

Implementation of Principle-Based Reserves (PBR) For Life Products

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VM-20 Overview

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Old Statutory Valuation Framework

□ NAIC Model Laws and Regulations

- Intent is to create a national standard that results in uniformity among all states
- Requires 2/3 vote of the NAIC Executive and Plenary Committee
- Does not become law in a state until adopted by the state legislature
- Accreditation requires the state law to be “substantially similar” to the NAIC model
- Ultimate authority to adopt/modify the model law rests with each state

□ NAIC Actuarial Guidelines

- Is an interpretation of an existing model law or regulation
- Requires 2/3 vote of the NAIC Executive and Plenary Committee
- Is effective immediately upon NAIC approval; does not require adoption by the state legislature
- But has same authority as a law or regulation

- **The NAIC Standard Valuation Law (SVL) has been adopted in each state and is the ultimate authority for valuation requirements in each state.**



New Statutory Valuation Framework

- A new “Valuation Manual” (VM) has replaced the old structure of model laws and Actuarial Guidelines
- The VM provides the valuation requirements for policies subject to both PBR and non-PBR reserve requirements
- All future changes to valuation requirements will be effective immediately when amendments to the VM are adopted by the NAIC (won’t require state-by-state adoption)
- **In effect, the states have delegated their authority to the NAIC for future changes in valuation requirements (although states ultimately have final authority if they disagree with VM requirements).**

Comparison of Valuation Systems

Formula-Based

- ❑ Calculated using formula or factor for each policy
- ❑ Might not reflect all risks or contract benefits
- ❑ Uses industry average assumptions that are the same for all companies
- ❑ Assumptions are locked in at issue date

Principle-Based

- ❑ Model-based calculations for groups of policies
- ❑ Reflects all risks and risk management business practices
- ❑ Assumptions based on company experience and current economic conditions
- ❑ Assumptions can be unlocked to reflect changes in experience or changes in economic conditions



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Life PBR Adoption

- Valuation Manual (VM) became operative on 1/1/2017
 - ▣ All 50 states have adopted the VM
 - ▣ Three-year transition is permitted on all or a portion of new issues
 - ▣ Companywide exemption is optional if company meets criteria
- New York legislature adopted PBR in July of 2018
 - ▣ Optional for 2019 and 2020, must be implemented in 2021
 - ▣ NY has added a second formulaic floor (in addition to the Net Premium Reserve) that is a factor times the current CRVM

PBR for Life Insurance Products

- Defined in Section VM-20 of Valuation Manual
- Only applies to policies issued 1/1/2017 and later.
- Applies to all Life products except **credit life, industrial life, pre-need, and guaranteed issue.**
- All companies must implement PBR by 1/1/2020.
- 23 companies implemented VM-20 for some portion of their 2017 issues; 37 did so in 2018, an estimated 226 must do so in 2020



Life PBR Exemption

- ▣ Designed to address the concerns of small companies
- ▣ Allows the company to follow the prior formula-based approaches rather than VM-20.
- ▣ Must file request with commissioner by July 1 each year for the following calendar year
- ▣ Condition for exemption: company has less than \$300 million of ordinary life premiums in the prior calendar year, and the group has less than \$600 million of ordinary life premiums in the prior year.
- ▣ Policies excluded from exemption: ULSG policies with a material secondary guarantee

Minimum Reserve under VM-20

The VM-20 reserve is the greater of three components:

1. **Deterministic Reserve (DR) + Due and Deferred Premium Asset (DDPA)**
 - Based on a single economic scenario* and some prescribed assumptions
2. **Stochastic Reserve (SR) + DDPA**
 - Based on multiple stochastic economic scenarios* and some prescribed assumptions
3. **Net Premium Reserve (NPR)**
 - Formulaic reserve with fully prescribed assumptions

* An “economic scenario” is a prescribed path of future interest rate and equity return assumptions.

Minimum Reserve under VM-20, Cont.

- Must determine each component separately within three product groups, called “VM-20 Reserving Category” (Term, ULSG and All Other), and then do the “greater of” comparison within each product group.
- The VM-20 Reserve equals the sum of the reserve for each VM-20 Reserving Category.
- The company may elect to exclude one or more groups of policies from the SR and/or the DR requirements if prescribed exclusion tests are passed.

The Deterministic Reserve

- Company has the option to use one of two approaches (which are mathematically equivalent):
 - **Gross Premium Valuation method**: present value of benefits and expenses less the present value of premium and other inflows, using discount rates equal to net asset earned rates.
 - **Direct Iteration method**: Determine the amount of starting assets that produces a zero ending asset balance at the end of the projection period.
- Uses cash flow model to project revenue, benefits, and expenses.

The Deterministic Reserve

- Is an aggregate reserve, and the company can group policies into modeling cells to project future cash flows.
- Cash flows are projected under a single prescribed economic scenario (interest rate movements and equity returns).
- Projected asset cash flows ignore IMR amortizations, so any pre-tax IMR on the valuation date is subtracted from the modeled reserve



The Stochastic Reserve

- Cash flows are projected under multiple economic scenarios from a prescribed stochastic generator that randomly projects interest rate paths and equity returns.
- Closer to a “true” principle-based reserve, because it more adequately captures the risks related to the contract
- The process starts with an estimated value of the final reserve (i.e., starting assets) and then adjusts it for the present value of the greatest asset deficiency over the lifetime of the product, using a CTE70 metric (i.e., average of worst 30%)
 - A “Scenario Reserve” is calculated for each economic scenario = starting assets plus the largest discounted asset deficiency
 - The Stochastic Reserve = the average of the highest 30% of the Scenario Reserves.
- Any pre-tax IMR (PIMR) on the valuation date is subtracted

Economic Scenarios

- Prescribed Generator can be found on the SOA website
www.soa.org/research/software-tools/research-scenario.aspx
- Additional description of economic scenarios can be found in Appendix 1 of VM-20
- Companies will have the choice to run either the full 10,000 stochastic scenarios or one of the pre-selected subsets (1,000, 500, 200, or 50 scenarios)
- Companies are encouraged to use the greatest number of scenarios their capacity allows
- Each scenario will provide the same 19 investment return categories, including Treasury interest rate yield curves at different tenors and various total investment equity return paths

Aggregation & Stochastic Reserve

- Determine the number of subgroups for aggregation purposes. Must have a minimum of three: term, ULSG, and all other
- For each aggregation subgroup:
 - Calculate the Scenario Reserve for each scenario
 - Rank the Scenario Reserves from lowest to highest, and take the average of the highest 30% (CTE 70).
 - The 30% worst scenarios may be different for each aggregation subgroup
- Stochastic Reserve for each VM-20 Reserving Category = the sum of the aggregation subgroups within each of the three VM-20 Reserving Categories

Net Premium Reserve

- ❑ Determined on a seriatim basis for each policy
- ❑ Initially intended to comply with federal income tax code
- ❑ For Term and ULSG products:
 - NPR calculated per Sections 3.A –3.D of VM-20
 - Intended to be close to, but under, old formulaic CRVM reserve
- ❑ For Other Products:
 - NPR = Pre-VM formulaic CRVM reserve

Net Premium Reserve

- Assumptions – prescribed mortality, interest, lapse
 - Mortality could be unlocked with future CSO tables
 - Lapse rates could be unlocked
 - Interest rates will not be unlocked
- Floor of $\frac{1}{2} Cx$



Changes in VM-20 for 2019 and 2020

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Summary of Recent VM Changes

- NAIC must adopt by Summer National Meeting (early August) to be effective 1/1 of next year.
- Substantive changes adopted for 2019 VM include:
 - ▣ Guaranteed issue policies are not subject to VM-20
 - ▣ Handling of secondary guarantees
 - ▣ Clarification of the Deterministic Exclusion Test
 - ▣ Clarification of the ULSG NPR lapse rates



Summary of Recent VM Changes

- 65 APFs were adopted by LATF this past year in time to be reflected in the 2020 version of the VM. Most changes are non-substantive.
- Substantive changes adopted for the 2020 VM include:
 - Interim approach on YRT reinsurance cash flows: $\frac{1}{2} Cx$
 - Aggregation of mortality segments to determine level of credibility
 - Prescribed DR option payoff assumption for indexed benefits (based on option budget)
 - Seriatim basis to test post level term profits (not aggregate basis)
 - Revisions to the valuation of term riders
 - Adjustments when company experience is worse than applicable industry table
 - Increase CSO mortality rates for NPR if lower than anticipated mortality
- Can these changes be used for yearend 2019? Generally yes.

Modeling YRT Reinsurance Premiums

- Regulators are concerned with the wide variation in margins used to model YRT reinsurance premiums
- Five APFs have been submitted to address this concern
- LATF adopted an interim approach in June (APF 2019-39)
 - Ceded YRT reserve is set equal to $\frac{1}{2}$ CX used in NPR; only pre-reinsurance reserve is modeled (modeling of reinsurance cash flows is eliminated)
 - Is effective 1/1/2020, with optional 3-year carve out for 2017–2019 issues
- A field test is underway to test the impact of various alternatives
 - Will involve actual data from companies, and model office of consultant
 - Goal is to have a permanent solution effective on 1/1/2021

Aggregation of Mortality Segments

- Issue: To what degree can mortality segments be aggregated for the purpose of determining the level of credibility
- Providing additional guidance has been a concern of LATF for some time
- LATF adopted a proposal that permits aggregation for mortality segments (APF 2018-17)
 - Policies must be subject to a similar underwriting process
 - Determining of company experience rates for each mortality segment must follow a “top-down” or “bottom-up” approach that must reflect the impact of aggregate mortality results
 - Documentation must be provided in VM-31

VM-20 Revisions Under Discussion

- ❑ Permanent approach to model YRT reinsurance cash flows
- ❑ Individually underwritten certificates under group contract
- ❑ Treatment of term and group conversions
- ❑ Non-U.S. business ceded into U.S.
- ❑ Reflecting impact of accelerated underwriting programs



Possible Future VM-20 Revisions

- ❑ Replacing individual margins with aggregate margin
- ❑ Eliminating the Net Premium Reserve
- ❑ Changes to mortality assumption calculation, including permitting mortality improvement



Preparing for Regulatory PBR Reviews



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2018 Regulatory PBR Review Process

- List of questions sent to company prior to on-site examination
- Examination focused on:
 - PBR Governance (framework, roles and reports)
 - Model Governance (validation and controls, including samples, reviews, signoffs)
 - YRT Reinsurance Premiums
 - Post-level Term Profits
 - Accelerated Underwriting (description, scope, backtesting)
 - Mortality Aggregation
- Summary of findings for each company sent to VAWG for their review
- Summary of findings for each company sent to company management
 - Included a request for a formal response from management on action plan to address findings

2019 Regulatory PBR Review Process

- Expect 2019 Regulatory PBR Review Process to be similar
 - Questions from CA/TX sent to companies electing VM-20 in 2019
 - On site examinations for selected companies
- 2019 review will likely focus on:
 - Companies electing VM-20 in 2018 that didn't get on-site PBR Examination
 - Companies electing VM-20 for the first time in 2019

Key items expected for review of 2019 results

- Model governance documentation
- YRT Reinsurance premium assumption
- Mortality aggregation for credibility
- Seriatim testing of post level term profits

Preparation for PBR Reviews

- Early on, inform/educate Senior Management on their role in the PBR governance process
- Upgrade and Document Model Governance Process
- Establish formal PBR Governance process to
 - Calculate VM-20 reserve
 - Prepare VM-31 PBR Report
 - Monitor on-going changes to VM-20 and VM-31



Use 2020 VM Changes for YE2019 Reporting?

- Determine whether to incorporate 2020 VM changes for YE 2019
 - While not required for YE2019 reporting, 2020 VM changes reflect the preferred approaches that have been approved by the NAIC
 - Will need to comply with the VM 2020 changes next year anyway; provides greater consistency year to year
 - May help ease the work of the regulatory examination of YE 2019 results
 - Good idea to check with your domestic regulator before proceeding
- Examples of significant 2020 VM changes to consider
 - Aggregation of mortality segments to determine level of credibility
 - Prescribed DR option payoff assumption for indexed benefits (based on option budget)
 - Interim approach on YRT reinsurance cash flows: $\frac{1}{2} Cx$
 - Seriatim basis to test post level term profits (not aggregate basis)

Preparing the PBR Report (VM-31)

- Read the 2017 PBR Review Report from the NAIC
- Follow the numbering and order of the required items listed in VM-31
 - While not required, recommend starting with the 2020 VM version
 - Will help minimize number of pre-examination questions
- Use tables, graphs, and spreadsheets where feasible
- Leverage existing documentation, such as Actuarial Memorandum and model governance documents

Preparing the PBR Report (VM-31)

- Choose an actuary qualified in the same practice area with strong writing skills to peer review the PBR Actuarial Report, assessing it for readability and compliance with each requirement
- Review ASOP 41 (Actuarial Communications) when drafting the PBR Actuarial Report

Observations from Past PBR Reviews

- ❑ Found the reviews to be a positive experience.
- ❑ Don't always agree with conclusions of regulators and external auditors, but they are typically reasonable.
- ❑ Use the regulatory and external audit reviews as an opportunity to:
 - Improve your knowledge of VM-20 and VM-31
 - Express concerns with the current VM requirements as they relate to your company products and processes
 - Provide a learning experience for others in your company

Appendix: PBR Resources



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PBR Page on Academy Website

- Go to actuary.org and click on Principle-based Reserving (navigation bar on right)



OR

- www.actuary.org/content/pbr-practice
- Page includes a PBR Toolkit

Academy PBR Toolkit

ACADEMY PBR TOOLKIT

- [The Details Behind PBR Implementation](#)
- [Model Governance Checklist](#)
- [Model Governance Practice Note](#)
- [Life Principle-Based Reserves Under VM-20](#)
- [Principle-Based Reserves for Life Products](#)
- [Economic Scenario Generators](#)
- [Life PBR Assumptions Resource Manual](#)

NAIC RESOURCES

- [Valuation Manual 2018-2019 Comparison](#)
- [Valuation Manual](#), published January 2019
- [VM Maintenance Agenda](#)
- [SVL Model Law](#)
- [VM-20 / VM-22 Tables](#)
- [NAIC Impact Study of VM-20 on PBR for Life Insurance](#)
- [Life Actuarial \(A\) Task Force of the NAIC](#)
- [2017 PBR Review Report](#)



Academy PBR Toolkit (cont.)

ACADEMY COMMENTS ON PBR

- [Life Insurance Issues \(VM-20\)](#)
- [Variable Annuity Issues \(VM-21\)](#)
- [Fixed Annuity Issues \(VM-22\)](#)
- [Long Term Care Issues \(VM-25\)](#)
- [RBC Requirements Under PBR](#)
- Read [reports](#) from Life Practice Council groups to the NAIC on the principle-based project.

ACADEMY PUBLICATIONS ON PBR

- [SVL Legislation in Brief](#)
- [Life Perspectives](#)



Academy PBR Toolkit (cont.)

PBR PRACTICE NOTES

[Life Principle-Based Reserves Under VM-20](#) (January 2019)

[Model Governance](#) (April 2017)

[Common Practices of Examining Actuaries Involved in Statutory Financial Solvency Examinations of Life and Health Insurers](#)

[More Practice Notes](#)

ACADEMY PRESENTATIONS AND STATEMENTS ON PBR

[PBR for Regulatory Actuaries](#)

[More Presentations](#)

[Read all Academy public statements related to PBR](#)

