



AMERICAN ACADEMY *of* ACTUARIES

Objective. Independent. Effective.™

Non-Variable Annuity PBR Update to LATF's VM-22 Subgroup

John R. Miller, MAAA, FSA Co-Chairperson

Chris Olechowski, MAAA, FSA Co-Chairperson

Annuity Reserves Work Group of the American Academy of Actuaries

November 17, 2015

ARWG: Direction

ARWG Chicago meeting, May 2013: VM-22 plan

- Not an annuity version of VM-20
- Like the VM-21 (AG 43) framework: two parts
 - A deterministic floor reserve (“CARVM-like”)
 - A modeled reserve (model office projections)
- Consideration of a new modeled reserve approach
- KS insurance department volunteers for a field test



ARWG: Direction / Goals

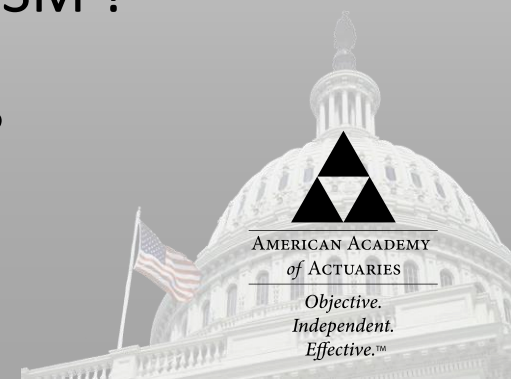
Report to LATF, August 2013: Update on a Potential VM-22 Reserve Methodology

- Goal: to propose a sound principle-based reserve standard for non-variable annuities incorporating:
 - A formulaic floor reserve that uses CARVM like methods to determine a minimum reserve (not the primary reserve)
 - May reflect lapses & utilization rates other than 0% or 100% for elective benefits
 - A modeled reserve reflecting key product risks
 - Applicable to current and future complex product designs



ARWG: Direction / Goals

- Reserves are “right sized”
- Floor reserve does not overwhelm the modeled V_x
 - Expands on elements found in AG 33, but less conservative
 - Satisfies requirements for treatment as the Tax Reserve
- Modeled V_x based upon on small set of scenarios
 - More manageable run times
 - Key risks modeled stochastically - possibly RSM ?
- Aggregate margin – transparent margins



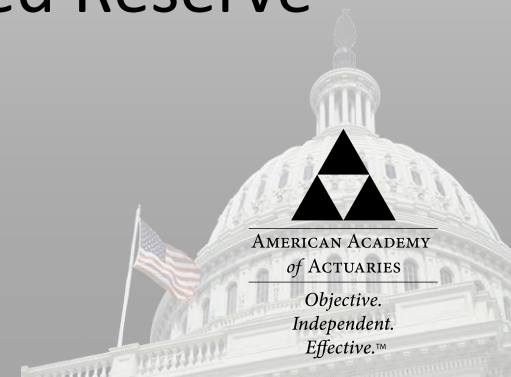
VM-22 Section 2. Reserve Methodology

- **Minimum Reserve** = Floor Reserve Amount +
 $\max \{0, \text{Modeled Reserve} - \text{Floor Reserve Amount}\}$
where
- Floor Reserve Amount = \sum_k Floor Reserve_{contract k}
and
- Floor Reserve_{contract k} = $\max \{FR1, FR2, FR3\}$



VM-22 Section 3. Floor Reserve

- 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



Floor Reserve 1 (FR1)

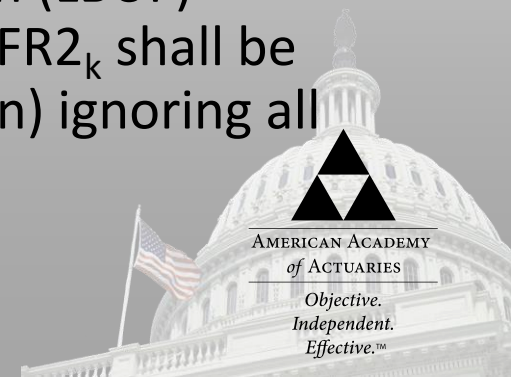
- Recall: Floor Reserve_{contract k} = max {FR1, FR2, FR3}
- FR1 = normal CARVM with a couple of differences
 - Assume Listed Benefits are terminated as of the valuation date
 - Possibly use prescribed lapse rates adjusted for In-the-Moneyness (ITM-ness) of rich non-listed benefits, such as significant GMDBs



Floor Reserve 2 (FR2)

- Recall: $CARVM = GPV\{ \text{all Integrated Benefit Streams} \}$
- FR2 considers *one* of those Integrated Benefit Streams for each Listed Benefit
- Calculation Rules
 - Each Listed Benefit is assumed to be elected eventually (unless death occurs first) (i.e., no other elective benefits in FR2)
 - 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, $FR2_k$ shall be calculated for each Listed Benefit k (for $k = 1$ to n) ignoring all other Listed Benefits. Then

$$FR2 = \max \{FR_1, FR_2, \dots, FR_n\}$$



Listed Benefit

- Term that applies to certain elective benefits
- Examples may ultimately include
 - Guaranteed Lifetime Income Benefits (GLIBs)
 - Annuitization within the annuitization tier of a two-tiered annuity



Listed Benefit Utilization Function

Sample Smoothed Utilization Rates for GLIBs

(Rates shown are percent of remaining lives)

Tax-Qualified				Non-Qualified							
Attained Age	Rate	Attained Age	Rate	Attained Age	Rate	Attained Age	Rate	Attained Age	Rate	Attained Age	Rate
0-58	0.0%	65	27.5%	0-58	0.0%	65	17.5%	72	5.0%	79	23.8%
59	5.0%	66	16.3%	59	3.8%	66	11.3%	73	5.0%	80	42.5%
60	15.0%	67	5.0%	60	12.5%	67	5.0%	74	18.8%	81	23.8%
61	10.0%	68	5.0%	61	8.8%	68	5.0%	75	32.5%	82	5.0%
62	5.0%	69	5.0%	62	5.0%	69	13.8%	76	18.8%	83	5.0%
63	5.0%	70	5.0%	63	5.0%	70	22.5%	77	5.0%	84	5.0%
64	16.3%	71+	100.0%	64	11.3%	71	13.8%	78	5.0%	85+	100.0%



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 Section 4. Modeled Reserve

- Modeled Reserve Methodology - to be determined
- KS Sponsored Field Test
 - Multi-risk
 - Representative scenarios
 - Aggregate margin



Questions?

