



AMERICAN ACADEMY *of* ACTUARIES

Update to Actuarial Guideline DIS from the American Academy of Actuaries' Life Reserves Work Group

Presented to the National Association of Insurance Commissioners' Life and Health Actuarial Task Force

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**ACTUARIAL GUIDELINE DIS
DOCUMENTATION AND DISCLOSURE REQUIREMENTS WHEN DETERMINING RESERVES BASED
ON THE PRINCIPLES-BASED LIFE RESERVES MODEL REGULATION**

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I. Purpose and Scope

This Guideline provides documentation and disclosure requirements for establishing reserves for policies subject to the Principles-based Reserves for Life Products Model Regulation (referred to throughout this Guideline as the “Model Regulation.”). Documentation and disclosure regarding reserve valuation assumptions for other supplemental benefits and riders not directly identified in the scope are to be consistent with the requirements defined by this Guideline.

II. Definitions

Definitions used in this Guideline are specified in the Model Regulation.

III. General Documentation and Disclosure Requirements.

A. Actuarial Report ~~Memorandum~~

The Model Regulation requires the actuary to prepare an Actuarial Report ~~Memorandum to that~~ documents the key modeling decisions made by the Actuary, including a description of the valuation assumptions and methods, as well as portraying the results including any results of applicable sensitivity tests. The Report ~~Memorandum~~ shall include:

1. All items required by Section 6.A.1. of A description of the blocks of policies subject to the Model Regulation.
2. ~~A comparison of the Deterministic Reserve to the Stochastic Reserve, including the distribution of the Scenario Reserves and the result of applying the CTE risk level.~~
2. All items required by Sections III, IV, V, VI, and VII of this Guideline.
3. Additional analytics as required by the NAIC or Actuarial Standards of Practice.

~~B. Analysis of Aggregate Assumption Margin for Deterministic Reserve~~

~~The actuary shall quantify the aggregate Margin in the Deterministic Reserve by:~~

~~3. the impact of aggregation at least once every three years, and in the current year regardless of the three year requirement if the company has made a material change in its risk profile, such as buying or selling a block of business, or entering into (or canceling) a reinsurance arrangement covering the policies subject to the Model Regulation.~~

~~4. The actuary can use reasonable approximations when performing this demonstration, but must disclose the nature of the approximations used and the rationale for why the approximations are appropriate.~~

D.B. Stochastic-~~Stochastic Modeling Reserve~~ Exclusion:

Subsection (H)(2) of Section 7 of the Model Regulation allows the actuary to exclude certain groups of policies from the Stochastic Reserve requirement. A complete demonstration supporting the exclusion must be provided in the initial exclusion year and at least once every three calendar years subsequent to the initial exclusion. If, as of the end of any calendar year, the actuary determines the Stochastic Reserve will exceed the Deterministic Reserve for the group of policies, the exclusion shall be discontinued and the Stochastic Reserve shall be held.

The demonstration should:

- ~~1. indicate a reasonable assurance that the Stochastic Reserve will not be greater than the Deterministic Reserve during the current calendar year plus two additional calendar years;~~
- ~~2. provide sufficient supporting information that an experienced independent actuarial reviewer can assess the reasonableness of the exclusion; and~~
- ~~3. provide an effective evaluation of the residual risk exposure resulting from risk mitigation techniques such as hedge instruments and reinsurance~~

Examples of methods available to demonstrate that the exclusion requirements are met for a group of policies include but are not limited to:

1. Analyzing a sufficient number of the required stochastic scenarios or a broad range of deterministic scenarios selected by the actuary to demonstrate that the Stochastic Reserve would be less than the Deterministic Reserve.
2. Demonstrating that any risk characteristics that would otherwise cause the Stochastic Reserve to exceed the Deterministic Reserve have been: a) hedged; b) immunized by investment strategy; c) reinsured; or d) passed on to the policyholder by contract provision.

Any demonstration shall take into account whether changing conditions over the current and two subsequent calendar years would be likely to change the conclusion to exclude the group of policies from the Stochastic Reserve requirement.

C. Reliability of Discount Rates. As a test of the consistency between the Discount Rates and the investment process being modeled, the actuary shall perform the following calculation:

1. For a selected Scenario and Asset Segment, set the starting asset amount exactly equal to the Scenario Reserve for that Asset Segment (which is likely to be different than the starting asset amount used to determine the Scenario Reserve).
2. Project the accumulated assets to the end of the Projection Period using the same model and assumptions used to calculate the Scenario Reserve.
3. Discount the value in C.2. to the valuation date using the path of Discount Rates used to calculate the Scenario Reserve, and add the amount to the Scenario Reserve.
4. Provide an explanation if the amount in C.3. is materially different than the Scenario Reserve.

[Drafting Note: the NAIC will determine the frequency of the test and the Scenario to be used.]

D. Treatment of Non-Guaranteed Elements, Reinsurance Agreements and Revenue Sharing

[Drafting Note: it is anticipated that disclosure and documentation requirements will be incorporated in this Guideline for these items.]

IV. Documentation and Disclosure Requirements for Setting Mortality Assumptions

A. General Documentation Requirements

1. The **Memorandum Report** shall include any material considerations that the actuary considers necessary to understand the development of mortality assumptions for the statutory valuation even if such considerations are not explicitly mentioned in this section. The documentation should be explicit when material judgments were required and such judgments had to be made without supporting historic experience.

The documentation shall:

- a. Explain the rationale for the grouping of policies into different segments for the determination of mortality assumptions and characterize the type and quantity of business that constitute each segment.
 - b. Describe how each segment was determined to be a plus or minus segment. A business segment is referred to as a plus (minus) segment if mortality must be increased (decreased) to provide a Margin.
 - c. **Plus Segments.** For a plus segment, the documentation shall also discuss the examination of the mortality data for the underreporting of deaths and experience by duration, and describe any adjustments that were made as a result of the examination.
 - d. **Minus Segments.** For a minus segment the documentation shall also discuss how the mortality deviations on minus segments compare to those on any plus segments. To the extent the overall margin is reduced, the documentation should include support for this assumption.
2. The actuary shall provide an actual to expected analysis at least once every three years.

B. Specific Documentation Requirements

1. Experience Mortality:

- a. Summarize any mortality studies used to support mortality assumptions, quantify the exposures and corresponding deaths, describe the important characteristics of the exposures and comment on unusual data points or trends;
- b. Document the age of the experience data used to determine expected mortality curves and comment on the relevance of the data;
- c. Describe how the expected mortality curves compare to recent historic experience and comment on any differences;
- d. If the study was not done on a similar business segment, identify the differences in the business segment on which the data was gathered and the business segment on which the data was used to determine mortality assumptions for the statutory valuation. Describe how these differences were reflected in the mortality used in modeling;
- e. Explain how the curve reflects the wearing off of underwriting over time;
- f. Discuss any assumptions made on mortality improvements, the support for such assumptions and how such assumptions adjusted the modeled mortality;
- g. Any other relevant important information concerning any adjustments to the experience mortality for changes in the mortality assumption;
 - i. Explain the rationale for any adjustment,
 - ii. Document, describe and summarize any studies used to support the adjustment,
 - iii. Document the mathematics used to adjust the mortality,
 - iv. Any other relevant important information concerning any adjustments to the experience mortality for changes in the mortality assumption;
- h. Identification and quantification of any changes in mortality assumptions from the prior year;

i. Any other relevant important information concerning the mortality assumption.

2. Results of Credibility Analysis:

The MemorandumReport shall include the result of the credibility analysis used to adjust experience mortality curves.

3. Valuation Margins:

The MemorandumReport shall include documentation of the determination and application of valuation Margins applied to determine a prudent best estimate assumption.

4. Valuation Mortality Table:

The MemorandumReport shall document the rationale and results of the analysis used in the selection of the mortality table(s). The MemorandumReport shall include a comparison of the mortality rates of the Prudent Best Estimate mortality assumption with the selected Commissioner's Standard mortality table.

5. Additional Adjustments to Mortality Curves

The MemorandumReport shall:

- a. Explain the rationale for any adjustment.
- b. Document, describe and summarize any studies used to support the adjustment.
- c. Document the mathematics used to adjust the mortality.
- d. Provide any other relevant important information concerning any adjustments to the experience mortality for changes in the mortality assumption.

V. Documentation and Disclosure Requirements for Setting Policyholder Behavior Assumptions

A. General Documentation Requirements

1. The MemorandumReport shall include any material considerations that the actuary considers necessary to understand the development of policyholder behavior assumptions even if such considerations are not explicitly mentioned in this section. The documentation should be explicit when material judgments were required and such judgments had to be made without supporting historic experience.
2. The actuary shall provide an actual to expected analysis aAt least once every three years.

B. Specific Documentation Requirements

The MemorandumReport shall disclose/document the following items with respect to policyholder behavior assumptions:

1. The premium persistency, lapse, withdrawal and other policyholder behavior assumptions used and any changes in these assumptions since the last valuation;
2. A description of the process used to establish the prudent best estimate assumptions for policyholder behavior, and any change in process since the last valuation;
3. If the actuary determines that a previously defined set of policyholder behavior assumptions is still appropriate, a description of the experience and analysis that led to that conclusion;
4. A description of the framework for assigning assumptions to policies in the deterministic reserve calculation and in the stochastic reserve calculation, and any changes in the framework since the last valuation. This description should indicate how the actuary concluded that further refinement in granularity of the framework would not materially impact the reserves;
5. A description of the sources of data used to develop PBE assumptions including recent historical company experience and relevant industry data, if any. This description should include commentary on the reasonableness and appropriateness of the data that were used;
6. A description and rationale of the assumptions used, and the results of sensitivity tests that underlie the PBE premium patterns. Sensitivity tests must include, but are not limited to, the following premium patterns:
 - a. No further premiums are paid; coverage terminates according to the contract provisions;
 - b. Minimum premium scenario: Each year the policyholder pays the minimum premium required to keep the policy in force until the end of the year. When the minimum premium is positive, it is reasonable to

- assume that some policyholders fail to pay the minimum premium, especially when the minimum premium for the current year is greater than the premium actually paid in the prior year. If the minimum premium is increasing substantially compared to the prior year premium, it is reasonable to assume a “shock lapse”, for example where the minimum premium has been zero for a period of years and the next minimum premium is substantial. These non-payment lapse assumptions should be consistent with lapse experience on policies where no nonforfeiture option is available;
- c. Pre-payment of premiums – Single premium case. Policyholders may elect to pay all of their premiums ahead of schedule. In this case the minimum premium will be zero and no non-payment lapses would be assumed. However, if the value of the cash surrender value is roughly equivalent to the value of the future death benefits (assuming no further premiums), then it would be reasonable to assume some policyholders will elect to surrender their policies. If the cash surrender value is substantially less than the value of the death benefits, it would be reasonable to assume that few or none would surrender their policies;
 - d. Pre-payment of premiums – Level premium case. Policyholders may elect to pay a level premium that is guaranteed to keep the policy in force until the policyholder’s death. Typically, in this case, the minimum premium will be zero followed by annually increasing premiums. However, it is reasonable to assume that some policyholders will continue the premium pattern that they have already established. It will be important to consider both of these premium payment scenarios since the value of the pre-payment option will depend on future interest rates compared to any implicit or explicit interest rates guarantee. Whenever the minimum premium is zero, surrender assumptions would be similar to those described for the single premium case.
7. A description of the margins for adverse deviation included in withdrawal assumptions and the basis of determining these margins.
 8. A description of the mechanism, if any, for varying withdrawal assumptions in response to changes in interest rates.
 9. A description of the mechanism, if any, for varying premium assumptions in response to changes in interest rates.
 10. A description of changes in premium assumptions and withdrawal assumptions related to the treatment of non-guaranteed elements in the reserve calculations.
 11. ~~A description of the margins for adverse deviation included in withdrawal assumptions and the basis of determining these margins~~An explanation of how assumptions were set beyond the point where fully credible relevant experience was available.

VI. Documentation and Disclosure Requirements for Setting Expense Assumptions

A. Documentation Requirements

The ~~Memorandum Report~~ shall disclose/document the rationale and support for the expense assumptions and shall include the following items:

1. ~~A The Company should reconcile~~reconciliation of actual expenses to those used for valuation purposes. A validation tool is provided in subsection B below;
2. ~~There may be circumstances where exceptions to the expense considerations are justified. Such exceptions should occur infrequently and be well documented. Any exceptions that result in a change to the methodology as outlined in Actuarial Guideline PBE should be discussed with and approved by a company’s state of domicile.~~
[Drafting note: Additional details may be needed]
- 3.2. The methodology used to allocate expenses to the policies subject to the Model Regulation.
- 4.3. The methodology used to apply the allocated expenses within the Cash Flow Model.

B. Validation of Expense Assumptions to Actual Data.

The actuary shall prepare a demonstration that the appropriate level of fully allocated expenses (from the annual statement) is reflected in the valuation expense assumptions-.

- 4-The following Exhibit must be completed annually.

A) Expenses	Prior Year Actual	Current Year Actual	Current Year Modeled *
(1) Exhibit 2 – General Expenses			
(2) Exhibit 3 – T, L & F's			
(3) Expenses from Plans and Policies Not Covered in Model <u>included in (1) & (2)</u>			
(4) Nonrecurring Expenses That Have Occurred Prior to Valuation <u>included in (1) & (2)</u>			
(5) Acquisition Expenses That Have Occurred Prior to Valuation <u>included in (1) & (2)</u>			
(6) Acquisition Expenses and Significant Non-recurring Expenses that are Expected to Occur <u>in the Next Calendar Year after the valuation</u>			
(7) Equals (1) + (2) – (3) – (4) – (5) + (6)			
B) Commissions			
(8) Commissions (Direct and Assumed Business)			
(9) Reinsurance Expenses in Ex. 1, Part 2 that are not included elsewhere			
(10) Commissions from Plans and Policies Not Modeled <u>included in (8) & (9)</u>			
(11) Commissions from Model Plans that are Paid Prior to Valuation <u>included in (8) & (9)</u>			
(12) Equals (8) +(9)– (10) – (11)			

* Current year modeled expenses are calculated by applying the model unit expenses to the actual average in force of the plans that are modeled.

2 Instructions:

1. Exhibit 2, Line 15, Column 1.
2. Exhibit 3, Line 10, Column 1.
3. Expenses in Item (1) and Item (2) that are from plans and policies not covered in the model for principles-based reserves. Expenses that cannot be allocated to specific plans should be prorated based on methods described in this document and fully disclosed.
4. Expenses in Item (1) and Item (2) but not included in Item (3) that are nonrecurring expenses and have occurred prior to the end of the year valuation date.
5. Expenses in Item (1) and Item (2) but not included in Item (4) that are acquisition expenses and have occurred prior to the end of the year valuation date. Expenses that cannot be allocated easily to acquisition expenses should be prorated based on methods described in this document and fully disclosed.

6. Expenses of the type mentioned in Item (4) and Item (5) that are acquisition expenses and significant non-recurring expenses and are expected to occur in the next calendar year. Allocations should be based on methods described in this document and fully disclosed.
7. Exhibit 1, Part 2, Line 31, Column 3 and Line 26.2, Column 3.
8. Reinsurance Expenses in Exhibit 1, Part 2 that are not included elsewhere in the model for principles-based reserves. These reinsurance expenses should only include expenses from plans covered in the model for principles-based reserve.
9. Commissions and expenses listed in Item (8) and Item (9) that are from plans and policies not covered in the model for principles-based reserves. Commissions and expenses including bonuses that cannot be allocated to specific plans should be prorated based on methods described in this document and fully disclosed.
10. Commissions and expenses listed in item (8) that are from plans in the model but paid prior to the end of the year valuation date. Commissions and expenses including bonuses that cannot be allocated to specific plans should be prorated based on methods described in this document and fully disclosed.

VII. Documentation and Disclosure Requirements for Setting Asset Assumptions

- A. The Memorandum Report shall disclose/document the rationale and support for the asset assumptions and shall include at least the following items:
 1. The asset investment strategy used to project and reinvest asset cash flows, and certification that it is consistent with the company's current investment strategy;
 2. Investment and disinvestment assumptions;
 3. Asset default assumptions;
 4. Investment expense assumptions;
 5. Bond call function;
 6. Mortgage prepayment function;
 7. Determining market value for assets sold due to disinvestment strategy;
 8. Grouping of general account equity investments for modeling;
 - 8.9. Grouping of separate account funds and subaccounts for modeling;
 10. Interest rate and equity return scenarios used, including real estate and other non fixed income assets.
 11. Exposure to foreign currency fluctuations.
- B. Additional disclosure items to be included in the Memorandum Report:
 1. Scenarios. A description of the methods used to generate stochastic interest rates, equity performance, and separate account fund performance, and the results of calibration if required;
 2. Asset Segments. Description of the asset segments;
 3. Starting Assets. For each asset segment, the amount and types of assets used in the Cash Flow Model, and the method and rationale for selecting the types of assets used, ~~the rationale of using the total starting asset amount if materially different from the Reported Reserve;~~
 4. Net Asset Earned Rates. For each asset segment, a summary of the path of Net Asset Earned Rates calculated for the Deterministic Reserve;

5. Embedded Spread in Starting Assets.

~~The actuary shall calculate and disclose in the documentation the number of basis points (spread over Treasuries) that would need to be added to the Treasury yield curve at the valuation date to discount the projected cash flows from the Starting Assets of each Asset Segment to equal the approximate market values on that date.~~

[Drafting Note: This disclosure is intended to provide regulators and peer reviewers a tool to compare, from a capital markets' perspective, the level of risk embedded in one company's Starting Asset portfolio to that of other companies' portfolios or of particular asset classes in the marketplace. It may also provide a basis for comparison to the actuary's prudent best estimate default cost assumptions; however, such a comparison has

~~limitations in that this risk measure reflects all sources of risk, not just defaults. Further, the existence of this measure does not indicate an intent that long-term estimates of default costs should fluctuate significantly from period to period based on movements in market values. Finally, certain calculation mechanics for this measure still need to be finalized by the LRWG with the goal of making this measure as useful as possible.]~~

6.5. Hedging Certification and Documentation

The actuary must provide a certification that the values for E, CTE Amount (adjusted) and CTE Amount best efforts) were calculated using the process defined in the Model Regulation and other applicable regulations and guidelines, and the assumptions used in the calculations were reasonable for the purpose of determining the Reported Reserve. The actuary must document the method(s) and assumptions (including data) used to determine CTE Amount (adjusted) and CTE Amount (best efforts) and maintain adequate documentation as to the methods, procedures and assumptions used to determine the value of E.

The actuary must provide a certification as to whether the Clearly Defined Hedging Strategy is fully incorporated into the ~~stochastic~~ cash flow model and any supplementary analysis of the impact of the hedging strategy on the Reported Reserve. The actuary must document the extent to which elements of the hedging strategy (e.g., time between portfolio rebalancing) are not fully incorporated into the ~~stochastic~~ cash flow model and any supplementary analysis to determine the impact, if any. In addition, the actuary must provide a certification and maintain documentation to support the certification that the hedging strategy designated as the Clearly Defined Hedging Strategy meets the requirements of a Clearly Defined Hedging Strategy including that the implementation of the hedging strategy in the stochastic cash flow model and any supplementary analysis does not include knowledge of events that occur after any action dictated by the hedging strategy (i.e. the model cannot use information about the future that would not be known in actual practice.).

A financial officer of the company (e.g., Chief Financial Officer, Treasurer or Chief Investment Officer) or a person designated by them who has direct or indirect supervisory authority over the actual trading of assets and derivatives must certify that the hedging strategy meets the definition of a Clearly Defined Hedging Strategy and that the Clearly Defined Hedging Strategy is the hedging strategy being used by the company in its actual day to day risk mitigation efforts.