

VM-22: HERE IT GOES

2024 Fall SEAC meeting

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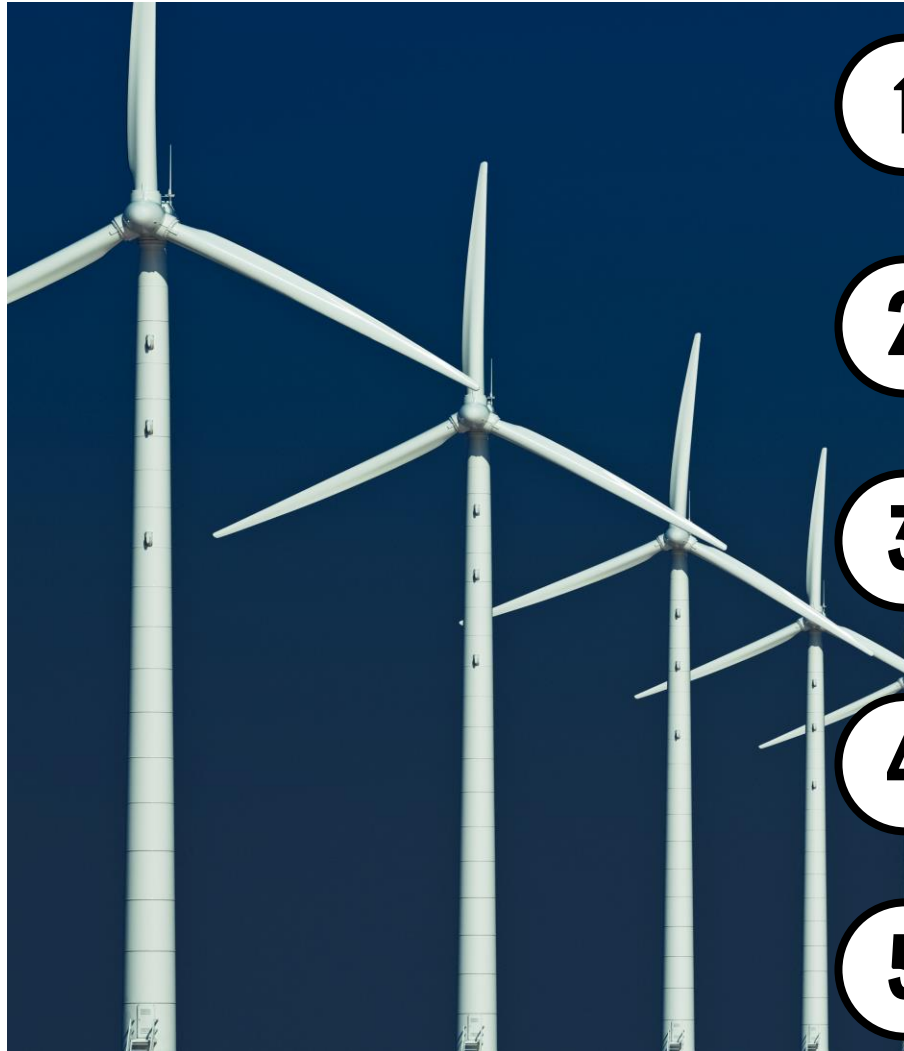
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GENERATOR OF ECONOMIC SCENARIOS

KEY TAKEAWAYS FROM GOES MODEL OFFICE TESTING

Oliver Wyman compared and analyzed the impact of the proposed economic scenario generator to the existing for variable annuity and life insurance products



1

Relative to the existing Academy Interest Rate Generator (“AIRG”), the new generator (“GOES”) produces the following: (1) **increased interest rate volatility** (2) **adverse equity tail scenarios** and (3) **elevated incidence of yield curve inversions**

2

Large increases to the CTE98 level reflective of more extreme tail scenarios for both interest rates and equity returns

3

Deterministic uses of the ESG are more impacted by the GOES for VM-20, resulting in larger impacts to DR and SERT ratios

4

Scenario-level CSV flooring applicable to **stochastic reserve** under VM-21 is a driver of **more substantial impacts VA reserves compared to Life**

5

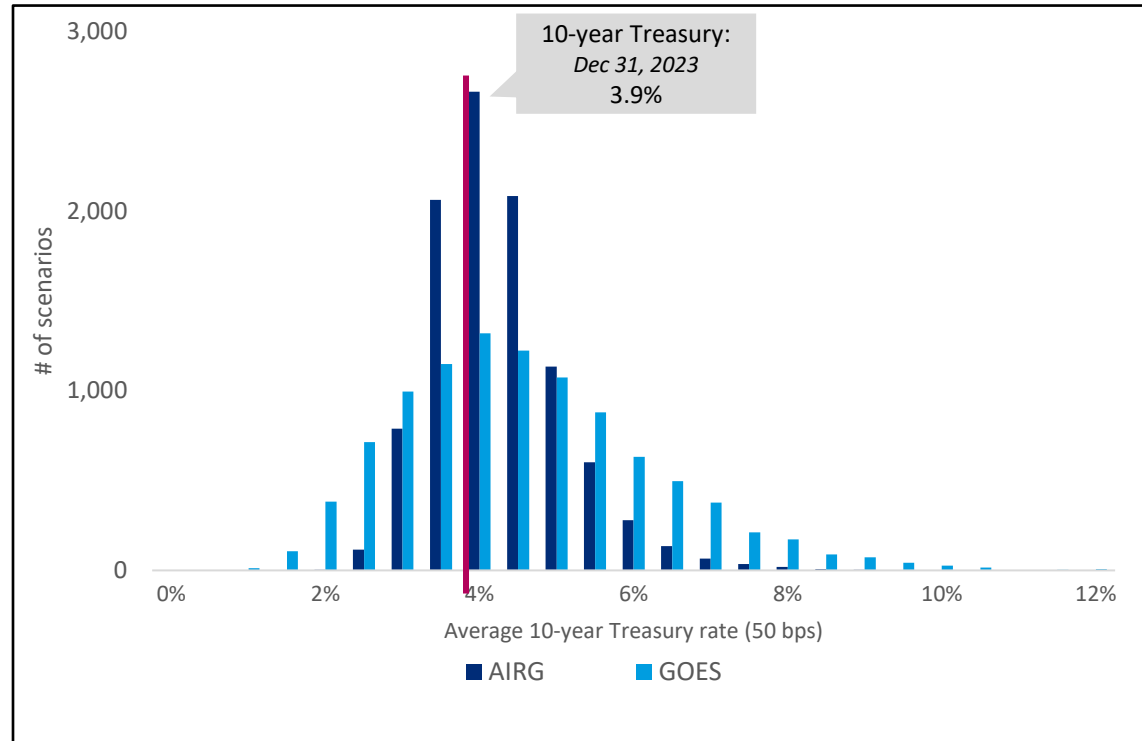
The GOES has minimal **treasury-equity linkage** and allows **negative interest rates**

COMPARING INTEREST RATES AND EQUITY RETURNS

Increased volatility in GOES interest rates results in a wider distribution of average treasury rates compared to AIRG; comparing growth wealth factors highlights more adverse tail equity returns

Interest rates

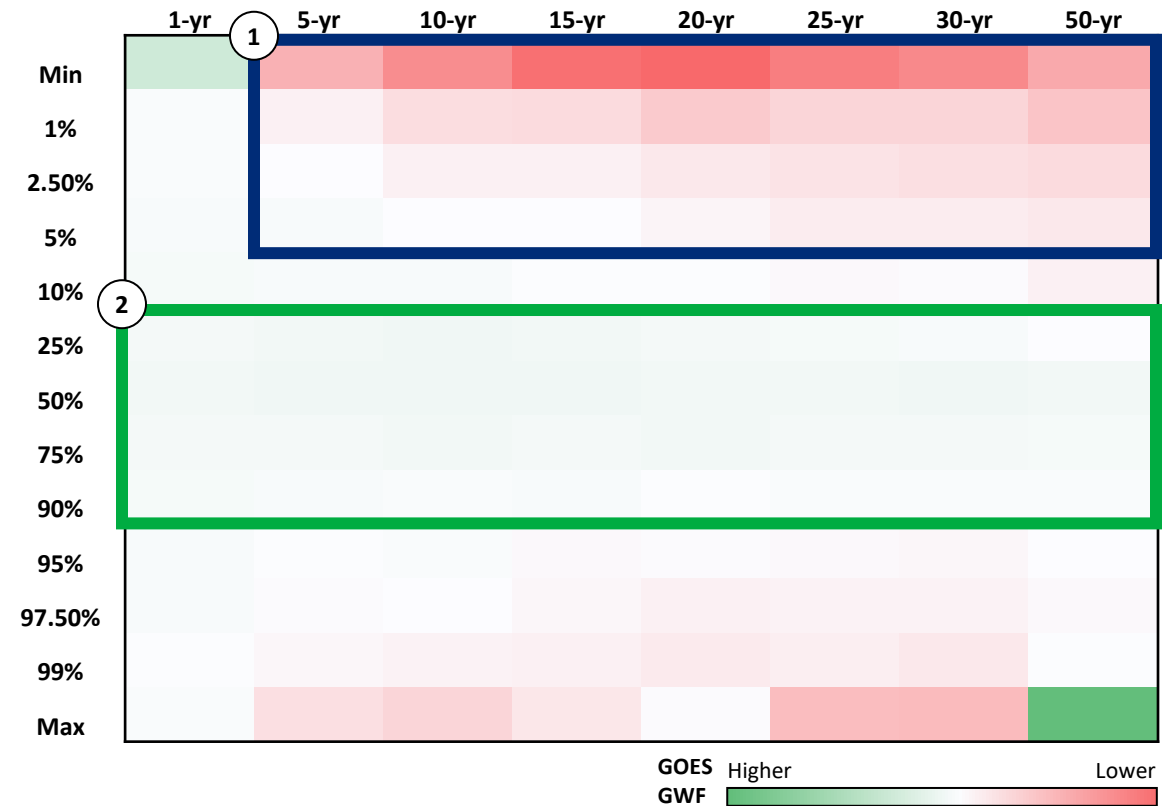
Comparison of average 10-year Treasury rates¹



1. Average over 30 years; each bar is a 50-bps increment

Equity returns

Comparison of gross wealth factor ("GWF") by percentile and year



- ① Cumulative GWF under GOES much lower than AIRG in tail percentiles
- ② Cumulative GWF similar between generators for middle percentiles

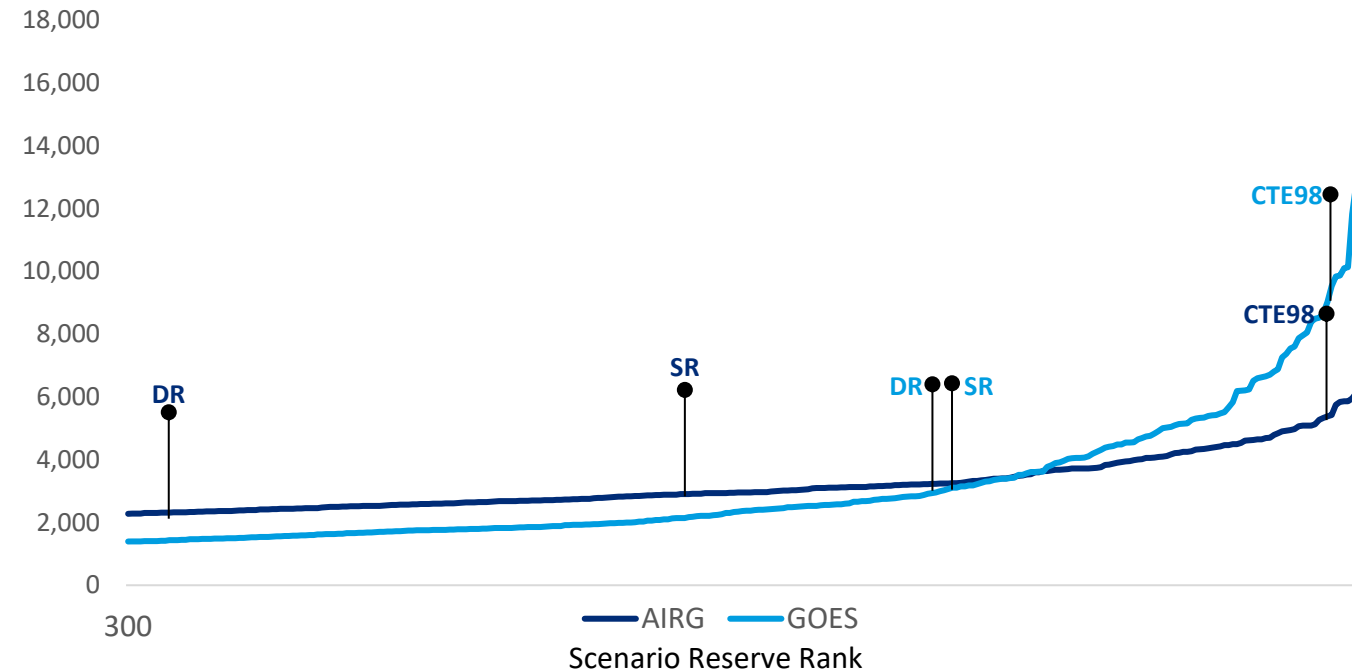
CTE98 COMPARED TO RESERVE CANDIDATES UNDER VM-20

Scenario reserves under VM-20 are similar between GOES and AIRG, as the more extreme tail behavior is partially offset by the “complementing” more favorable behavior (scenario reserves are not floored at CSV, unlike VM-21)

Selected ULSG VM-20 results

Scenario Set	Deterministic reserve		Stochastic reserve		CTE98
AIRG	2,325		3,229		5,417
		▲ 24%		▼ 2%	
GOES	2,879		3,167		9,936
					▲ 72%

Distribution of scenario reserves (worst 30%)



Observations: GOES relative to AIRG

- ULSG deterministic reserve increased by 20% and while the stochastic reserve (CTE70) is largely consistent with AIRG
- Under GOES, the SR is higher than the DR by a significantly smaller margin than under AIRG, driven by the strengthening of the DR
- The spread between the “worst” and “best” CTE70 scenario is much wider, explained by the wider dispersed yield curve paths
- CTE98 is significantly more severe; CTE70 receives some benefit of scenarios that produce lower scenario reserve

DETERMINISTIC USE CASES UNDER VM-20: DR AND SERT

Single scenarios between GOES and AIRG are not well aligned, despite reasonable validation metrics on the full stochastic set (10,000)

Selected ULSG VM-20 results

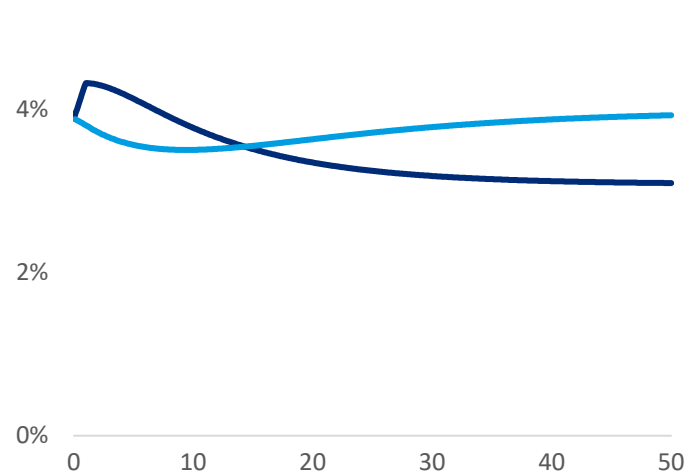
Scenario Set	Deterministic reserve	Max reserve (scenario 3)	SERT ratio
AIRG	2,325	1,625	8.6%
GOES	2,879	2,281 ▲ 40%	19.0%

Observations

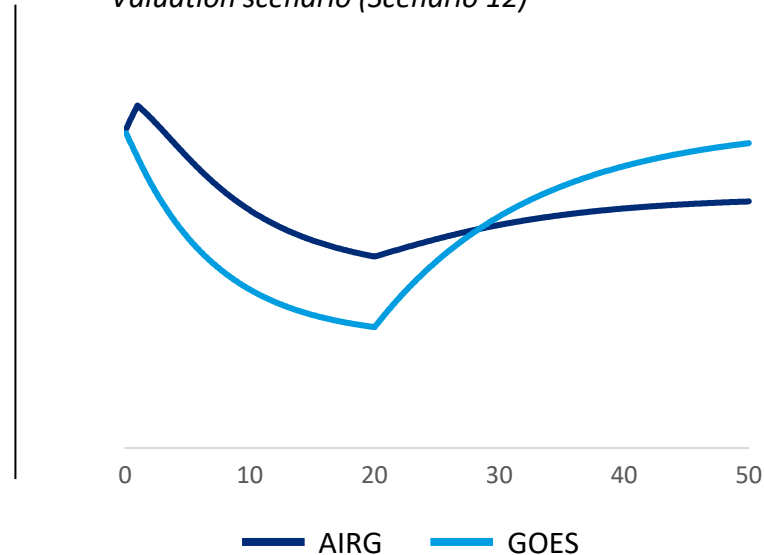
- SERT ratio more than doubled and Max Reserve component increased 40%
- While method for deterministic and exclusion test scenarios is defined by VM-20, scenarios are determined based on statistics of the entire set; wider dispersion in the GOES set leads to more volatile single scenario paths

10-yr treasury rates for VM-20 scenarios

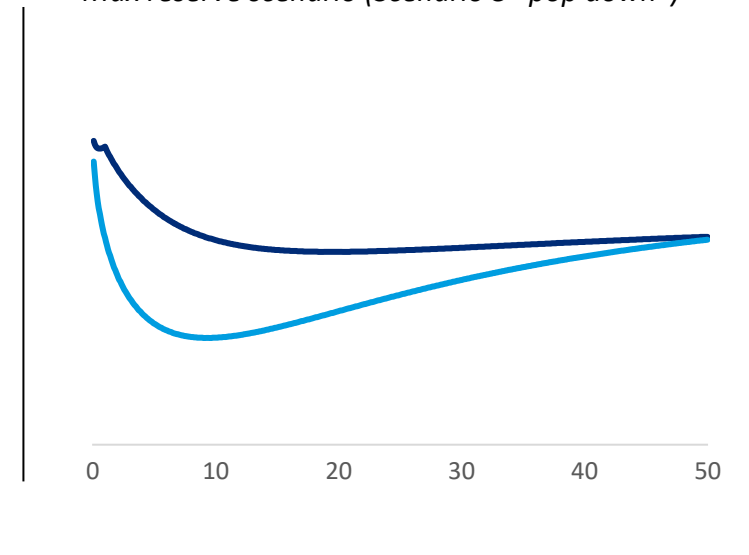
Baseline scenario (Scenario 9, no shocks)



Valuation scenario (Scenario 12)



Max reserve scenario (Scenario 3 "pop down")



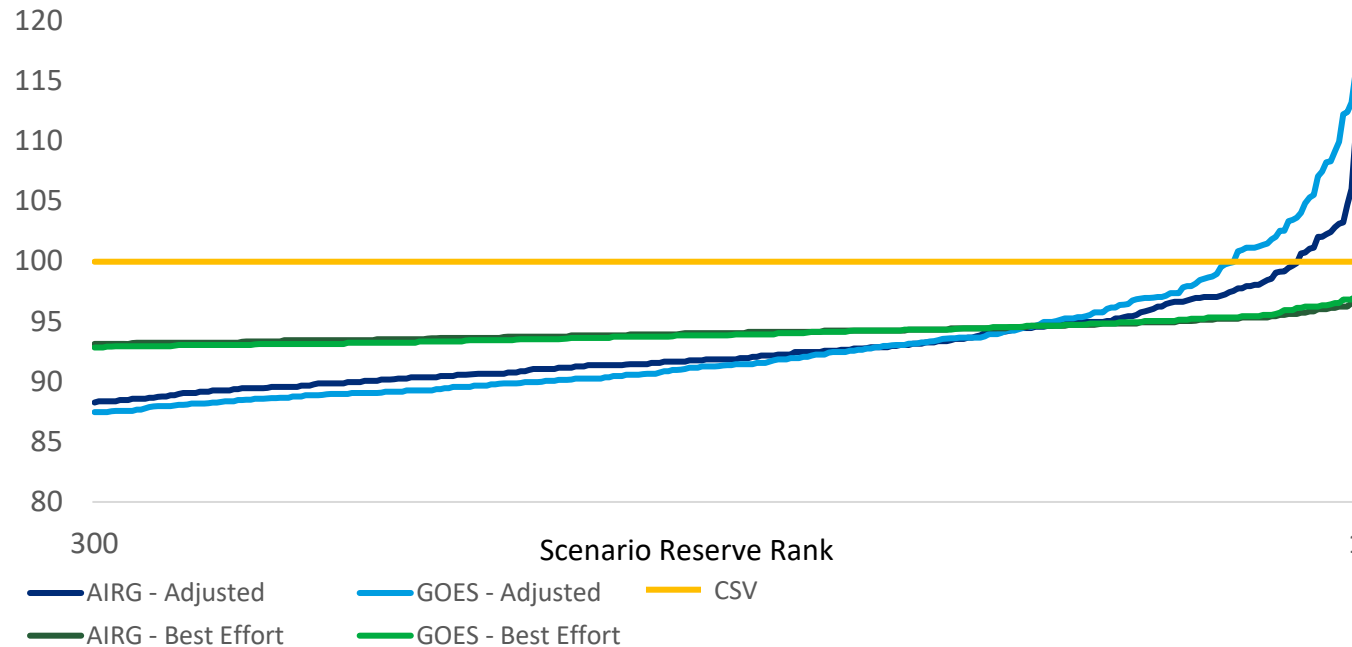
SCENARIO RESERVES FOR VARIABLE ANNUITIES UNDER VM-21

In situations where reserve or capital levels are close to CSV under AIRG, GOES may result in a significant increase to total asset requirement due to CSV flooring requirements to scenario reserves under VM-21

Unfloored CTE70 adjusted scenario reserve metrics

Scenario Set	CTE70	CTE80	CTE90	CTE95	CTE98
AIRG	93	94	97	99	102
GOES	93	95	99	102	107

Distribution of unfloored scenario reserves (worst 30%)



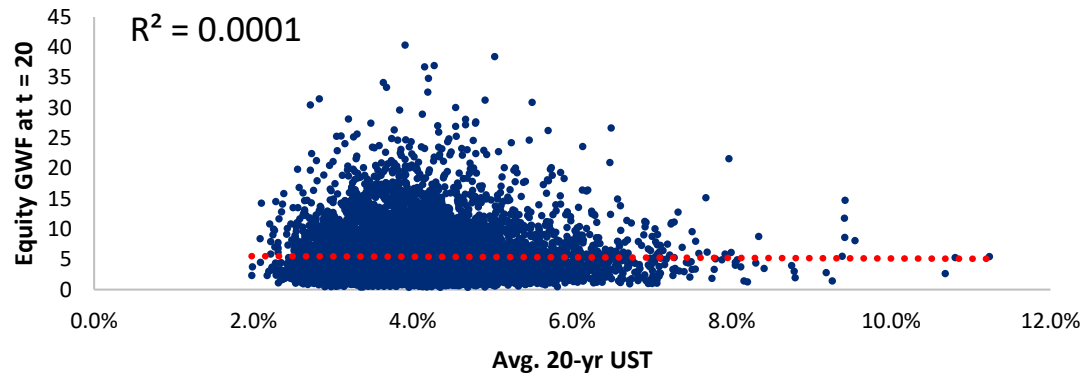
Observations: GOES relative to AIRG

- Severity of adverse impact to tail scenarios are the result of increased volatility to equity returns and interest rates under GOES
 - Equity returns in tail scenarios are lower, leading to higher claims and lower fees
 - Interest rates in tail scenarios are lower and may go negative, leading to lower investment income and higher discounted claims
 - Deep tail scenarios exhibit low equity returns and interest rates
- The profile of the underlying inforce may have a significant impact to CTE70 and impact of flooring
- Minimal change to “best efforts”, which reflects hedging and below the CSV

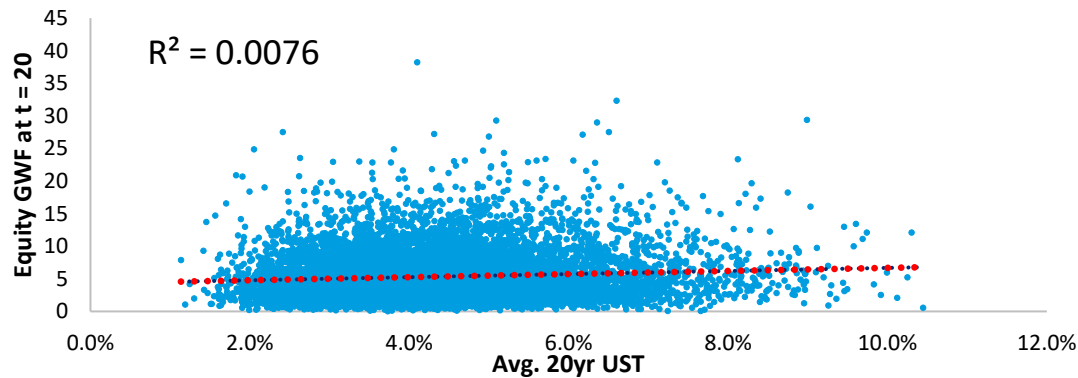
GOES CHARACTERISTICS: TREASURY-EQUITY LINKAGE

The GOES exhibits minimal linkage between equity returns and Treasury rates, but more than under the AIRG which had none

AIRG 10,000 scenarios as of 12/31/2023



GOES 10,000 scenarios as of 12/31/2023



Key takeaways

- The **AIRG has zero Treasury-Equity linkage**, meaning Treasury rates and equity returns are produced in an independent process
- GOES has Treasury-Equity correlation, producing a weak relationship between Treasuries and equities
- Starting yield curve conditions have **no impact** on the equity scenarios produced by GOES

Correlation metrics

Through 30 simulation years, high and low scenarios defined as 95th and 5th percentile of path wise scenario outcomes

		Equity			Equity			
		High	Mid	Low				
Interest	High	0.29%	4.46%	0.25%	High	0.44%	4.38%	0.18%
	Mid	4.44%	80.97%	4.59%	Mid	4.33%	81.20%	4.47%
	Low	0.27%	4.57%	0.16%	Low	0.23%	4.42%	0.35%

MODELING CHALLENGES



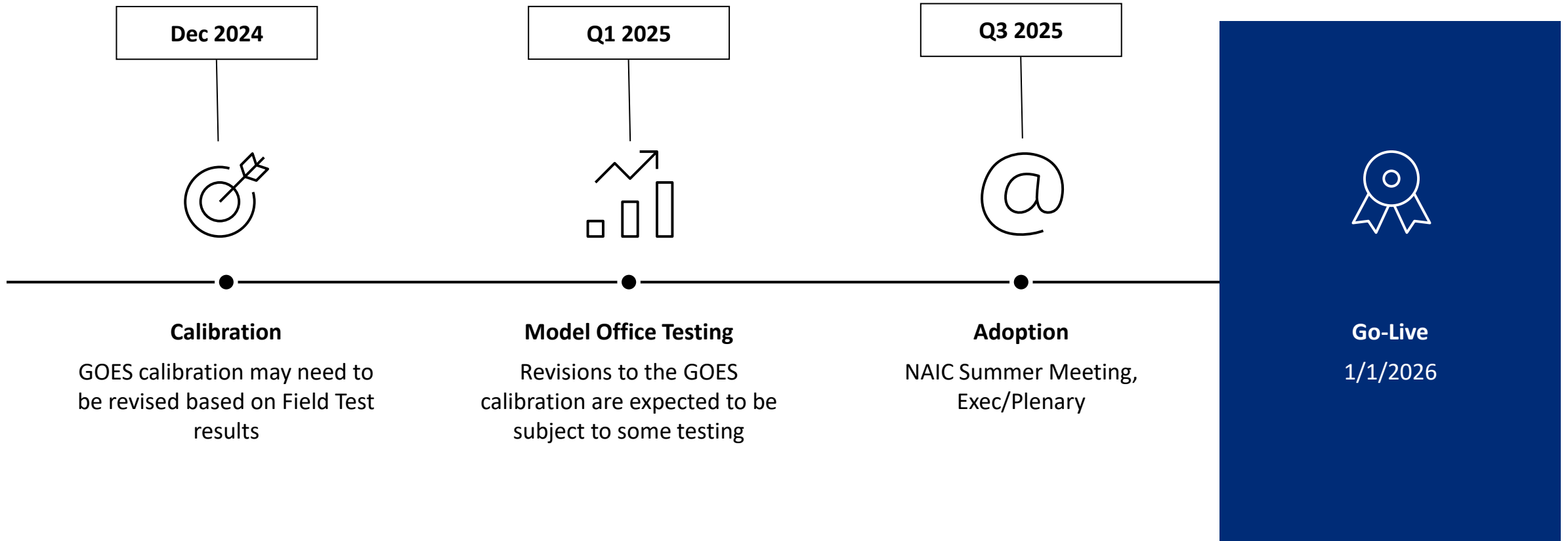
1 Formatting

2 Integration to models

3 Integration to processes

4 Validation and review

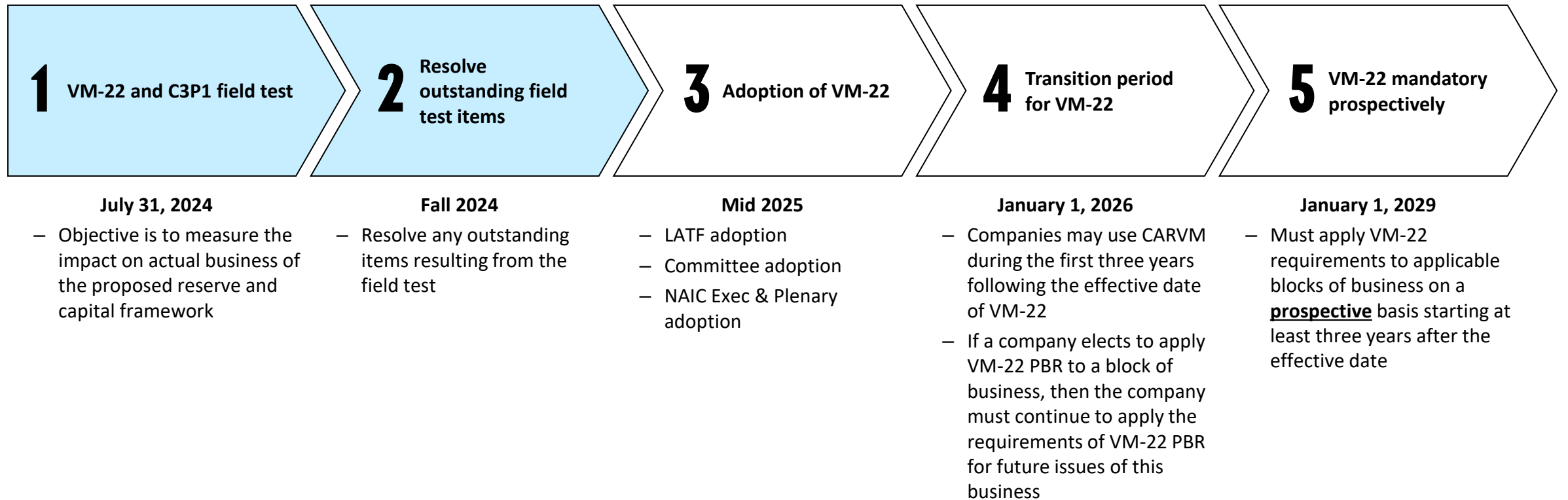
A LOT REMAINS TO BE DONE PRIOR TO THE GOES BECOMING EFFECTIVE



2

VM-22 OVERVIEW

ADOPTION AND IMPLEMENTATION TIMELINE



VM-22 is currently planned to be effective as of January 1, 2026, and mandatory starting in 2029

KEY DIFFERENCES BETWEEN AG 33/35 AND VM-22

VM-22 is a Principles-Based Reserving (“PBR”) framework that aims to incorporate all risks that may prevent a company from meeting its contractual obligations

Parameter	AG 33	VM-22
1 Level of calculation	Policy-level calculations, summed to aggregate level	Calculations conducted across an aggregated group of policies , then allocated to policy-level
2 Cashflows considered	Premiums and benefits	All cashflows (premiums, benefits, commissions, expenses, investment-related cashflows , etc.)
3 Policyholder behavior assumptions	Optimal path that leads to the highest reserve	Company-specific prudent (i.e., padded) assumptions, per guidance in VM-22: Section 10, and subject to VM-31 standards
4 Mortality rates	Prescribed by issue year	Company-specific prudent assumptions, per guidance of VM-22: Section 11
5 Discount rates	Prescribed by issue year and benefit; disconnected from reality	Earned rate generated by actual assets held by company; subject to prescribed defaults and reinvestment yield spreads
6 Credited rates	Guaranteed rates; for index-linked products, option cost accumulated at the risk-free rate (i.e., B-S Projection Method)	Explicitly calculated through scenario-specific valuation where assets and liabilities interact
7 Hedging	Not explicitly considered	Explicitly considered; clearly defined hedging strategies (“CDHS”) must be modeled and their impact measured
8 Reinsurance	Only reinsurance premiums and benefits are considered; assumes no recapture	All reinsurance cashflows and treaty provisions (e.g., experience account balances, recaptures) are considered

The framework is moving from a prescribed, liability-driven calculation to a stochastic ALM evaluation

VM-22 AGGREGATE RESERVE

Unlike pre-PBR valuation frameworks that calculated reserves at a policy level and aggregated up, VM-22 calculates the reserves at an aggregate level and allocates down

$$\text{VM-22 agg. rsv} = (\text{SR} + \text{DR}) \text{ 1} + \text{ASPA} \text{ 2} - \text{PIMR} \text{ 3} + \text{VM-A/C/V} \text{ 4}$$

1 SR + DR (“Stochastic Reserve” + “Deterministic Reserve”)

- Conducts ALM projections over many (SR) or few (DR) economic scenarios using prudent best-estimate policyholder behavior assumptions
- Groups of contracts may forgo SR/DR if Stochastic Exclusion Test (“SET”) is passed, allowing for valuation of contracts under pre-PBR frameworks

2 ASPA (“Additional Standard Projection Amount”)

- Akin to calculating the SR or DR, but using assumptions prescribed within VM-22: Section 6
- Applicable to contracts within the scope of VM-22, excluding contracts that pass exclusion tests and to which pre-PBR requirements are applied
- Acts as a minimum reserve floor

3 PIMR (“Pre-tax Interest Maintenance Reserve”)

- Allocated PIMR attributed to assets that previously backed reserves for selected contracts
- Excludes PIMR for contracts valued under pre-PBR requirements

4 VM-A/C/V (Pre-PBR valuation frameworks, i.e., “CARVM”)

- Applicable to contracts that qualify for PBR exemption
 - <\$1bn in company reserves and <\$2bn in group reserves
 - Contracts with GLBs are not eligible
- Applicable to groups of contracts for which the company elects to use pre-PBR requirements after passing the “SET”

VM-22 aggregate reserve approach is largely consistent with Variable Annuity Principles-Based Reserving framework (VM-21)

SCENARIO RESERVES

For a given economic scenario, determined as the starting asset position required to fund all future liability cash flows such that no year-end deficiencies exist; floored at cash surrender value

Calculation methodology

DIM (“Direct iteration method”)

- Determined by **running the scenario with various levels of starting assets** until no year-end deficiencies are achieved
- The result is more intuitive and the **ALM process can be validated** through first principles
- The process is **computationally demanding**, as it requires multiple re-runs per each scenario, and thus is very sensitive to model optimization

GPVAD (“Greatest Present Value of Accumulated Deficiencies”)

= Starting asset amount + GPVAD

- GPVAD is calculated as the **maximum of PV(accumulated deficiencies_t)**, discounted at Net Asset Earned Rate (“NAER”)
 - NAER is based on the **additional** invested asset portfolio
- Does not require multiple model runs of the same scenarios, **reducing run time and cost**
- The NAER may be **challenging to calculate**

Aggregation categories

- Policies across categories cannot be combined, but the groups within the categories can be split further
- **“Payout Annuity Reserving Category”** – Pension risk transfer, SPIA/DIA, structured settlements, non-GLB annuitizations
- **“Longevity Reinsurance Reserving Category”** – Defined under VM-01
- **“Accumulation Reserving Category”** – All other non-variable annuities, including WB payments once funds are exhausted

Cash flow considerations

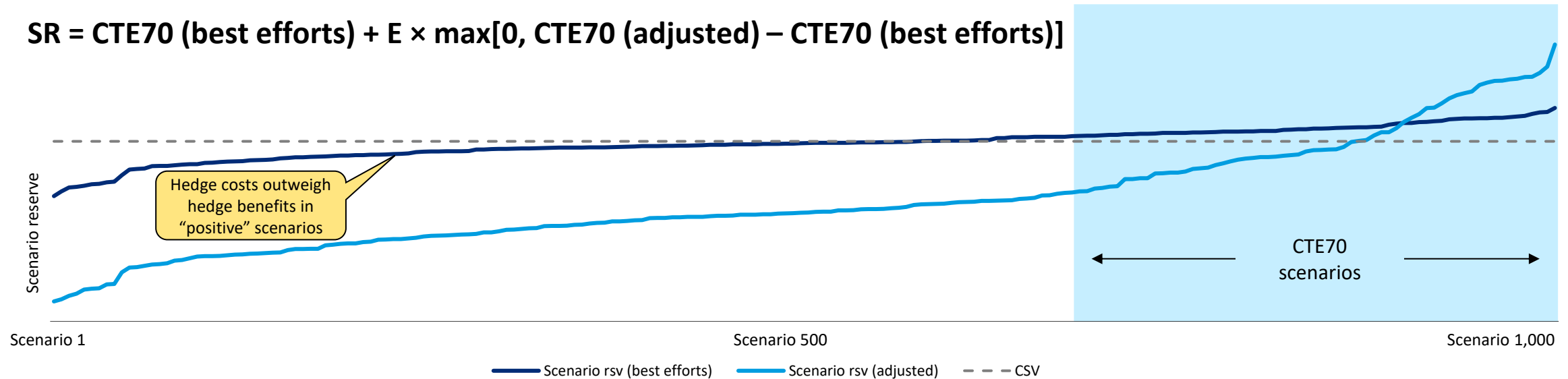
- No federal income tax or capital
- Reflect all product features and guarantees
- Expenses must be **fully allocated** (i.e., including overhead)
- While asset yields for existing assets are not prescribed, the **defaults for those assets are prescribed**
- Calculations must be performed **gross and net of reinsurance**, where all significant treaty terms are to be reflected

STOCHASTIC RESERVE (“SR”)

Scenario reserves are generated over enough scenarios to ensure that using additional scenarios would not materially affect the aggregate reserve

Illustrative

$$SR = CTE70 (\text{best efforts}) + E \times \max[0, CTE70 (\text{adjusted}) - CTE70 (\text{best efforts})]$$



SR components

CTE70 (best efforts)

- Scenario reserve calculation **reflects future hedging strategy**

CTE70 (adjusted)

- Scenario reserve calculation **only reflects future hedges supporting policy index credits** and existing hedge runoff

Error factor (E)

- Accounts for potential overstatement of the impact of the hedging strategy;
- Between 5% - 100% based on the model's ability to reflect the parameters of the hedging strategy

STOCHASTIC EXCLUSION TEST (“SET”)

A company can value a group of contracts under pre-PBR valuation frameworks if the group passes the Stochastic Exclusion Test

To pass the SET for a group of contracts, one of the following conditions must be met:

Condition	Frequency	Description
Stochastic Exclusion Ratio Test (“SERT”)	Annually	Ratio comparing the largest adjusted scenario reserve under 48 economic/mortality shock scenarios and a baseline scenario reserve. The ratio must be less than a threshold that is TBD
Stochastic Exclusion Demonstration Test	First year then every three years	Demonstration that the standalone stochastic reserve would not be greater than applicable requirements in VM-A, VM-C, and VM-V
SET Certification Method	First year then every three years	Certification that the group of contracts is not subject to material interest rate risk, mortality/longevity risk, or asset return volatility risk

Not eligible if there is a CDHS; certain payout annuities (excluding PRT) may be allowed to use pre-PBR frameworks without performing SET

May require modeling infrastructure to calculate scenario reserves as they would be calculated for VM-22 Stochastic Reserves

Not eligible for contracts with GLBs, future hedging strategies, or PRT business; can be demonstrated through CFT results using NY7 scenarios

Passing SET would reduce the corporate administrative burden, but may still require modeling functionality to calculate SR

DETERMINISTIC RESERVE (“DR”)

If the company does not choose to take the full SET, Deterministic Certification Option (“DCO”) offers an alternative path to reducing the calculation burden for eligible groups of contracts

- A group of contracts may elect the DCO and calculate a DR if all requirements are met
- Deterministic reserve calculation is consistent with the scenario reserve calculation
- The deterministic scenario used is scenario 12 found in Appendix 1 of VM-20
 - Consistent with VM-20 DR scenario

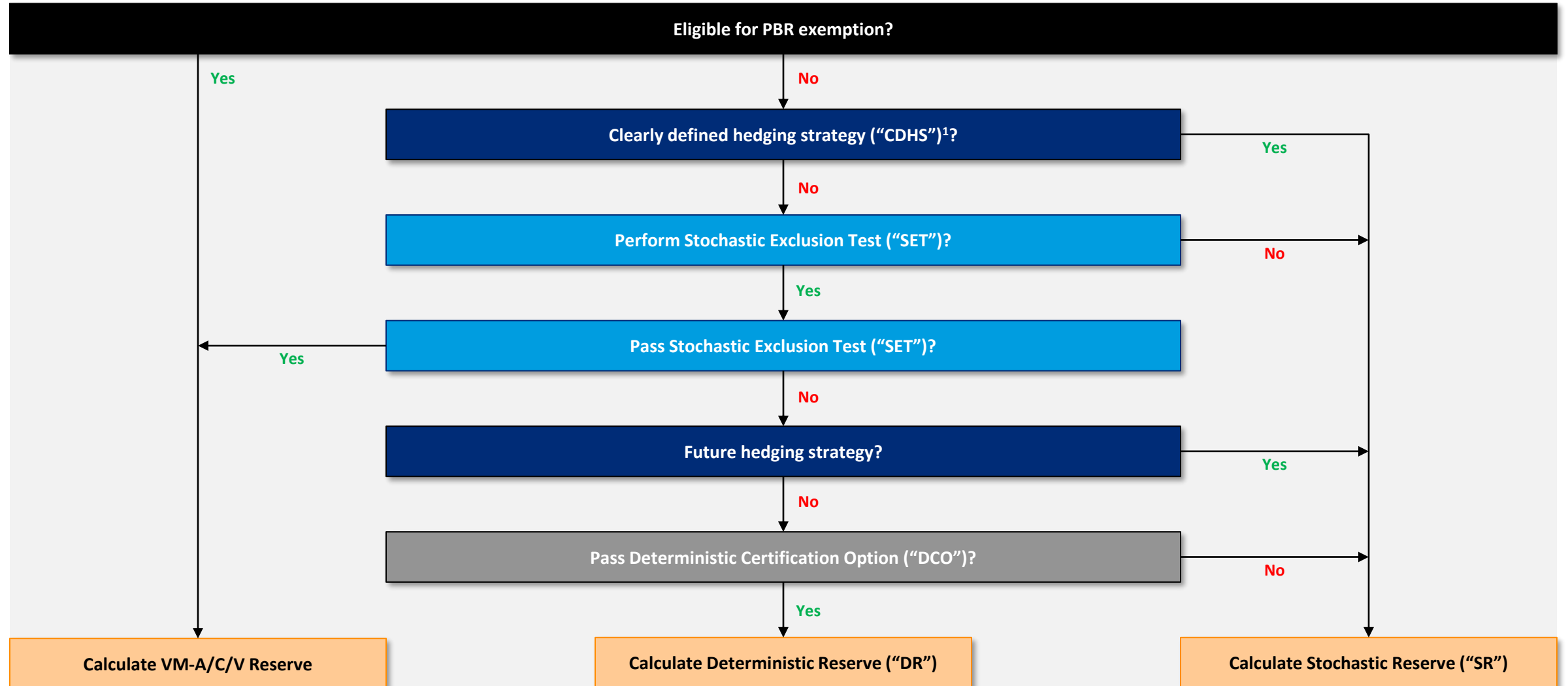
DCO requirements

- ✓ Certify economic conditions do not materially influence contract holder behavior
- ✓ Contracts are not supported by a reinvestment strategy containing future hedge purchases
- ✓ Pass modified SERT: 16 economic scenarios, 100% mortality only
- ✓ Disclose description of contracts and features in the certification

Companies should consider DCO for groups of policies that may be sensitive to mortality but not economics

VM-22 RESERVE FLOWCHART

A company can choose to value business under pre-PBR valuation frameworks (i.e., VM-A/C/V) if it passes the Stochastic Exclusion Test

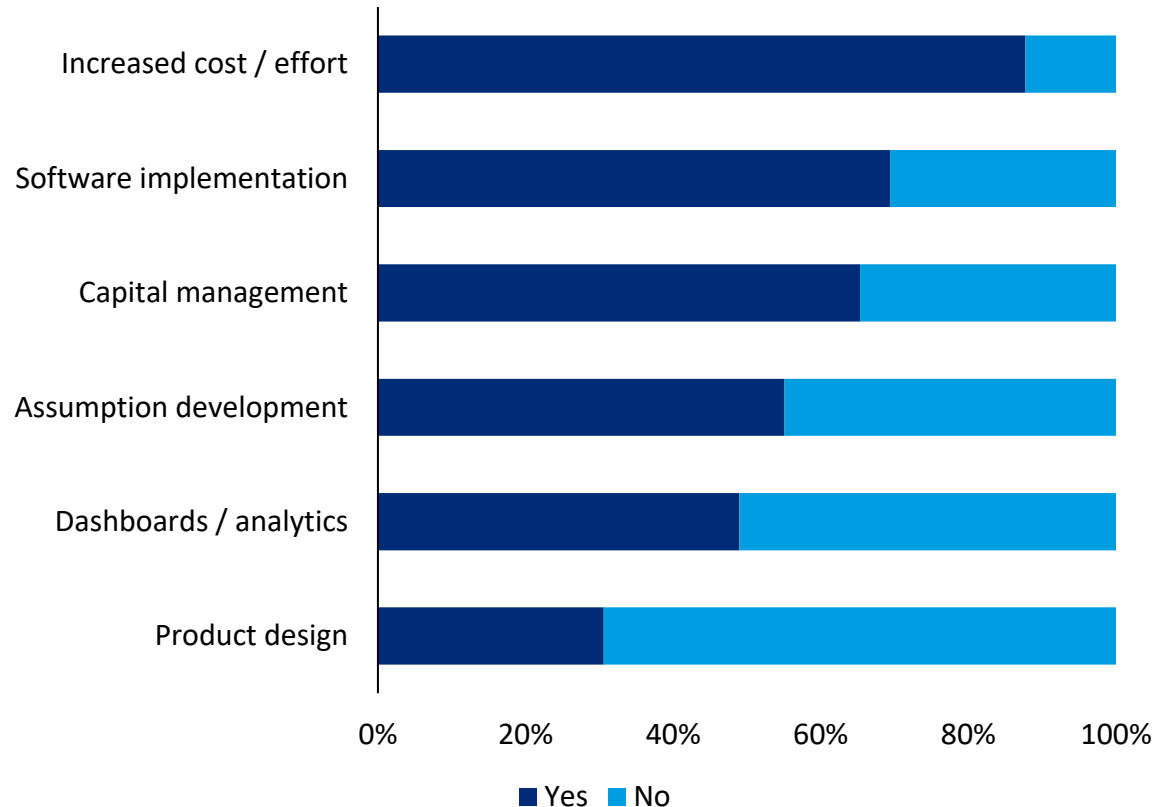


1. Future hedging strategies consisting only of hedges for index credits are not considered CDHS

RISKS AND CONSIDERATIONS

While the target date for start of transition period is a bit over a year away, companies are just beginning to evaluate the framework

Concern level with key risks



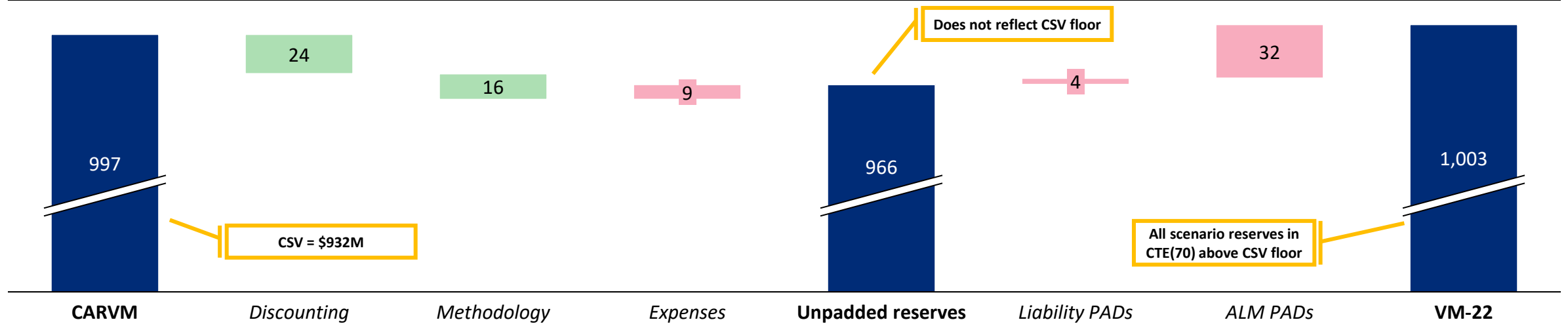
Other considerations

- Differences in **C3P1** between new/old valuation regime
- Impact of greatly more conservative **GOES scenario generator** on reserves
- **Income volatility** and its impact on hedging frameworks or development of alternative measures
- Additional **expenses spent on administration** (e.g., resources for VM-31 compliance)
- Vendors prioritizing VM-22 **software development** and optimization
- **Asset portfolio optimization** as a reserve management measure
- Implementation of cashflows (e.g., reinsurance risk charges, expenses) **priced as a percentage of reserves**
- Methodology to develop **margins to use for prudent assumption**

There remains a lot of uncertainty about what impact VM-22 will have on how insurance companies treat business under its scope

MODEL OFFICE RESERVE ATTRIBUTION: MYGA

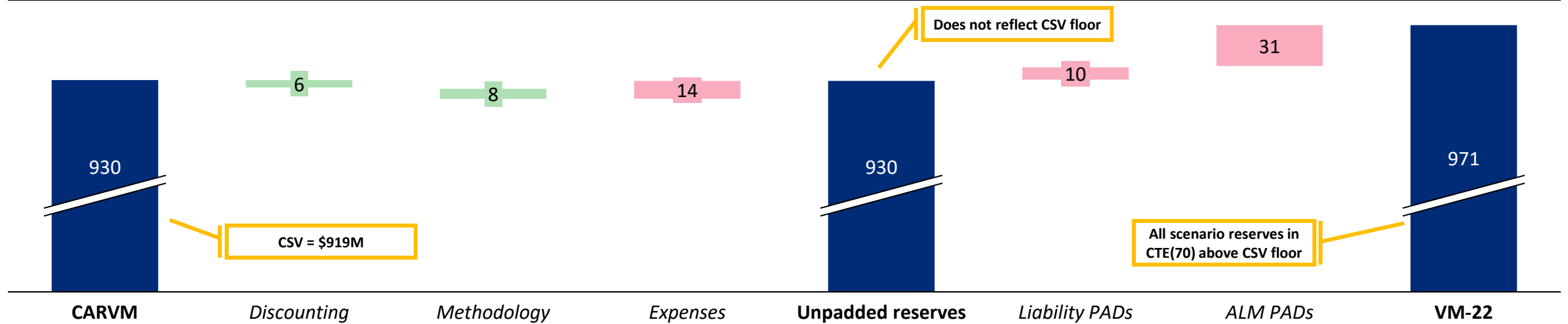
Reserve attribution	Change (\$)	Change (%)	Driver of impact
CARVM	\$ 997	100%	
<i>Discounting</i>	\$ (24)	(2.4)%	<i>Discount rates increasing from statutory valuation rates to modeled net asset yields</i>
<i>Best-estimate methodology</i>	\$ (16)	(1.6)%	<i>Largely offsetting impacts between introduction of ALM, explicit rate setting, and non-optimized p/h behavior</i>
<i>Expenses</i>	\$ 9	0.9%	<i>Expenses are not included under CARVM; company size and fixed expense allocation may be a significant differentiator</i>
<i>Liability PADs</i>	\$ 4	0.4%	<i>PAD levels on liability assumptions (e.g., mortality, surrenders); will vary company to company</i>
<i>ALM PADs</i>	\$ 32	3.3%	<i>Impact of implicit conservatism in going from CTE(0) to CTE(70), driven by potential for ALM mismatch</i>
VM-22 aggregate reserve	\$ 1,003	100.6%	



Expenses and implicit conservatism of using tail economic scenarios lead to slightly higher reserves

MODEL OFFICE RESERVE ATTRIBUTION: FIA

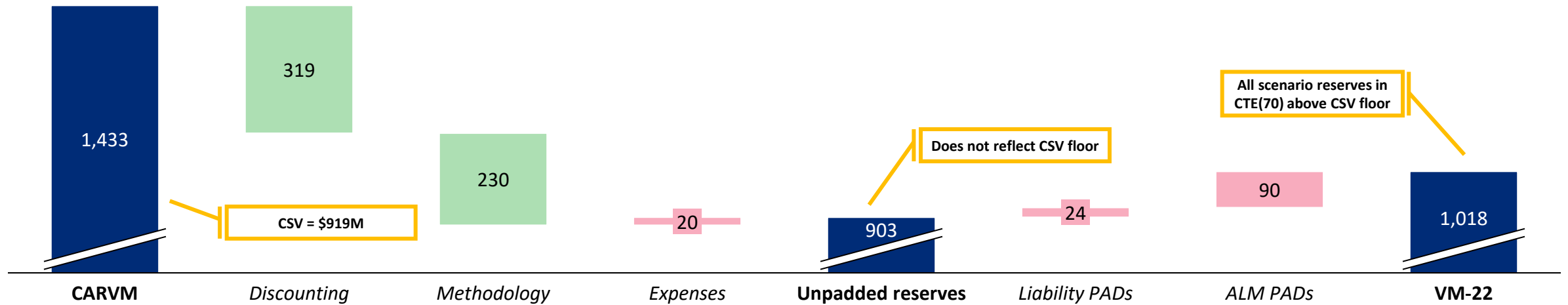
Reserve attribution	Change (\$)	Change (%)	Driver of impact
CARVM	\$ 930	100%	
<i>Discounting</i>	\$ (6)	(0.7)%	<i>Discount rates increasing from statutory valuation rates to modeled net asset yields</i>
<i>Best-estimate methodology</i>	\$ (8)	(0.9)%	<i>Largely offsetting impacts between introduction of ALM, stochastic equity / cap solves, and non-optimized p/h behavior</i>
<i>Expenses</i>	\$ 14	1.5%	<i>Expenses are not included under CARVM; company size and fixed expense allocation may be a significant differentiator</i>
<i>Liability PADs</i>	\$ 10	1.1%	<i>PAD levels on liability assumptions (e.g., mortality, surrenders); will vary company to company</i>
<i>ALM PADs</i>	\$ 31	3.3%	<i>Impact of implicit conservatism in going from CTE(0) to CTE(70), driven by potential for ALM mismatch</i>
VM-22 aggregate reserve	\$ 971	104.3%	



Expenses and implicit conservatism of using tail economic scenarios lead to slightly higher reserves

MODEL OFFICE RESERVE ATTRIBUTION: FIA WITH GLWB

Reserve attribution	Change (\$)	Change (%)	Driver of impact
CARVM	\$ 1,433	100%	
<i>Discounting</i>	\$ (319)	(22.3)%	<i>Initial asset net yields under VM-22 are significantly higher than non-elective statutory valuation rates under CARVM</i>
<i>Best-estimate methodology</i>	\$ (230)	(16.1)%	<i>Non-optimized policyholder behavior, especially WB utilization, is a key driver for a significant reduction in reserve</i>
<i>Expenses</i>	\$ 20	1.4%	<i>Expenses are not included under CARVM; company size and fixed expense allocation may be a significant differentiator</i>
<i>Liability PADs</i>	\$ 24	1.7%	<i>PAD levels on liability assumptions (e.g., mortality, WB utilization); will vary company to company</i>
<i>ALM PADs</i>	\$ 90	6.3%	<i>Impact of implicit conservatism in going from CTE(0) to CTE(70), driven by potential for ALM mismatch</i>
VM-22 aggregate reserve	\$ 1,018	71.0%	



Higher yields on assets and non-optimized policyholder behavior assumptions significantly contribute to reserve reduction

APPENDIX

MODEL OFFICE INPUT GRIDS

MODEL OFFICE INPUT GRIDS: MYGA

Product features and assumptions underpinning the model office used to calculate statutory reserves

Product features	
SC schedule	8%, 8%, 7%, 6%, 5%
FPW	10% of prior anniversary AV
MVA	None
GLWB rider	None
General	
Demographics	Issue ages: 50 (10%), 55 (20%), 60 (25%), 65 (25%), 70 (15%), 85 (5%) Gender: 50% male, 50% female
Strategy allocation	100% fixed account (5-year guarantee period); initial rate 4.2%
Premium	\$1B total; \$150K average policy size
Crediting rates	
VM-22	Asset NIER - 1% pricing spread
AG 33	4.2% current rate, 1% guar rate
Assets (VM-22)	
Initial investment allocation	50% 5-year BBB bonds, 5.4% annual gross yield 50% 7-year BBB bonds, 5.6% annual gross yield
Reinvestment allocation	10% 5-year bonds, 25% 7-year bonds, 35% 10-year bonds, 25% 20-year bonds, 5% 30-year bonds (50/50 split between AA and A)
Yield spreads	NAIC prescribed
Defaults	NAIC prescribed
Investment expenses	0.10%

Liability assumptions (best-estimate)	
Mortality	
Base mortality	100% of 2012 IAM Basic
Mortality improvement	Projection Scale G2, base year 2012
Lapse	
Base lapse	0.5%, 2%, 2%, 3%, 3%, 70%, 15% ultimate
Dynamic lapse	Additive interest-sensitive factor based on market rate (7Y UST – 50bps) Factor = $A * (MR - CR - SC/4)$, where A = 1 during SC period, 8 during shock year, 4 during shock year + 1, and 3 thereafter
Partial withdrawals	1.5% of AV per year
Annuitizations	0%
Expenses	
Per policy	75, inflated at 2.5% from 2015 to 2024, then inflated at 2% thereafter (same as SPA prescribed)
Per fund	7% of fund value (same as SPA prescribed)
VM-22 PADs	
Mortality	+10%, multiplicative
Lapse	+10%, multiplicative
Partial withdrawals	+200%, multiplicative
Expenses	+10%, multiplicative

MODEL OFFICE INPUT GRIDS: FIA

Product features and assumptions underpinning the model office used to calculate statutory reserves

Product features	
SC schedule	9%, 9%, 8%, 7%, 6%, 5%, 4%, 3%, 2%, 1%
FPW	10% of prior anniversary AV
MVA	None
GLWB rider	None
General	
Demographics	Issue ages: 50 (10%), 55 (20%), 60 (25%), 65 (25%), 70 (15%), 85 (5%) Gender: 50% male, 50% female
Strategy allocation	100% 1-year PTP (S&P 500); initial cap 8%
Premium	\$1B total; \$150K average policy size
Option budgets	
VM-22	Asset NIER - 1% pricing spread
AG 35	4.7% current OB, 0.5% guar OB
Assets (VM-22)	
Initial investment allocation	75% 10-year BBB bonds, 5.8% annual gross yield 25% 20-year BBB bonds, 6.2% annual gross yield
Reinvestment allocation	10% 5-year bonds, 25% 7-year bonds, 35% 10-year bonds, 25% 20-year bonds, 5% 30-year bonds (50/50 split between AA and A)
Yield spreads	NAIC prescribed
Defaults	NAIC prescribed
Investment expenses	0.10%

Liability assumptions (best-estimate)	
Mortality	
Base mortality	100% of 2012 IAM Basic
Mortality improvement	Projection Scale G2, base year 2012
Lapse	
Base lapse	0.5%, 2%, 2%, 3%, 3%, 3.5%, 4%, 4.5%, 5%, 5.5%, 50%, 15% ultimate
Dynamic lapse	Additive interest-sensitive factor based on market rate (7Y UST – 50bps) Factor = $A * (MR - CR - SC/4)$, where A = 1 during SC period, 8 during shock year, 4 during shock year + 1, and 3 thereafter
Partial withdrawals	1.5% of AV per year
Annuitizations	0%
Expenses	
Per policy	75, inflated at 2.5% from 2015 to 2024, then inflated at 2% thereafter (same as SPA prescribed)
Per fund	7% of fund value (same as SPA prescribed)
VM-22 PADs	
Mortality	+10%, multiplicative
Lapse	+10%, multiplicative
Partial withdrawals	+200%, multiplicative
Expenses	+10%, multiplicative

MODEL OFFICE INPUT GRIDS: FIA WITH GLWB

Product features and assumptions underpinning the model office used to calculate statutory reserves

Product features	
SC schedule	9%, 9%, 8%, 7%, 6%, 5%, 4%, 3%, 2%, 1%
FPW	10% of prior anniversary AV
MVA	None
GLWB rider	Rider charge: 1% of BB 12% simple rollup for up to 10 years
General	
Demographics	Issue ages: 50 (10%), 55 (20%), 60 (25%), 65 (25%), 70 (15%), 85 (5%) Gender: 50% male, 50% female
Strategy allocation	100% 1-year PTP (S&P 500); initial cap 8%
Premium	\$1B total; \$150K average policy size
Option budgets	
VM-22	Asset NIER - 1% pricing spread
AG 35	4.7% current OB, 0.5% guar OB
Assets (VM-22)	
Initial investment allocation	25% 10-year BBB bonds, 5.8% annual gross yield 75% 20-year BBB bonds, 6.2% annual gross yield
Reinvestment allocation	10% 5-year bonds, 25% 7-year bonds, 35% 10-year bonds, 25% 20-year bonds, 5% 30-year bonds (50/50 split between AA and A)
Yield spreads	NAIC prescribed
Defaults	NAIC prescribed
Investment expenses	0.10%

Liability assumptions (best-estimate)	
Mortality	
Base mortality	80% of 2012 IAM Basic
Mortality improvement	Projection Scale G2, base year 2012
Lapse	
Base lapse	0.5%, 1%, 1.5%, 2%, 2.5%, 2.5%, 2.5%, 2.5%, 3%, 3%, 20%, 10% ultimate
Dynamic lapse	Multiplicative ITM factor based on GLWB ITM (BB/AV) Factor = $(1/ITM)^3$ for $ITM > 1$, otherwise $\min[(1/ITM)^{1/3}, 1.1]$
Partial withdrawals	1.5% of AV per year before GLWB utilization; 100% of LIA after utilization
Annuitizations	0%
Expenses	
Per policy	100, inflated at 2.5% from 2015 to 2024, then inflated at 2% thereafter (same as SPA prescribed)
Per fund	7% of fund value (same as SPA prescribed)
VM-22 PADs	
Mortality	-10%, multiplicative
Lapse	-10%, multiplicative
Partial withdrawals	GLWB utilization rate +10-15% (depending on issue age), additive
Expenses	+10%, multiplicative

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