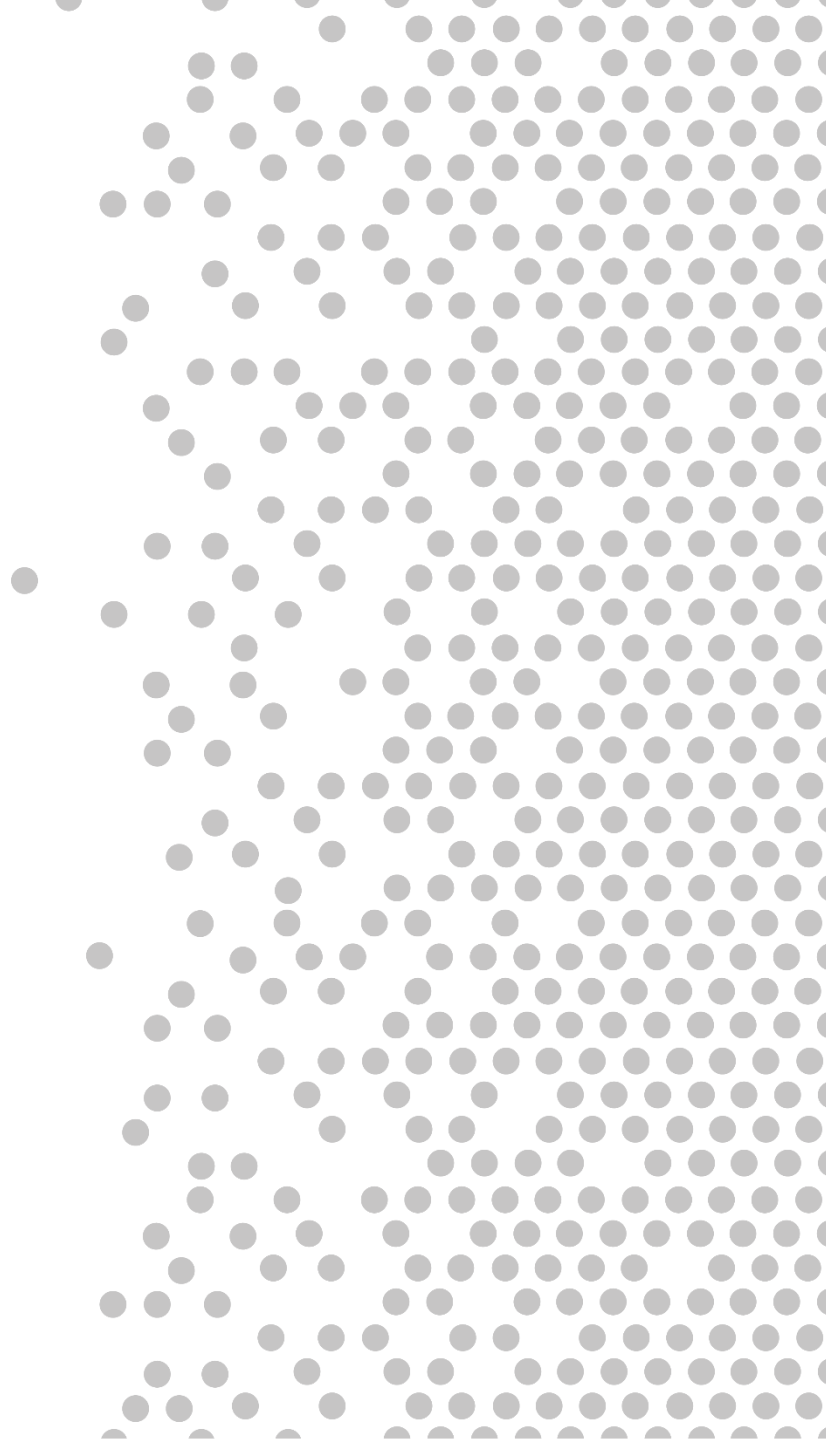# Non-Variable Annuity PBR: Let's Set Valuation Rates Daily!

Chanseo Lee, FSA, MAAA MassMutual Financial Group

Contents

What is VM-22?

Valuation Manual (VM)

- VM-20 Life Insurance PBR
- VM-21 Variable Annuity PBR
- VM-22 Non-Variable Annuity PBR

VM-20 Life Insurance PBR
- Net premium reserve
- Deterministic reserve based on deterministic scenario
- If fail on **stochastic exclusion test**, calculate stochastic reserve based on multiple stochastic scenarios
- CTE calibration on stochastic reserve
- Reserve = max of 3 reserves
- Adjusted with DDPA

VM-21 Variable Annuity PBR
- Standard reserve based on deterministic scenario
- Stochastic reserve based on multiple stochastic scenarios
- CTE calibration on stochastic reserve
- Reserve = max of 2 reserves
- C3 Phase 2 risk based capital requirement (RBC) in addition to VM-21 PBR

Annuities

<u>Fixed Annuity</u>
- Invested in general (fixed) account
- Guarantee credited interest rate like bank's "CD"
- Tax deferral until withdrawal, death benefit, annuity benefit, & surrender value
- Fixed indexed annuity with GLWB

<u>Income Annuity</u>
- Invested in general account
- Guarantee annuitization rate at issue vs current annuitization rate
- Tax deferral until withdrawal, death benefit, annuity benefit, & **no** surrender value
- Single premium immediate & deferred

<u>Variable Annuity</u>
- Invested in general and/or separate accounts
- Policyholder assumes investment risk on separate account
- Tax deferral until withdrawal, death benefit, annuity benefit, & surrender value
- GMxBs

AG-33 Fixed Annuity Commissioner's Annuity Reserve Valuation Method (CARVM) Reserve

Equivalent to CRVM
- Method is much different from CRVM
- Prescribed valuation rate and utilization rate

CARVM Reserve
- Project fund value forward at guaranteed rate at each policy year
- Benefit stream = projected fund value - required future premiums
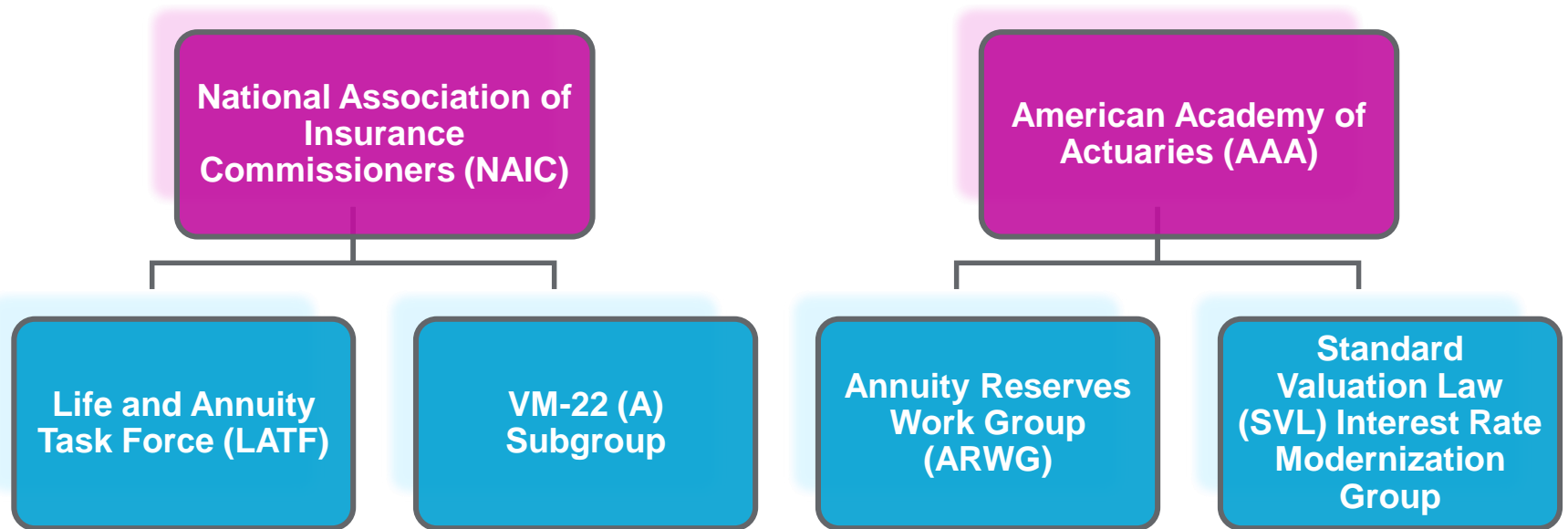- Reserve = GPV (benefit stream) discounted at valuation rate and utilization rate

Assumptions
- Valuation rate = past 15-month moving average of Moody's long-term corporate bond index
- 100% of benefit utilization rate on guaranteed living & death benefits
- Conservative reserve

What is VM-22?
Organization and Committees Involved

```
National Association of
Insurance
Commissioners (NAIC)
    ├── Life and Annuity Task Force (LATF)
    └── VM-22 (A) Subgroup

American Academy of
Actuaries (AAA)
    ├── Annuity Reserves Work Group (ARWG)
    └── Standard Valuation Law (SVL) Interest Rate Modernization Group
```

What is VM-22?
Objectives and Impacted Products

Annuity Reserve Working Group ("ARWG") has been assisting the VM-22 (A) subgroup of the Life and Annuity Task Force ("LATF") with the development of a principle-based approach to the valuation of non-variable annuities

Objectives	Products

▪ A floor reserve that does not dominate the modeled reserve
 	
▪ "Right-Size" reserves for fixed indexed annuities with guaranteed living and/or death benefits
 	
▪ Exclude payout and fixed annuities without guaranteed living and/or death benefits from stochastic calculations and continue with current reserve methodologies
 	
▪ Consistency in reserve methodologies for all annuities
 	
▪ Consistency in methodologies between reserves and capital calculations
	▪ Non-variable individual and group annuities
	
	   ▪ Deferred annuities
	
	   ▪ Payout annuities
	
	   ▪ Deposit type fund products

VM-22 Status up to August 2017
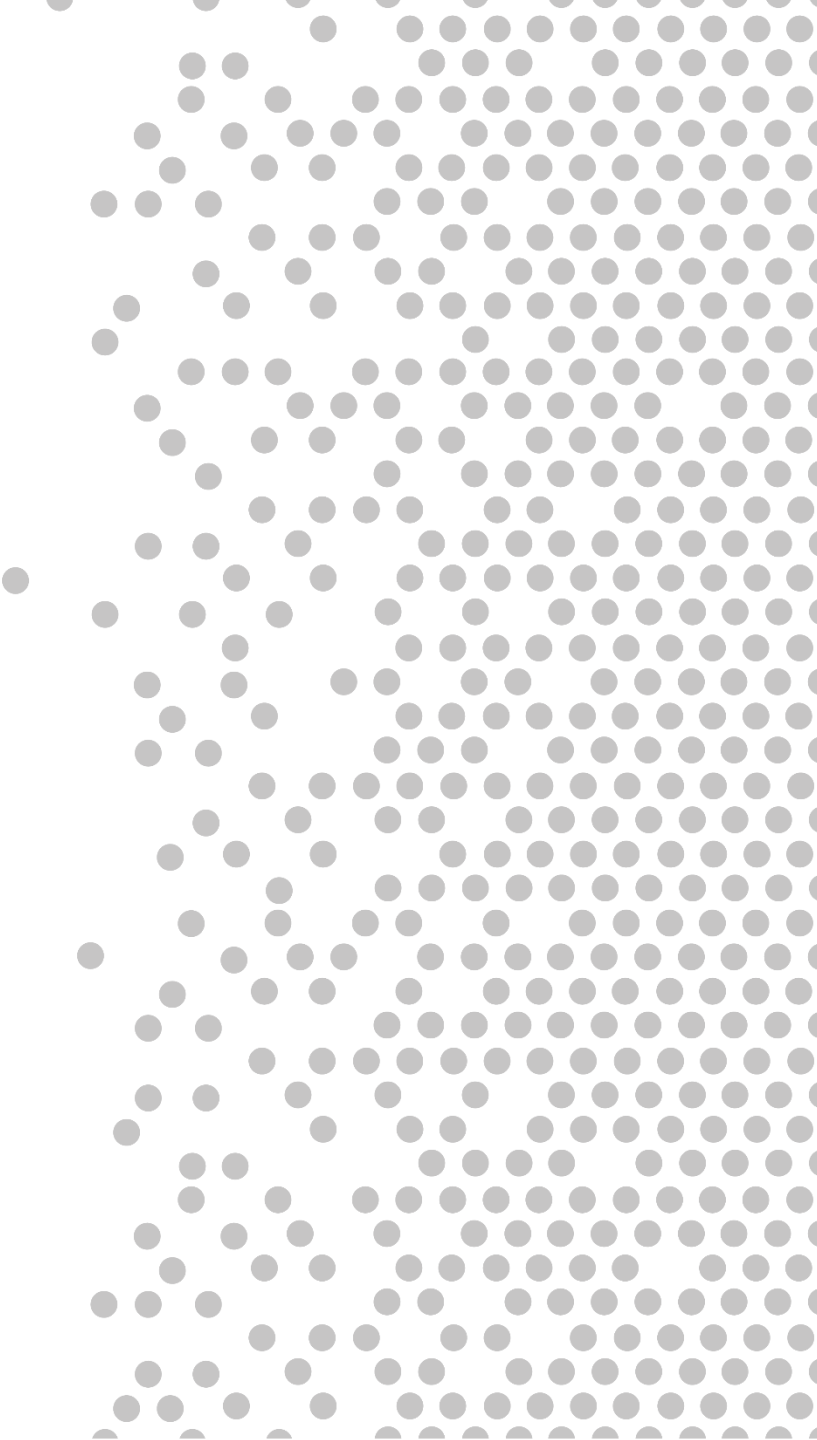
VM-22 Status up to August 2017
Initial Approach - Options

VM-22

Develop a principle-based approach to the valuation of non-variable annuities

Option 1

Representative Scenarios Method (RSM)
- Small set of scenarios
- Manageable run times
- Key risks modeled stochastically

Option 2

VM-20 Replication
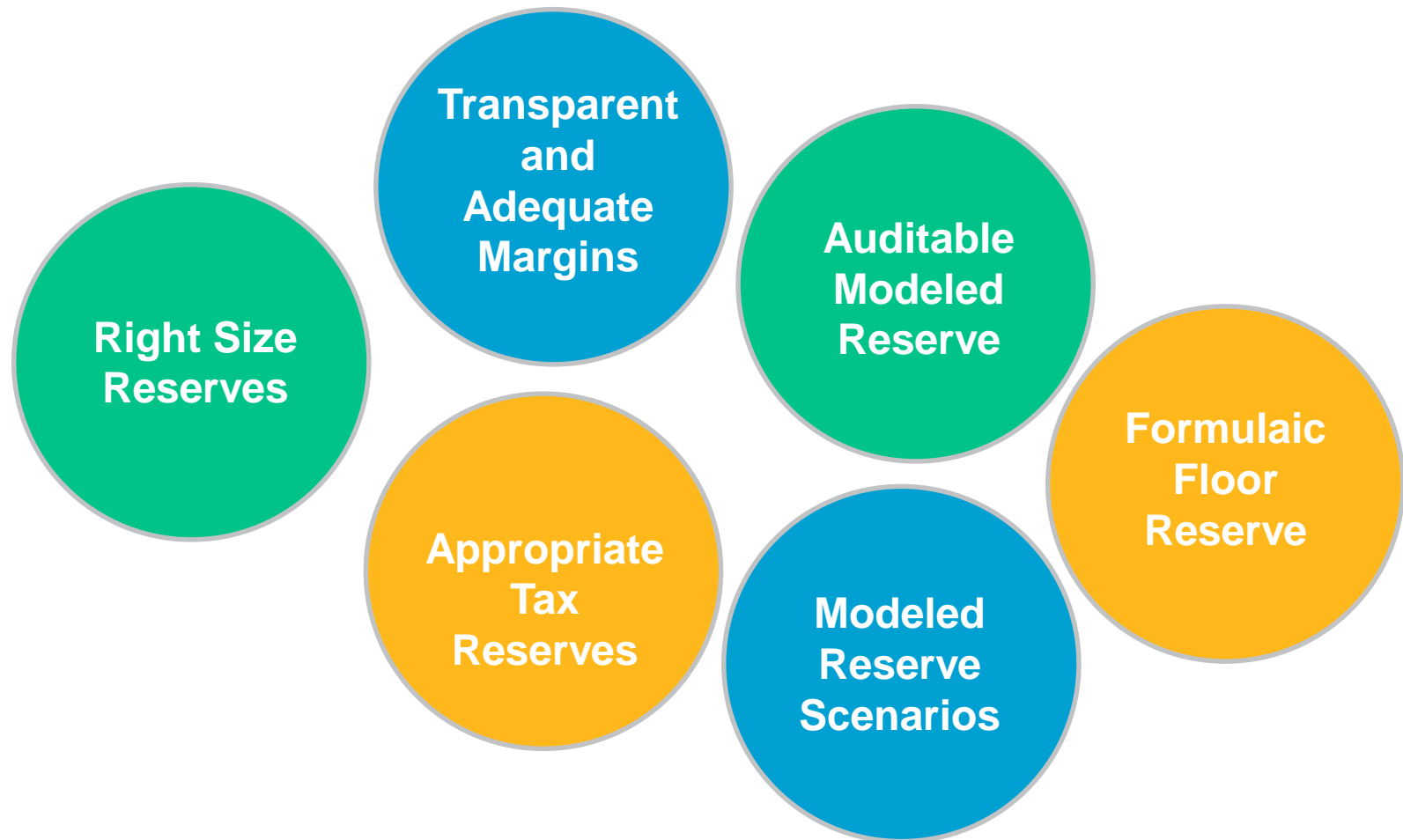- Create an annuity version of VM-20, which is the life principle-based approach

Option 3

AG-33 Modifications
- Alter AG-33 so that it can appropriately handle modern product designs, including living benefits

VM-22 Status up to August 2017
Initial Approach – Aspects Considered

VM-22 Status up to August 2017
Initial Methodology Considered

Reserve Methodology

- Minimum Reserve = Floor Reserve Amount + max {0, Modeled Reserve – Floor Reserve Amount}

  - Floor Reserve Amount = Σ k Floor Reserve contract k

  - Floor Reserve contract k = max {FR1, FR2, FR3}

Floor Reserve Objectives

- Serves as a yardstick with which to establish a reasonable floor for the minimum reserve

- Serves as a possible model for the computation of tax reserves

- Not necessary that the floor reserve be an adequate reserve for each contract valued

- Not designed to reflect the differences in product design to the same degree as the modeled reserve

VM-22 Status up to August 2017
Floor Reserve Methodology Considered

Floor Reserve 1 (FR1)

- Normal CARVM with a couple of differences
  - Assume listed benefits are terminated as of the valuation date
  - Non-listed benefits – Prescribed lapse rates adjusted for in-the-moneyness Listed benefits – GLIBs, annuitizations other than GLIB elections, and annuitization within the annuitization tier of a two-tiered annuity

Floor Reserve 2 (FR2)

- CARVM = GPV {all Integrated Benefit Streams}
  - FR2 considers one of those Integrated Benefit Streams for each listed benefit
- Calculation Rules
  - Each listed benefit is assumed to be elected eventually
  - Each listed benefit is assumed to be elected according to a corresponding listed benefit utilization function (LBUF)
- If a single contract has multiple listed benefits, FR2 shall be calculated for each listed benefit k.

Floor Reserve 3 (FR3)

- FR3 is based on the amount available for the contractholder to withdraw from the contract as of the statement date

VM-22 Status up to August 2017
Modeled Reserve Methodology Considered

Modeled Reserve

- Small number of primary risk drivers
- Scenario projections with company's anticipated experience assumptions
- Results derived from the scenarios called the Current Estimate Reserve (CER)
- Aggregate Margin will be added to CER to produce modeled reserve
- Will be compared to floor reserve
- Make audit process more manageable

Representative Scenarios Method

- Generalized, multi-risk
- Model separated into model segment
  - Blocks of business with similar risk profiles for both liabilities and assets
- Each model segment reflects its key risk drivers (KRD)
- Modeled reserve – reserve as if all KRDs were modeled stochastically
  - But more practical to calculate and easier to audit

VM-22 Status up to August 2017
Kansas Insurance Department Field Test

Goals

- Test the practicality of using the RSM for the modeled reserve

Approach

- Reserve calculations for actual business in force.
  - Compare results using:
    - AG33
    - AG43 standard scenario
    - AG 43 stochastic reserve
    - Proposed VM-22
- 2 volunteer companies, 5 different plans

Results

- Results shared with ARWG, & ARWG not involved in design or performance of test
- Proposed approach produced reserves higher than CARVM, while expecting reserves lower than CARVM
- So discarded RSM

VM-22 Status up to August 2017
New Direction

New Direction

- Abandon the RSM (late 2015)
- Consistency for all annuities
  - Modeled reserve consistent with VM-21
  - Must take into account the Variable Annuities Issue Working Group improvement items
- Evaluate previously proposed floor reserve approaches
- Incorporate a modeled reserve exclusion test

Reformation

- Regrouped the ARWG to support the new direction of VM-22
- Solicited new volunteers
- Divided the ARWG into two sections (focus areas)
  - Floor reserve / Exclusion test section
  - Modeled reserve section

VM-22 Status up to August 2017
Other Proposals Impacting VM-22

Variable Annuities Issues Working Group proposal (VM-21)	C-3 Capital treatment of Indexed Annuities proposal
- Study and address regulatory issues resulting in VA captives - Hired Oliver Wyman (OW) to support the project - VA framework for changes adopted by NAIC - VAIWG exposed OW's report with proposed changes to AG 43 and C3P2	- Align hedge assets with liability valuation - Reform standard scenarios - Align Total Asset Requirement (TAR) and reserves - Revise asset admissibility for derivatives and DTAs - Standardize capital market assumptions

Poll: Have you been following the development of introducing an exclusion test resembling that of VM-20 for non-variable annuity products?

Polling Question #1. Have you been following the development of introducing an exclusion test resembling that of VM-20 for non-variable annuity products?

a. Yes; I have been following it, and know the possible methodology and its implication

b. Yes; I have been following it, but not in much detail

c. No; I have just heard about it

d. No; I don't have any concern

VM-22 Status up to August 2017
Proposal at NAIC August 2017
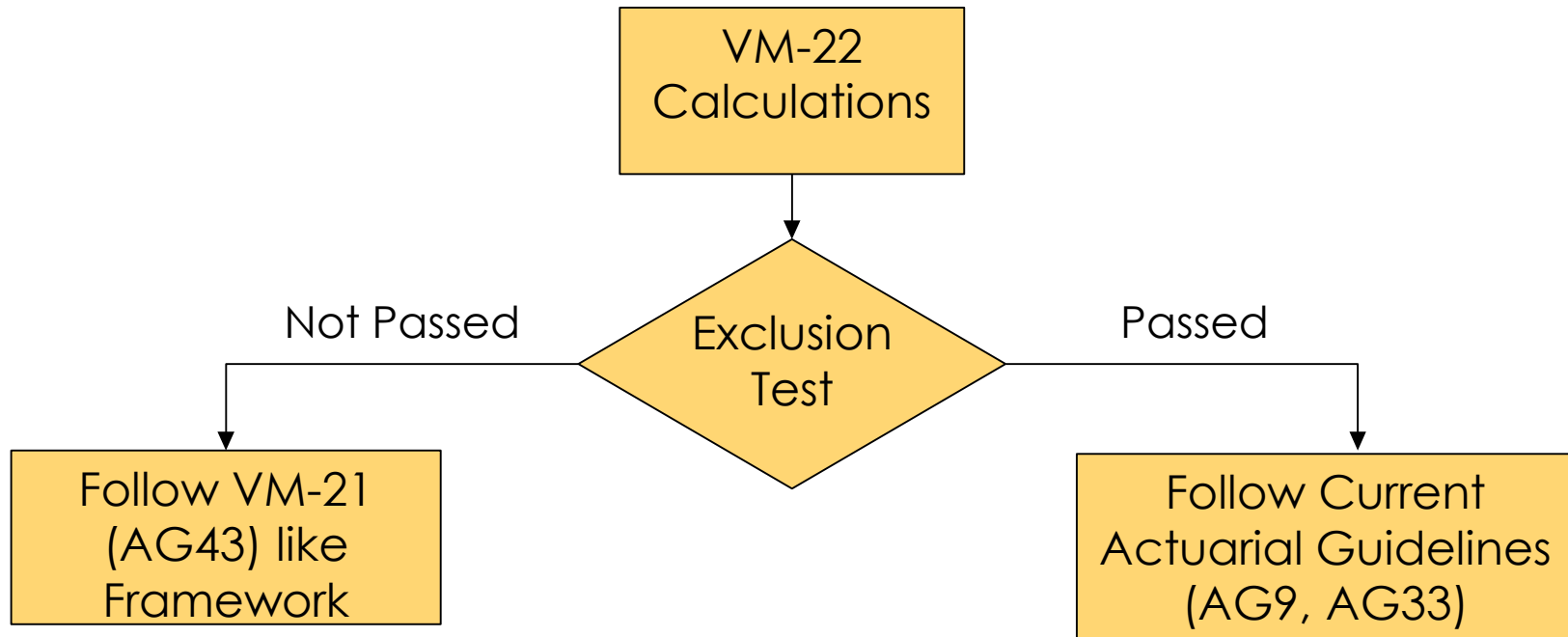
The above diagram is the latest approach presented by the ARWG at the NAIC August 2017 meeting. This approach has evolved considerably from prior iterations for several reasons, including:

- Desire for consistency, practicality, and simplicity
- Variable Annuities Issues Working Group proposal
- C-3 Capital treatment of Indexed Annuities proposal

VM-22 Status up to August 2017
Proposal at NAIC August 2017

- Exclusion test (Risk-based criteria) – likely to fail on products with optionality

- Modeled reserve/standard scenario requirements for non-variable annuities

Initial Focus
- Hedge modeling
- Discount rates
- Stochastic scenarios
- CTE calibration
- Aggregation
- Net asset yields
- Standard scenario policyholder behavior

Secondary Focus
- Standard scenario expenses
- Reinsurance
- Tax reserves
- Reporting
- Small company exemption
- Transition

VM-22 Status up to August 2017
What Decisions are Left?

The proposed approach still leaves several decisions left to be made:

Floor Reserve / Exclusion Test Section
- Evaluate previously proposed Floor Reserve approaches
  - ARWG proposed approach from November 2015
  - Formulate a simplified approach?
- Incorporate a Modeled Reserve Exclusion Test

Modeled Reserve Section
- Development of standard scenario assumptions
- Calibration of standard scenarios
- Implementation issues
- Inforce/new business

VM-22 Status up to August 2017
How Can You Prepare?

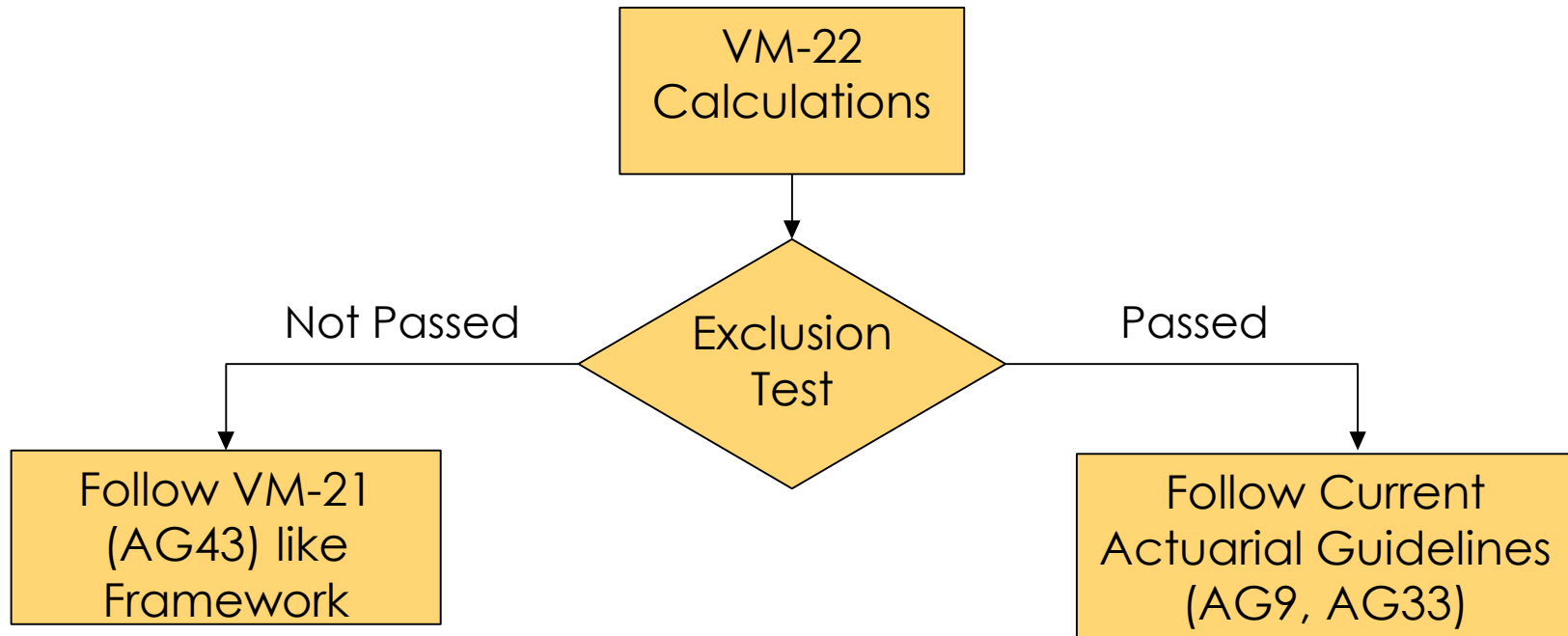| Floor Reserve	Modeled Reserve	Income Annuity Valuation Interest Rates
▪ Follow current Actuarial Guidelines ▪ Floor reserve does not dominate modeled reserve ▪ Exclude payout and fixed annuities without guaranteed living and/or death benefits from stochastic calculations	▪ Standard scenario assumptions to be determined ▪ Standard scenarios are calibrated to not dominate modeled reserve ▪ All inforce or only new business? ▪ Determine tax reserves ▪ Aggregation across lines of business	▪ Maximum, but not perfect, valuation rates for income annuities ▪ Valuation rates more responsive to liability duration and interest market ▪ Effective for contracts issued on or after January 1, 2018

VM-22 Status Update since September 2017
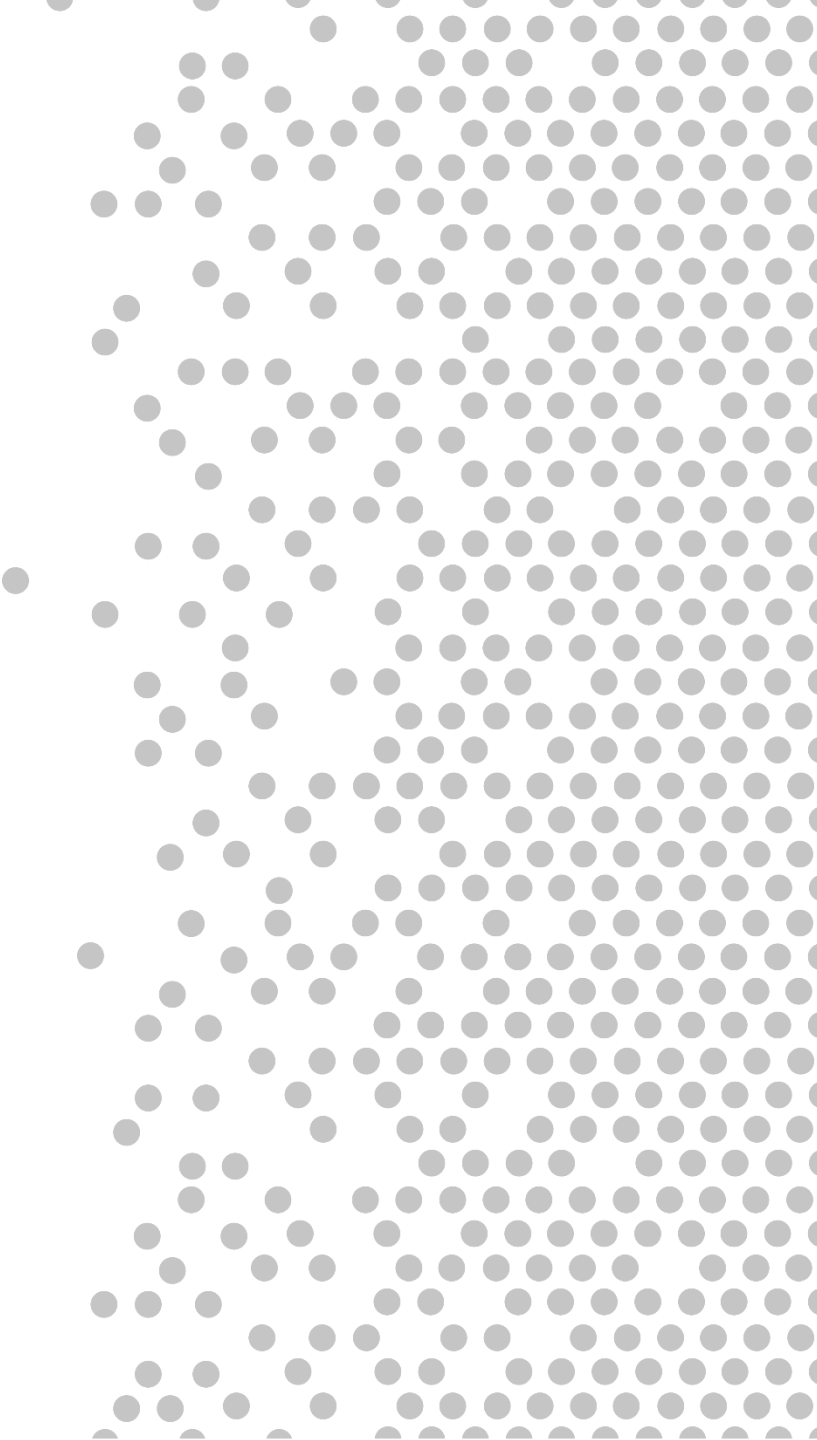
VM-22 Renewed Approach
at NAIC August 2018

```
                    ┌──────────────┐
                    │    VM-22     │
                    │ Calculations │
                    └──────┬───────┘
                           │
                           ▼
                         ◇ Exclusion ◇
   Not Passed ───────────◇   Test    ◇─────────── Passed
        │                  ◇        ◇                  │
        ▼                                              ▼
┌──────────────┐                          ┌──────────────────┐
│ Follow VM-21 │                          │  Follow Current  │
│  (AG43) like │                          │Actuarial Guidelines│
│  Framework   │                          │   (AG9, AG33)    │
└──────────────┘                          └──────────────────┘
```

- Exclusion test will decide which set of reserve calculations should be preformed

- The ARWG will consider how framework similar to VM-21 (AG43) should be modified for non-variable annuities

Potential Exclusion Test Methodology

➤ Definitions:

Formulaic CARVM = **FCARVM** (Formulaic Commissioners Annuity Reserve

Valuation Method = The current standard for non-variable annuities

found in AG 9, 33, & 35

➤ **CSV** = The Cash Surrender Value = The floor for all reserves

➤ **AV** = Account Value or contract vale

➤ **MR** = The Modeled Reserve

Potential Exclusion Test Methodology

➤ If **FCARVM <= CSV**, calculation of MR becomes optional

      Then reserve = CSV, or reserve = maximum [MR, CSV] if MR is calculated

➤ If **CSV <= FCARVM <= AV**, calculation of MR becomes optional

      Then reserve = FCARVM, or reserve = maximum [MR, CSV] if MR is calculated

Contracts without CSV would satisfy this requirement (CSV = 0)

The reserve could be less than FCARVM if MR is calculated (0 <= MR =< FCARVM)

➤ If **FCARVM > AV**, calculation of MR is required

      Then reserve = maximum [MR, CSV]

The reserve could be less than FCARVM if FCARVM > MR >= CSV

Poll: Which non-variable annuity product is most likely to not pass an exclusion test in the methodology currently considered?

Polling Question #2. Which non-variable annuity product is most likely to not pass an exclusion test in the methodology currently considered?

a. Single Premium Immediate Annuity (SPIA)

b. Fixed Deferred Annuity with guaranteed death benefits
    = Max [Premium, current AV]

c. Deferred Income Annuity with guaranteed living benefits (GLWB or GLIB)

d. Fixed Indexed Annuity (FIA) without guaranteed living or death benefits

Thoughts on Polling Question #2

a. Single Premium Immediate Annuity (SPIA)

Since SPIA doesn't have CSV, **CSV <= FCARVM <= AV**. So MR is optional

If MR is calculated, Reserve = Max [MR, CSV] could be less than FCARVM

b. Fixed Deferred Annuity with guaranteed death benefits

= Max [Premium, current AV]

Since mortality rate is so small, **CSV <= FCARVM <= AV.** So MR is optional.

If MR is calculated, Reserve = Max [MR, CSV] could be less than FCARVM

c. Deferred Income Annuity with guaranteed living benefits (GLWB or GLIB)

Since FCARVM considers all benefits utilized, it is highly possible that

FCARVM > AV. So MR is required

d. Fixed Indexed Annuity (FIA) without guaranteed living or death benefits

Since **CSV <= FCARVM <= AV**, MR is optional.

If MR is calculated, Reserve = Max [MR, CSV] could be less than FCARVM

Rationale for Potential Exclusion Test Methodology

➤ Companies would continue to calculate formulaic CARVM reserves to comply the current required methods

➤ MR would be optional for some contracts, and only required for those that FCARVM > AV

➤ Rules should be developed to minimize potential gaming of the optionality aspect to utilize MR

➤ Asset adequacy testing using FCARVM reserve generally demonstrates that the formula reserves are adequate

➤ Asset adequacy testing would still be required

Rationale for Potential Exclusion Test Methodology

➤ General agreement that the "issues" of FCARVM method (AG33) produces overly conservative reserves rather than inadequate reserves

➤ The Academy SVL Interest Rate Modernization Work Group (under direction of VM-22 subgroup) reviews the methods to derive valuation interest rates for deferred annuities similar to those on SPIA's small and jumbo annuities

➤ It is expected that the renewed approach to calculate MR following VM-21 and AG43 framework would, by design, produce reserves that satisfy asset adequacy requirements

➤ If the FCARVM reserve exceeds the AV, as may be the case for GLWB or GLIB, that indicates there is the potential for the policyholder to receive benefits in excess of the AV. The ARWG believes MR is better suited to capture the company's potential risk exposure

Application of Potential Exclusion Test Methodology

➢ Valuation interest rates and mortality assumptions are locked at issue, thus testing at the time of issue should be sufficient for most product designs

- The long term relationships between the CSV, FCARVM, and the AV should be known at issue for performing the test and documenting the results of the exclusion test

- Products that provide changing future guarantees of some form could require updated or annual testing

- A plan that meets the exclusion test for issues in a particular calendar year may not satisfy the tests for future issues

➢ The test would be prescribed as a per policy test but demonstrating that a policy qualifies could, in many cases, be performed as a higher level (plan code or policy form)

➢ Annual retesting could be a requirement but may not be needed for some designs

➢ Should the requirement to calculate the MR be permament?

Poll: How much do you have to prepare for multiple stochastic scenario testing if it would be required in 6 months?

Polling Question #3. How much do you have to prepare for multiple stochastic scenario testing if it would be required in 6 months?

a. We are already ready to implement it

b. We will need some preparation, but not much due to existing products and system functionality

c. We will need a lot of preparation because our current system doesn't have this functionality

d. We will have to establish the system from scratch

Case Study: Fixed Indexed Annuity
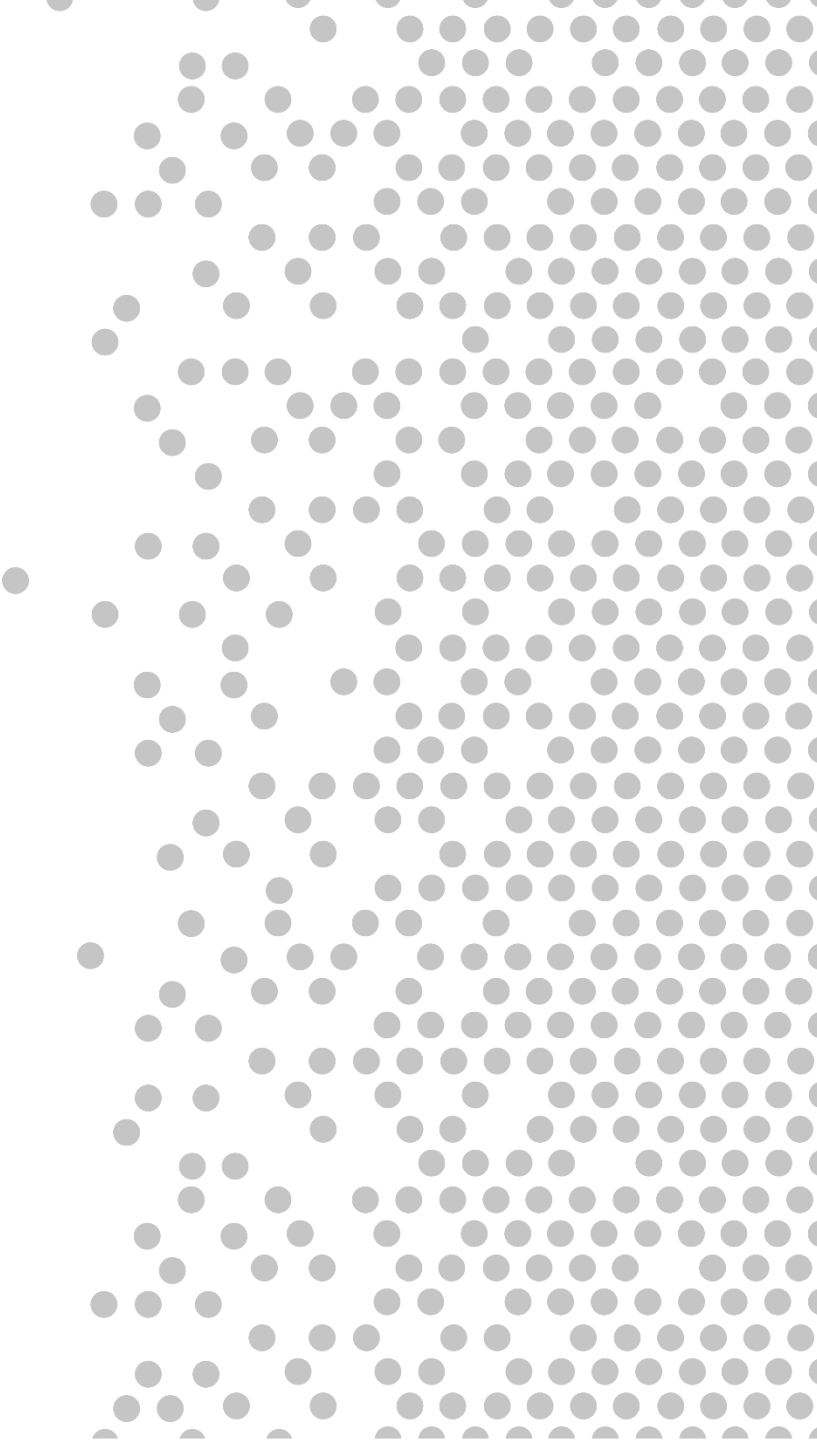
AG 33/35 – FIA with GLWB

Greatest present value of benefits under AG 33/35 by wait period

Issue age 62 with a 8% simple rollup capped at 10 years and income varying by attained age
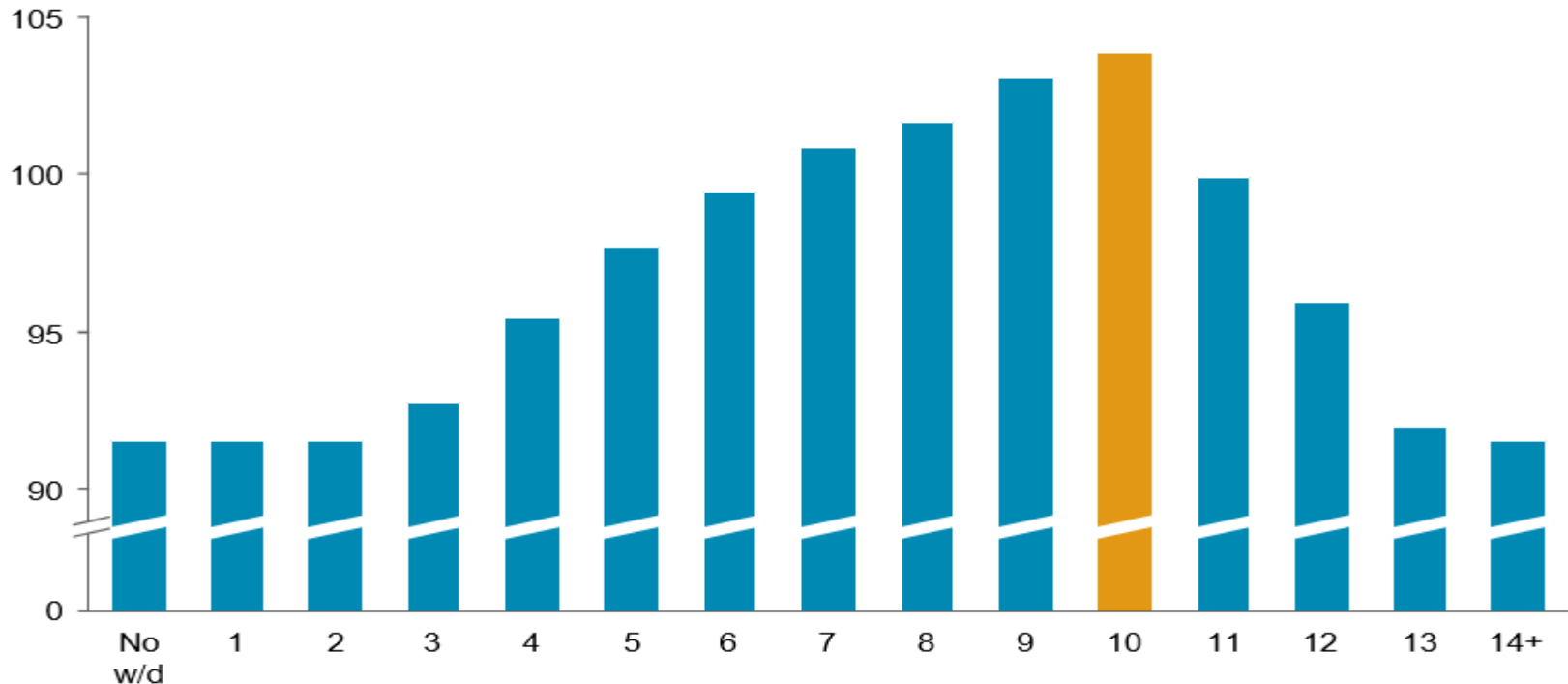
Contract level reserves are set to the greatest present value of future Guaranteed benefits, generating redundant reserves

AG 33/35 vs PBR

	AG 33/35	PBR Modeled Reserve
Methodology	• Contract level reserves = GPV(future guaranteed benefits) under CARVM	• Initial assets covers all future liability payments at CTE (e.g., CTE70) for set of stochastic scenarios
Policyholder behavior / Mortality	• Mortality: Prescribed – IAR 2012 • Surrenders: GPV considers full surrenders along each path • Free partial withdrawals: Paths with and without free partial withdrawals are considered • GLWB utilization: All potential election points are considered	• AG 43 does not prescribe behavior for stochastic calculations, but requires prudent estimates
Expenses	• None	• Included
Discount rate / Investment income	• Prescribed based on standard valuation law	• Investment income is projected based on actual asset portfolio and assumed reinvestment strategy with applicable limitations (e.g., VM-20) • Deficiencies are discounted and added to initial assets (discount rate for VM-22 to be determined)

# Initial View on Principles-based CTE Calculation for an FIA with GLWB

Initial reserve for a representative model point
Issue age 62 with a 8% simple rollup capped at 10 years and income rates varying by attained age
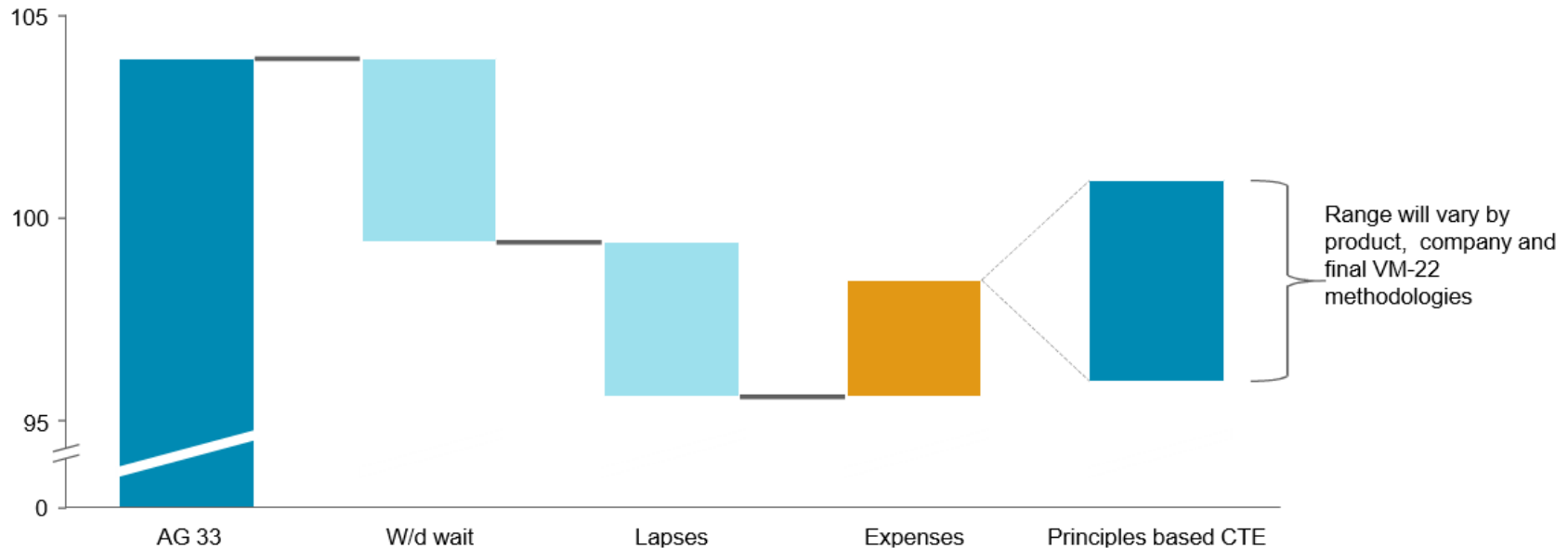
VM-22 methodologies for a principle-based CTE calculation are not defined; the final manual will affect the principle-based reserve levels

VM-22 Effective on 1/1/2018
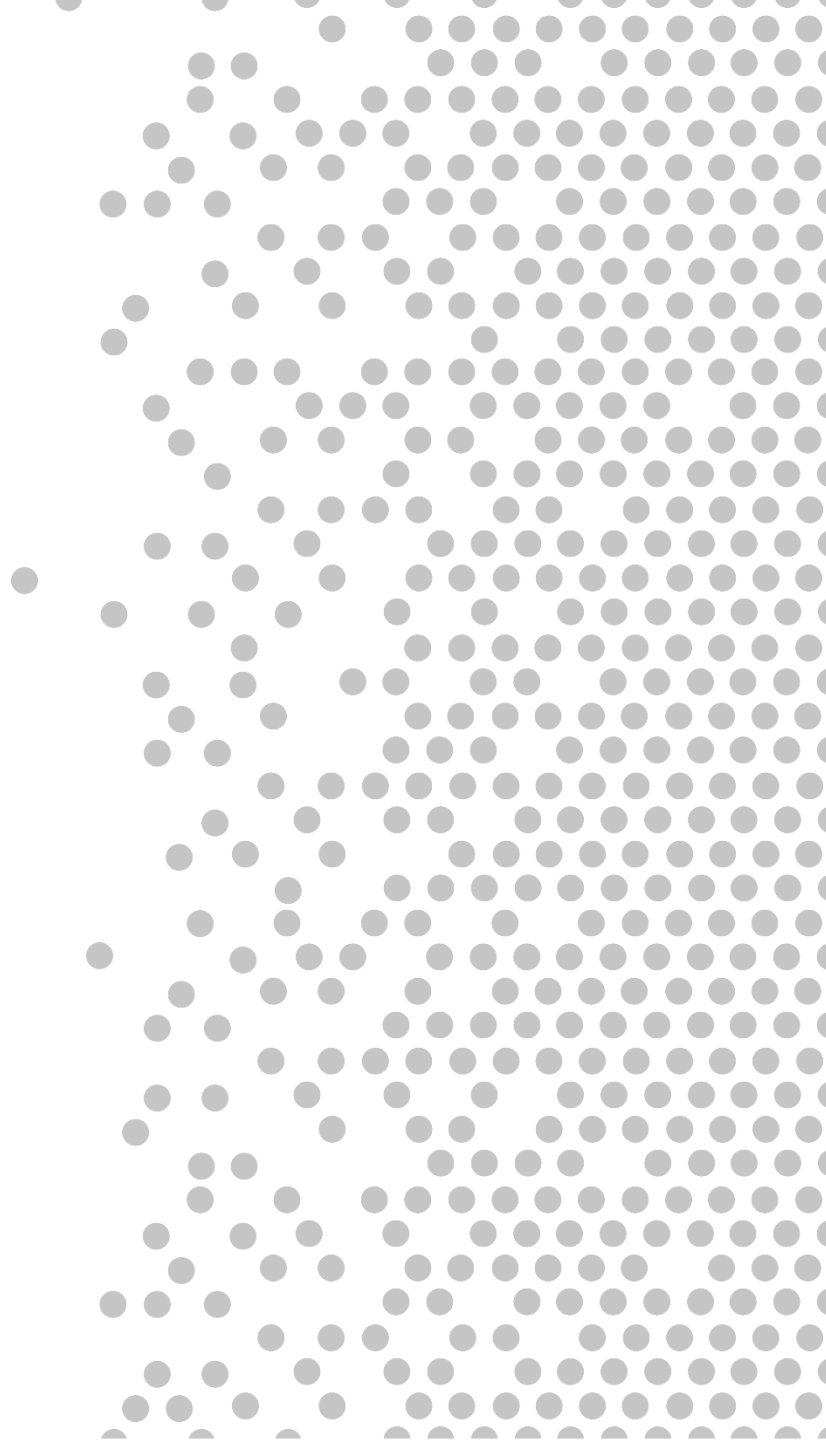
Reasons of Creation of VM-22 Effective on 1/1/2018

➢ Prior Standard Valuation Law process is no longer appropriate

➢ Moody's index does not match SPIA liabilities

➢ Credit quality of index has drifted lower since the 1980s

➢ Valuation rates now more responsive to liability duration and interest market

➢ Asset adequacy testing adjustments still likely, but at lower levels

Comparison of Prior Method vs. New Method

| Item	Prior (before January 1, 2018)	Current (as of January 1, 2018)
Reference Index	Moody's Long Term Corporate Bond Index	Treasuries plus VM-20 Spreads
Credit Quality	Moody's index (i.e., average of industrial and public utilities)	Average Life Insurer Bond Portfolio
Provisions for Adverse Deviation	20% of Reference Rate in Excess of 3%	VM-20 Baseline Defaults 25 bps for Expenses and Stat Margin
Floor	None, but bias toward 3%	None
Duration Buckets	1	4
Frequency of Updates	Annual	Non-jumbos: Quarterly Jumbos: Daily
Multiple Premiums	N/A	Separate rate for each premium
Rounding	Nearest 25 basis points	Non-jumbos: Nearest 25 basis points Jumbos: Nearest basis point

VM-22: Maximum Valuation Interest Rates for IA
Overall Methodology

- Effective for contracts issued on or after January 1, 2018

- Effective for all states that have adopted the valuation manual (VM)

- Interest rates for VM-22 are stored on the NAIC home page (under the Industry tab), rather than on the LATF page

- Provides the methodology for determining valuation interest rates for income annuities

  - Designed to be more responsive to the economic environment than the prior method

- Valuation rates are split between jumbo annuities (premium >= $250 million) and non-jumbo annuities (premium < $250 million)

  - Jumbo valuation rates are determined daily, while non-jumbo are determined quarterly

  - Once determined at the "Premium Determination Date", the rate will remain fixed for the duration of the payout

- The reserve method will not be changing at this time, just the method to determine the valuation rate for income annuities

VM-22 Effective on 1/1/2019
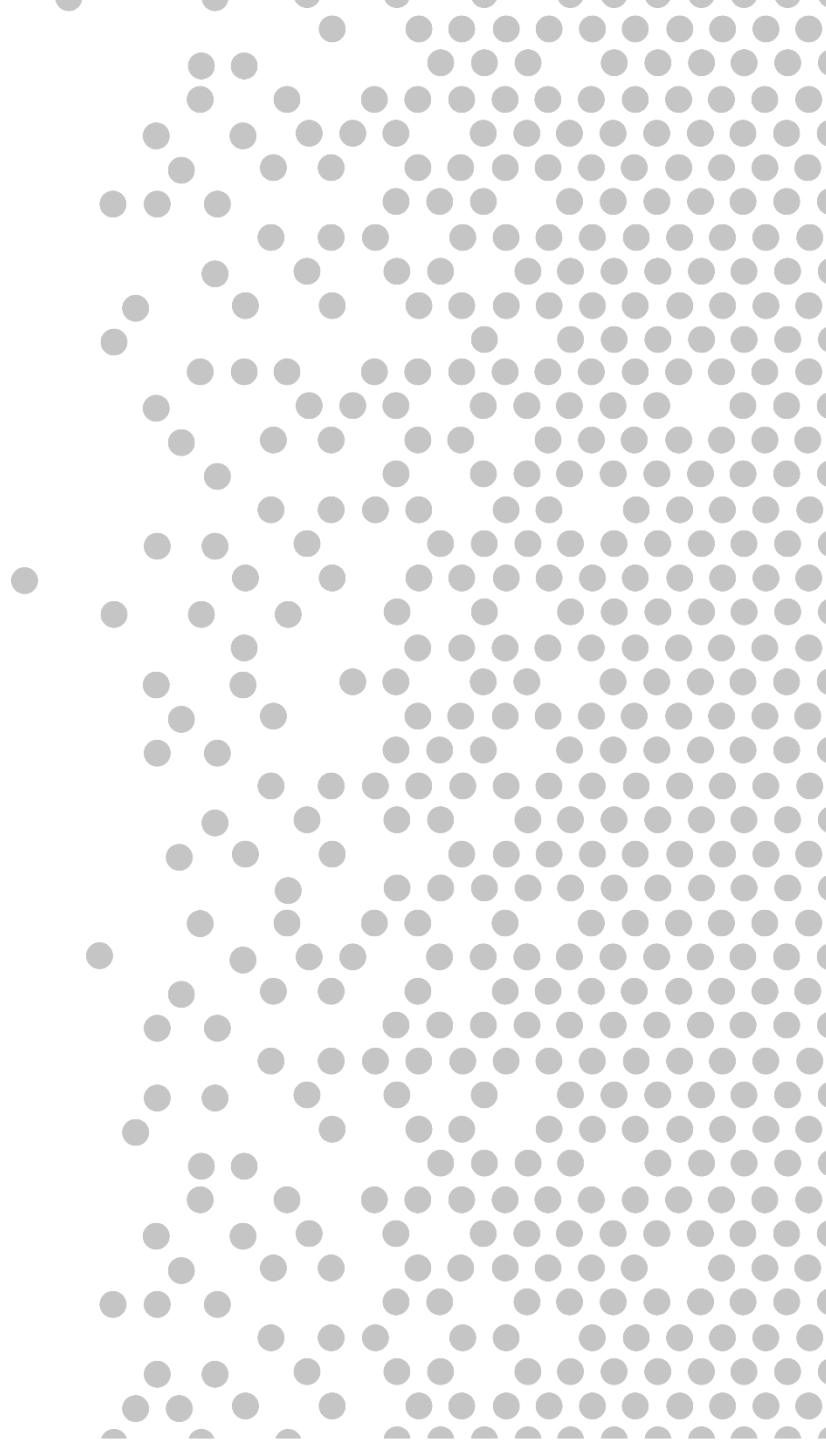
Purpose of VM-22 Redraft
Report of VM-22 (A) Subgroup at NAIC March 22, 2018

➢ Interpretation questions after VM-22 became effective on January 1, 2018

➢ NAIC determined more clarity was needed so began working on a redraft

➢ New draft aims to preserve the original content and intent of the framework and methodology, but provides more detail and precision

➢ **Key updates as part of the redraft include:**

- Expanded purpose and scope

- Updated descriptions of products in scope

- Clarification of exemptions

- Updated and expanded definitions

- Clarification of responsibility for calculation of rates

- Enhanced section showing full calculation details for each component and resulting final rates

Section 1.A. Purpose and Scope

- The redraft includes expanded language regarding the purpose and scope of VM-22 in Section 1.A

  - The language is consistent with valuation requirements and clarifies the distinction between the method (e.g. CARVM and assumptions to be used in CARVM)

  - This change is a result of feedback received from the first draft that was exposed in early June 2018

- The redraft language states:

  - These requirements define for single premium immediate annuity contracts and other similar contracts, certificates and contract features, the statutory maximum valuation interest rate that complies with Model#820.

  - These are the maximum interest rate assumption requirements to be used in the Commissioner's Annuity Reserve Valuation Method (CARVM) and for certain contracts, the Commissioner's Reserve Valuation Method (CRVM). These requirements do not preclude the use of a lower valuation interest rate assumption by the company if such assumption produces statutory reserves at least as great as those calculated using the maximum rate defined herein.

Section 1.B. Products Included

- Immediate annuity contracts (life contingent and certain only) issued after December 31, 2017

- Deferred income annuity contracts issued after December 31, 2017

- Structured settlements in payout or deferred status, issued after December 31, 2017

- Fixed payout annuities resulting from the exercise of settlement options or annuitizations of host contracts issued after December 31, 2017

- Fixed payout annuities resulting from the exercise of settlement options or annuitizations of host contracts issued during 2017, for fixed payouts commencing after December 31, 2018 or, at the option of the company, for fixed payouts commencing after December 31, 2017

- Supplementary contracts excluding contracts with no scheduled payments (such as retained asset accounts and settlements at interest) issued after December 31, 2017

- Fixed income payment streams attributable to contingent deferred annuities issued after December 31, 2017, once the underlying contract funds are exhausted

- Fixed income payment streams attributable to guaranteed lifetime income benefits associated with deferred annuity contracts issued after December 31, 2017, once the contract funds are exhausted

- Certificates with premium determination dates after December 31, 2017 emanating from non-variable group annuity contracts specified in Model #820, Section 5.C.2, purchased for the purpose of providing certificate holders benefits upon their retirement

Section 1.C. Exemptions

- In the current version of VM-22, exemptions are briefly discussed as part of the guidance note for the definition of the premium determination date

  - This notes that "Approval would normally be granted when the domestic commissioner has been provided satisfactory demonstration that the company employs an appropriate asset/liability matching strategy."

- The VM-22 subgroup determined that the reference to "domestic commissioner approval" is unclear and is not accurately reflecting what was intended

- The redraft language states:

  - With the permission of the domiciliary Commissioner, for the categories of annuity contracts, certificates and or contract features in scope as outlined in Section 1.B.4, or Section 1.B.5, or Section 1.B.6, or Section 1.B.7, or Section 1.B.8., the company may use the same maximum valuation interest rate used to value the payment stream in accordance with the guidance applicable to the host contract. In order to obtain such permission, the company must demonstrate that its investment policy and practices are consistent with this approach.

  - The maximum valuation interest rates for the contracts, certificates and contract features within the scope of VM-22 supersede those described in Appendices VM-A and VM-C of the *Valuation Manual*, but they do not otherwise change how those Appendices are to be interpreted. In particular, Actuarial Guideline IX-B (see VM-C) provides guidance on valuation interest rates and is therefore superseded by these requirements for contracts, certificates and contract features in scope. Likewise, any valuation interest rate references in Actuarial Guideline IX-C (see VM-C) are also superseded by these requirements.

Section 2. Definitions – Premium Determination Date

- The current definition for premium determination date is:
  - This term means the date upon which the premium is determined by the insurance company and is committed to by the client. This term is generally defined as the issue date. For supplementary contracts and annuitizations, this would normally be the date of election of the supplementary contracts and the annuitizations, but a company may use the valuation rate basis in effect when the original contract was issued with domestic commissioner approval.

- The VM-22 subgroup determined that this definition is not ideal for a couple of reasons:
  - It assumes SPIA logic, rather than logic that varies by type of contract
  - The reference to "domestic commissioner approval" is unclear and is not accurately reflecting what was intended

- The redraft has been updated to:
  - Include a table of decision rules to clarify the decision date for different types of contracts

Section 2. Definitions - Premium Determination Date (continued)

- The following table specifies the decision rules for setting the premium determination date for each of the contracts, certificates and contract features listed in Section 1:

Item # in Section 1	Item Description	Premium Determination Date
1.B.1	Immediate annuity	Date consideration is determined and committed to by contract holder
1.B.2	Deferred income annuity	Date consideration is determined and committed to by contract holder
1.B.3	Structured settlements	Date consideration is determined and committed to by contract holder
1.B.4 and 1.B.5	Fixed payout annuities resulting from settlement options or annuitizations from host contracts	Date consideration for benefit is determined and committed to by contract holder or benefit commencement date
1.B.6	Supplementary contracts	Date of issue of supplementary contract
1.B.7	Fixed income payment streams from contingent deferred annuities, AV=0	Date on which AV becomes 0
1.B.8	Fixed income payment streams from guaranteed lifetime income benefits, AV becomes 0	Date on which AV becomes 0
1.B.9	Group annuity, and related certificates	Date consideration is determined and committed to by contract holder

Section 2. Definitions – Reference Period

- The current definition for reference period is:
  - This term means the length of time, rounded to the nearest year, from the Premium Determination Date to the date of the last non-life-contingent payment under the individual contract or group certificate, as applicable.
  - Guidance Note: The definition of Reference Period assumes a series of material, substantially similar payments and materiality is relative to the life-contingent payments. If the payments are not level, the actuary should apply Actuarial Guideline IX-B exercise prudent judgment to measure the Reference Period.

- There has been concern regarding this definition, as the reference period is solely determined based on the date of the last non-life contingent payment
  - This allows for an opportunity to take advantage of the definition to get a longer reference period, since a single non-life contingent payment in a very late period would extend the reference period

- In the redraft, the definition has been refined to eliminate any ambiguity in the language

Section 3. Calculation of Rates vs. Selection of Rates

- In the current version of VM-22, extensive detail regarding the calculation of the maximum valuation interest rates is provided

  - The process of calculating the rates involves a set of spreads, a set of weights, a set of default costs, a set of corporate bond rates, and a set of average US Treasury rates

- The redraft of VM-22 focuses on the selection of rates rather than the calculation of them, as the resulting statutory maximum valuation interest rates are published by the NAIC

  - The user is expected to select the appropriate rate from the published rates

  - The user is not expected to complete the calculations themselves

  - The processes for re-determining the weights, default costs, spreads, reference rates, and daily corporate rates are described and illustrated

  - The process of calculating the statutory maximum valuation interest rates is described

Section 3. Selection of Rates – Duration Rate Buckets (A-D)

- For the purpose of selecting the statutory maximum valuation interest rate, the contract, certificate or contract feature being valued must be assigned to one of four valuation rate buckets labeled A through D. In order to match the duration of the assets backing the liabilities, four groupings are used
  - Based on contract and annuitant characteristics
  - Easy to both implement and audit

Initial age	Length of Reference Period (RP)			
	<= 5 years	More than 5 years, up to 10 years	More than 10 years, up to 15 years	More than 15 years
Without life contingencies				
	A	B	C	D
With life contingencies				
90+	A	B	C	D
80-89	B	B	C	D
70-79	C	C	C	D
<70	D	D	D	D

Examples

VM-22 Rate Selection

VM-22 Rate Selection (continued)

VM-22 Rate Selection (continued)

	A	B	C	D	E	F	G	H	I	J	K
1											
2			Valuation Bucket								
3	Premium Determination	RP <= 5 Y	5Y < RP <= 10Y	10Y < RP <= 15Y	RP > 15Y						
4	Date	A	B	C	D						
5	1/1/2018	2.41%	2.74%	3.04%	3.38%						
6	1/2/2018	2.41%	2.74%	3.04%	3.38%						
7	1/3/2018	2.46%	2.79%	3.10%	3.43%						
8	1/4/2018	2.46%	2.78%	3.08%	3.41%						
9	1/5/2018	2.47%	2.79%	3.08%	3.42%						
10	1/6/2018	2.48%	2.80%	3.10%	3.43%						
11	1/7/2018	2.48%	2.80%	3.10%	3.43%						
12	1/8/2018	2.48%	2.80%	3.10%	3.43%						
13	1/9/2018	2.47%	2.80%	3.10%	3.43%						
14	1/10/2018	2.50%	2.83%	3.14%	3.48%						
15	1/11/2018	2.50%	2.83%	3.14%	3.48%						
16	1/12/2018	2.48%	2.81%	3.11%	3.44%						
17	1/13/2018	2.51%	2.83%	3.11%	3.44%						
18	1/14/2018	2.51%	2.83%	3.11%	3.44%						
19	1/15/2018	2.51%	2.83%	3.11%	3.44%						
20	1/16/2018	2.51%	2.83%	3.11%	3.44%						
21	1/17/2018	2.50%	2.81%	3.09%	3.41%						
22	1/18/2018	2.54%	2.85%	3.13%	3.44%						
23	1/19/2018	2.56%	2.87%	3.16%	3.47%						
24	1/20/2018	2.58%	2.90%	3.18%	3.50%						
25	1/21/2018	2.58%	2.90%	3.18%	3.50%						
26	1/22/2018	2.58%	2.90%	3.18%	3.50%						
27	1/23/2018	2.60%	2.92%	3.20%	3.52%						
28	1/24/2018	2.56%	2.88%	3.17%	3.49%						
29	1/25/2018	2.58%	2.90%	3.19%	3.52%						
30	1/26/2018	2.56%	2.87%	3.15%	3.46%						
31	1/27/2018	2.60%	2.90%	3.18%	3.48%						
32	1/28/2018	2.60%	2.90%	3.18%	3.48%						
33	1/29/2018	2.60%	2.90%	3.18%	3.48%						
34	1/30/2018	2.62%	2.92%	3.20%	3.51%						
35	1/31/2018	2.62%	2.94%	3.23%	3.54%						
36	2/1/2018	2.66%	2.96%	3.23%	3.53%						
37	2/2/2018	2.69%	3.00%	3.27%	3.57%						

2018 Jumbo Rates | 2018 Non-Jumbo Rates | VM-22 Tables 3 thru 6 | Note Regarding Table F | LEGAL DISCLAIMER

VM-22 Rate Selection: Non-Jumbo

- Life only (no certain period)
- Single premium immediate annuity
- Issued 7/1/18
- 90 years old

Initial age	Length of Reference Period (RP)			
	<= 5 years	More than 5 years, up to 10 years	More than 10 years, up to 15 years	More than 15 years
Without life contingencies				
	A	B	C	D
With life contingencies				
90+	A	B	C	D
80-89	B	B	C	D
70-79	C	C	C	D
<70	D	D	D	D

VM-22 Rate Selection: Non-Jumbo (continued)

Statutory Maximum Valuation Interest Rate for Non-Jumbo				
	Valuation Rate Buckets			
Premium Determination Date	RP <= 5 Y	5Y < RP <= 10Y	10Y < RP <= 15Y	RP > 15Y
	A	**B**	**C**	**D**
1/1/2018 - 3/31/2018	2.25%	2.75%	3.00%	3.25%
4/1/2018 - 6/30/2018	2.75%	3.00%	3.25%	3.50%
7/1/2018 - 9/30/2018	3.25%	3.50%	3.75%	4.00%
10/1/2018 - 12/31/2018				

VM-22 Rate Selection: Jumbo

- Life only (no certain period)
- Single premium immediate annuity
- Issued 7/1/18
- 90 years old within a jumbo case

Initial age	Length of Reference Period (RP)			
	<= 5 years	More than 5 years, up to 10 years	More than 10 years, up to 15 years	More than 15 years
Without life contingencies				
	A	B	C	D
With life contingencies				
90+	A	B	C	D
80-89	B	B	C	D
70-79	C	C	C	D
<70	D	D	D	D

VM-22 Rate Selection: Jumbo (continued)

Premium Determination Date	Valuation Bucket			
	RP <= 5 Y	5Y < RP <= 10Y	10Y < RP <= 15Y	RP > 15Y
	A	**B**	**C**	**D**
6/30/2018	3.26%	3.53%	3.76%	4.02%
7/1/2018	3.26%	3.53%	3.76%	4.02%
7/2/2018	3.26%	3.53%	3.76%	4.02%
7/3/2018	3.32%	3.60%	3.82%	4.04%
7/4/2018	3.30%	3.57%	3.79%	4.01%
7/5/2018	3.30%	3.57%	3.79%	4.01%
7/6/2018	3.30%	3.57%	3.78%	3.99%
7/7/2018	3.28%	3.55%	3.76%	3.97%
7/8/2018	3.28%	3.55%	3.76%	3.97%
7/9/2018	3.28%	3.55%	3.76%	3.97%
7/10/2018	3.29%	3.56%	3.77%	3.98%
7/11/2018	3.30%	3.56%	3.76%	3.98%
7/12/2018	3.27%	3.54%	3.74%	3.95%
7/13/2018	3.28%	3.54%	3.74%	3.95%