



## ACTUARIAL STANDARDS BOARD

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● EXPOSURE DRAFT ●

**Proposed  
Actuarial Standard  
of Practice**

**Pricing of Life Insurance and Annuity Products**

**Comment Deadline:  
August 31, 2016**

**Developed by the  
Life Insurance and Annuity Pricing Task Force  
of the Life Committee of the  
Actuarial Standards Board**

**Approved for Exposure by the  
Actuarial Standards Board  
March 2016**

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**TABLE OF CONTENTS**

Transmittal Memo	iv
Section 1. Purpose, Scope, Cross References, and Effective Date	1
1.1 Purpose	1
1.2 Scope	1
1.3 Cross References	1
1.4 Effective Date	1
Section 2. Definitions	2
2.1 Model Framework	2
2.2 Model Point	2
2.3 Pricing	2
2.4 Profitability Analysis	2
2.5 Profitability Metric	2
2.6 Risk Capital	2
2.7 Sensitivity Analysis	2
2.8 Stochastic Analysis	2
Section 3. Analysis of Issues and Recommended Practices	2
3.1 Considerations for the Actuary Prior to Beginning the Pricing Exercise	2
3.2 Selecting Profitability Metrics	3
3.2.1 Profitability Metrics	3
3.2.2 Considerations in Selecting Profitability Metrics	3
3.3 Developing the Model Framework	3
3.4 Pricing Assumptions	4
3.4.1 Consistency of Assumptions	4
3.4.2 Experience Reflected in Setting Assumptions	4
3.4.3 Assumption Setting	5
3.4.4 Capital Market Assumptions	5
3.5 Cost of Risk	6
3.5.1 Assumption Margins	6
3.5.2 Risk Capital	6
3.5.3 Sensitivity Analysis	6
3.5.4 Stochastic Analysis	6
3.6 Pricing Controls	6
3.7 Reliance on Data or Other Information Supplied by Others	7
3.8 Documentation	7
Section 4. Communications and Disclosures	7
4.1 Communication and Disclosure	7
4.2 Disclosures Concerning Pricing	7

**EXPOSURE DRAFT—MARCH 2016**

**APPENDIX**

Appendix—Background and Current Practices	8
Background	8
Current Practices	9

**EXPOSURE DRAFT—MARCH 2016**

March 2016

**TO:** Members of Actuarial Organizations Governed by the Standards of Practice of the Actuarial Standards Board and Other Persons Interested in the Pricing of Life Insurance and Annuity Products

**FROM:** Actuarial Standards Board (ASB)

**SUBJ:** Proposed Actuarial Standard of Practice (ASOP)

This document contains the exposure draft of a proposed actuarial standard of practice, *Pricing of Life Insurance and Annuity Products*. Please review this exposure draft and give the ASB the benefit of your comments and suggestions. Each response will be acknowledged, and all responses will receive appropriate consideration by the drafting committee in preparing the final document for approval by the ASB.

The ASB accepts comments by either electronic or conventional mail. The preferred form is e-mail, as it eases the task of grouping comments by section. However, please feel free to use either form. If you wish to use e-mail, please send a message to **comments@actuary.org**. You may include your comments either in the body of the message or as an attachment prepared in any commonly used word processing format. **Please do not password protect any attachments. If the attachment is in the form of a PDF, please do not “copy protect” the PDF.** Include the phrase “ASB COMMENTS” in the subject line of your message. Please note: Any message not containing this exact phrase in the subject line will be deleted by our system’s spam filter. Also please indicate in the body of the e-mail if your comments are being submitted on your own behalf or on behalf of a company or organization.

If you wish to use conventional mail, please send comments to the following address:

Pricing of Life Insurance and Annuity Products Exposure Draft  
Actuarial Standards Board  
1850 M St., Suite 300  
Washington, DC 20036-5805

The ASB posts all signed comments received to its website to encourage transparency and dialogue. Unsigned or anonymous comments will not be considered by the ASB nor posted to the website. The comments will not be edited, amended, or truncated in any way. Comments will be posted in the order that they are received. Comments will be removed when final action on a proposed standard is taken. The ASB website is a public website, and all comments will be available to the general public. The ASB disclaims any responsibility for the content of the comments, which are solely the responsibility of those who submit them.

**Deadline** for receipt of responses in the ASB office: **August 31, 2016**

## EXPOSURE DRAFT—MARCH 2016

### Background

The ASB recently reviewed the completeness of Actuarial Standards of Practice (ASOPs) for all practice areas and asked the Life Committee to consider whether an ASOP addressing life insurance and annuity pricing principles would be appropriate. Casualty and Health areas have guidance on ratemaking. In October 2014, the ASB Life Committee distributed a Request for Comments regarding an ASOP focused on life insurance and annuity pricing. Sixteen comments were received. Most of the comments supported the drafting of such an ASOP.

The pricing of products is one of the most important functions actuaries perform. Therefore, the ASB Life Committee believes that the profession would be well served by an ASOP providing guidance regarding life insurance and annuity product pricing. The ASB agreed and approved the creation of an exposure draft.

The ASB appreciates the comments that were made in response to the *Request for Comments – Life Insurance and Annuity Pricing ASOP*. The comments were carefully considered in the preparation of this exposure draft.

### Request for Comments

The ASB would appreciate comments on the draft ASOP and would draw the reader's attention to the following areas in particular:

1. Does the draft ASOP provide appropriate guidance to the actuary when providing actuarial services related to the pricing of life insurance and annuity products?
2. Given the range of roles actuaries may have in the pricing of life insurance and annuity products, is the scope of the draft ASOP appropriate?
3. Does the draft ASOP address the range of products and pricing methodologies used in the industry?
4. Are the disclosures required in section 4 appropriate?

The ASB voted in March 2016 to approve this exposure draft.

**EXPOSURE DRAFT—MARCH 2016**

Life Insurance and Annuity Pricing Task Force

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*The Actuarial Standards Board (ASB) sets standards for appropriate actuarial practice in the United States through the development and promulgation of Actuarial Standards of Practice (ASOPs). These ASOPs describe the procedures an actuary should follow when performing actuarial services and identify what the actuary should disclose when communicating the results of those services.*

**PROPOSED ACTUARIAL STANDARD OF PRACTICE  
PRICING OF LIFE INSURANCE AND ANNUITY PRODUCTS**

**STANDARD OF PRACTICE**

Section 1. Purpose, Scope, Cross References, and Effective Date

- 1.1 Purpose—This actuarial standard of practice (ASOP) provides guidance to actuaries when performing actuarial services with respect to the **pricing** of life insurance and annuity products.
- 1.2 Scope—This standard applies to actuaries when performing actuarial services with respect to the **pricing** of life insurance and annuity products, including riders, that will be sold in the future. In this context, actuarial services include advising on the design of the product and its rates and benefits and evaluating the product’s profitability and risks. This standard does not address: (i) other considerations that may affect the ultimate price charged, such as marketing goals and competition; or (ii) the requirements of applicable law, including federal antitrust laws.

The standard applies to life insurance and annuity products written on individual policy forms and group master contracts with individual certificates.

To the extent that the guidance in this standard may conflict with guidance in other ASOPs regarding the **pricing** of specific benefits other than life and annuity, the guidance in the other standard will govern. This standard does not apply to actuaries when performing professional services with respect to illustrations of nonguaranteed charges or benefits subject to ASOP No. 24, *Compliance with the NAIC Life Insurance Illustrations Model Regulation*.

If the actuary departs from the guidance set forth in this standard in order to comply with applicable law (statutes, regulations, and other legally binding authority) or for any other reason the actuary deems appropriate, the actuary should refer to section 4.1.

- 1.3 Cross References—When this standard refers to the provisions of other documents, the reference includes the referenced documents as they may be amended or restated in the future, and any successor to them, by whatever name called. If any amended or restated document differs materially from the originally referenced document, the actuary should consider the guidance in this standard to the extent it is applicable and appropriate.
- 1.4 Effective Date—This standard will be effective for any actuarial services performed on or after four months after adoption by the ASB.

## EXPOSURE DRAFT—MARCH 2016

### Section 2. Definitions

The terms below are defined for use in this actuarial standard of practice.

- 2.1 Model Framework—The configuration of a model and how the model operates.
- 2.2 Model Point—A record used in a model to represent a cohort of policies with similar characteristics.
- 2.3 Pricing—The process of setting charges for, and benefits provided by, an insurance policy or annuity contract at issue. Examples of charges include premiums, cost of insurance charges, separate account charges, surrender charges, and policy fees. Examples of benefits include death benefits, surrender benefits, and income benefits.
- 2.4 Profitability Analysis—An evaluation of a product’s expected financial return using a set of pricing assumptions and a specified **model framework**.
- 2.5 Profitability Metric—A measurement used to assess a product’s expected level of financial return.
- 2.6 Risk Capital—Amounts to absorb potential unexpected losses resulting from severe events.
- 2.7 Sensitivity Analysis—Analysis performed by changing an assumption or set of assumptions and comparing the results to those resulting from the original assumption(s).
- 2.8 Stochastic Analysis—Analysis performed using a model that estimates distributions of potential outcomes by allowing random variation in one or more inputs to the model.

### Section 3. Analysis of Issues and Recommended Practices

- 3.1 Considerations for the Actuary Prior to Beginning the Pricing Exercise—The actuary should take into account relevant characteristics of the product and the market into which it will be sold. Relevant characteristics that the actuary should consider taking into account include the following:
  - a. the intended design of the product;
  - b. the intended market and the competitive alternatives to the product;
  - c. how the product will be sold;
  - d. how the product will be administered, including any limitations in administrative and valuation systems that could impact product design or operational risks;



**EXPOSURE DRAFT—MARCH 2016**

- e. applicable law; and
  - f. the tax treatment of the product as it applies to both the owner and the company.
- 3.2 **Selecting Profitability Metrics**—The actuary should select one or more appropriate **profitability metrics** that are consistent with the goals of the actuary’s principal.

3.2.1 **Profitability Metrics**—The actuary should consider using more than one **profitability metric** when evaluating the expected profitability. The actuary should consider using a **profitability metric** that measures the expected return on initial invested capital (often referred to as an internal rate of return) when performing **pricing** of life insurance and annuity products. Additional **profitability metrics** the actuary may consider using include the following:

- a. the average of expected future periodic returns on capital (for example, average return on equity);
- b. a measure of profitability expressed as a percentage of revenue (for example, profit margin);
- c. the present value of expected future profits (for example, embedded value at issue);
- d. the time period when a measure of profitability turns positive; and
- e. any other appropriate measures.

When using a **profitability metric**, the actuary should calculate the **profitability metric** over the time horizon of the pricing model and over shorter periods of time when consistent with the goals of the principal.

3.2.2 **Considerations in Selecting Profitability Metrics**—When selecting **profitability metrics**, the actuary should consider the following:

- a. the expected pattern of profits over time;
- b. the nature of the product’s underlying risks; and
- c. any other considerations that the actuary determines are relevant.

3.3 **Developing the Model Framework**—The actuary should develop the **model framework** to support **pricing**. The **model framework** should accommodate the design and benefits of the product and the selected **profitability metrics**, and reasonably simulate the product’s expected impact on the company’s future financial and risk position.

When developing the **model framework**, the actuary should consider the following:

## EXPOSURE DRAFT—MARCH 2016

- a. Time Horizon—the degree to which the model extends over a sufficient time period such that the risk and returns of the product are adequately captured;
  - b. Model Points—the degree to which the **model points** are representative of the expected source of future sales;
  - c. Granularity of Assumptions—the degree to which the granularity of the assumptions is appropriate to the **model points** and **profitability metrics** selected;
  - d. Asset Returns—the degree to which the model incorporates asset returns in the same manner as such returns are expected to be recognized and allocated to the product;
  - e. Accounting Bases—the degree to which the model uses accounting bases that are expected to be used in practice;
  - f. Risk Capital Mechanics—the degree to which the model uses **risk capital** mechanics that are expected to be used in practice;
  - g. Taxes—the degree to which the model uses tax mechanics that are expected to apply given the product, the tax position of the company, and the company’s tax allocation practices;
  - h. Risk Quantification—the degree to which the **model framework** uses an appropriate method to quantify risks (for example, **sensitivity analysis**, **stochastic analysis**, etc.);
  - i. Risk Mitigation—the degree to which risk mitigation strategies, such as reinsurance or hedging, that are expected to be used are appropriately modeled;
  - j. Model Validation—the degree to which the **model framework** is sufficiently transparent to support validation; and
  - k. Such other items as the actuary determines are significant to the **model framework**.
- 3.4 Pricing Assumptions—The actuary should use assumptions when performing the **pricing** of a life insurance or annuity product that are based on expected future experience before considering the cost of risk as described in section 3.5.
- 3.4.1 Consistency of Assumptions—The actuary should use assumptions that are internally consistent within the **model framework** and consistent with company practices, including any anticipated changes in the company’s practices.
  - 3.4.2 Experience Reflected in Setting Assumptions—The actuary should reflect

## EXPOSURE DRAFT—MARCH 2016

appropriate experience when setting assumptions.

- a. The actuary should determine assumptions using relevant and credible data, such as company experience and other relevant experience, such as industry experience, which may be modified to reflect the circumstances being modeled. When modifying such experience, the actuary should refer to ASOP No. 25, *Credibility Procedures*, for guidance.
- b. In using experience, the actuary should consider whether there are reasons to expect that future experience will differ from past experience.
- c. To the extent professional judgment is used to modify available sources of information, the actuary should document the modifications made.

3.4.3 Assumption Setting—The actuary should set assumptions that reflect expectations over the entire modeling time horizon. When setting these assumptions, the actuary should consider the following:

- a. investment assumptions that include assumptions for reinvestment, asset default, and investment expenses;
- b. mortality assumptions that incorporate the effects of selection and classification of future applicants and the impact of expected trends on future mortality;
- c. where appropriate, policy and premium persistency assumptions that vary by policyholder characteristics (for example, age) and policy or rider characteristics (for example, size of policy) as well as the effect of external factors (for example, crediting rates available in the marketplace);
- d. expense assumptions that reflect the effect of future inflation on the expense assumptions; and
- e. the principal's capacity and intent, when setting assumptions with regard to enforce management strategies, including nonguaranteed elements.

The actuary should consider consulting subject matter experts when setting pricing assumptions in areas outside the actuary's area of expertise.

3.4.4 Capital Market Assumptions—The actuary should take into account the design of the product when determining whether to use market consistent assumptions or real world assumptions in performing **stochastic analysis**. When analyzing a benefit that can be replicated using liquid capital market instruments, the actuary should compare the cost of the benefit using market consistent assumptions to the price of a comparable investment guarantee observed in capital markets.

**EXPOSURE DRAFT—MARCH 2016**

- 3.5 **Cost of Risk**—The actuary should evaluate the cost of risk when performing a **profitability analysis**. The actuary should consider the following approaches to evaluating the cost of risk:
- 3.5.1 **Assumption Margins**—The actuary should consider the appropriateness of including margins in assumptions. The actuary should consider whether the level of margins individually for each assumption and in aggregate for all assumptions is appropriate. If margins are included in assumptions, the actuary should document the approach used and, where practicable, indicate the margin component of each assumption.
  - 3.5.2 **Risk Capital**—The actuary should consider the cost of establishing **risk capital** when evaluating the expected profitability of the product. The actuary should consider using a **risk capital** assumption that is consistent with the principal's assessment of capital necessary to meet company objectives.
  - 3.5.3 **Sensitivity Analysis**—The actuary should consider using **sensitivity analysis** to evaluate the cost of the risk that future experience may be different than an assumption and affect expected profitability. The actuary should consider evaluating correlated assumptions, such as economic and policyholder behavior assumptions, jointly.
  - 3.5.4 **Stochastic Analysis**—The actuary should consider using **stochastic analysis** to evaluate the cost of the risk that volatility in an assumption affects the expected profitability. When performing stochastic analyses, the actuary should maintain consistency between correlated assumptions (for example, economic and policyholder behavior assumptions).

The actuary should also consider the impact of risk mitigation strategies that are expected to be implemented at the product and company level and the expected effectiveness of those strategies in reducing the cost of risk.

- 3.6 **Pricing Controls**—The actuary should establish controls over **pricing** to reasonably protect the reliability of the process and results. In establishing these controls, the actuary should consider the following:
- a. **Governance**—the degree to which
    - i. there is effective oversight of methods and assumptions;
    - ii. the model is preserved and protected from unintentional or untested changes; and
    - iii. there is an appropriate separation of duties.
  - b. **Validation**—the degree to which

## EXPOSURE DRAFT—MARCH 2016

- i. the model is tested for fitness of purpose;
    - ii. the model accurately reproduces the expected practices of the company; and
    - iii. the model uses the inputs appropriately.
  - c. Peer Review—the degree to which the assumptions and other aspects of the model have been reviewed by an objective, knowledgeable person.
- 3.7 Reliance on Data or Other Information Supplied by Others—When relying on data or other information supplied by others, the actuary should refer to ASOP No. 23, *Data Quality*, for guidance. When relying on assumptions provided by others, the actuary should refer to ASOP No. 41, *Actuarial Communications*.
- 3.8 Documentation—The actuary should prepare and retain documentation in accordance with ASOP No. 41.

### Section 4. Communications and Disclosures

- 4.1 Communication and Disclosure—The actuary should comply with ASOP No. 41 when communicating actuarial opinions and actuarial findings. The actuary should include the following, as applicable, in their actuarial communications:
- a. the disclosure in ASOP No. 41, section 4.2, if any material assumption or method was prescribed by applicable law (statutes, regulations, and other legally binding authority);
  - b. the disclosure in ASOP No. 41, section 4.3, if the actuary states reliance on other sources and thereby disclaims responsibility for any material assumption or method selected by a party other than the actuary; and
  - c. the disclosure in ASOP No. 41, section 4.4, if, in the actuary’s professional judgment, the actuary has otherwise deviated materially from the guidance of this ASOP.
- 4.2 Disclosures Concerning Pricing—The actuary should disclose the following information in any actuarial report concerning **pricing**:
- a. the **profitability metrics** used to evaluate expected profitability and how these metrics are used to support the goals of the actuary’s principal as described in section 3.2 of this standard;
  - b. the considerations used to determine the **model framework** as described in section 3.3 of this standard;

## **EXPOSURE DRAFT—MARCH 2016**

- c. the manner in which the actuary has established assumptions based on expected future experience as described in section 3.4 of this standard; and
- c. the manner in which the actuary has evaluated the cost of risk as described in section 3.5 of this standard.

### **Appendix**

#### **Background and Current Practices**

*Note:* This appendix is provided for informational purposes and is not part of the standard of practice.

#### **Background**

The pricing of life insurance and annuity products is a complex process and requires management to make decisions based on a variety of inputs that often include analyses of profitability and risk performed by actuaries. The roles performed by actuaries in pricing are significant and varied. They can range from technical analysis of profitability to the development of marketing strategies for a proposed product. While the final decisions on product design, price, and marketing are the responsibility of management, information necessary for making those decisions is most often provided by actuaries. Management must balance business growth, profitability, and other strategic goals in setting the parameters for a proposed new product. Actuaries are typically asked to evaluate the profitability and risk inherent in those parameters. In this relationship, management relies on actuarial analyses to make decisions that impact the ability of the insurance company to meet its goals in the future.

As summarized in the document, *Applicability Guidelines for Actuarial Standards of Practice*, current ASOPs address various aspects of the pricing of life insurance and annuity products. Examples include the following:

1. ASOP No. 2, *Nonguaranteed Charges or Benefits for Life Insurance Policies and Annuity Contracts*;
2. ASOP No. 7, *Analysis of Life, Health, or Property/Casualty Insurer Cash Flows*;
3. ASOP No. 12, *Risk Classification (for All Practice Areas)*; and
4. ASOP No. 15, *Dividends for Individual Participating Life Insurance, Annuities, and Disability Insurance*.

This draft ASOP supplements the guidance provided by existing ASOPs and provides guidance to actuaries providing actuarial services related to the pricing of life insurance and annuity products.

Most life insurance and annuity products provide multi-year guarantees in the form of a fixed premium, guaranteed benefits, or limits on the ability of the company to change future

## **EXPOSURE DRAFT—MARCH 2016**

premiums, fees, or benefits. In these situations, the company must commit to the price before the product is sold and may have to honor that commitment for a lifetime. The decision to offer a life insurance or annuity product at a certain price represents a long-term commitment. It is critical that the actuarial analyses supporting that decision meet accepted standards.

### Current Practices

Supporting the pricing of life insurance and annuity products typically requires developing a model to apply expected future experience to measure the risks inherent in the product design and the likely future profit. Setting the assumptions for future experience is typically the role of the actuary, although at times either regulation (for example, unisex legislation) or management will mandate the use of a certain assumption.

Developments in consumer preferences and medical science will continue to affect policyholder behavior, future mortality rates, and product profitability. Other examples of existing trends that are expected to affect life insurance and annuity product pricing include the following:

- Principles-based approaches to determining statutory accounting requirements will provide more flexibility and responsibility for actuaries in establishing the assumptions and methods that are used in that context.
- Vendors and other third parties are playing increasingly important roles in the traditional pricing and product distribution functions.
- Risks and opportunities are created by new distribution models, disruptive market entrants, and technology.