ACTUARIAL STANDARDS BOARD

Actuarial Standard
of Practice
No. 54

Pricing of Life Insurance and Annuity Products

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

Adopted by the
Actuarial Standards Board
June 2018

Doc. No. 193

TABLE OF CONTENTS

APPENDIXES

ASOP No. 54—Doc. No. 193

June 2018

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: Actuarial Standard of Practice (ASOP) No. 54, *Pricing of Life Insurance and Annuity Products*

This document is the final version of ASOP No. 54, *Pricing of Life Insurance and Annuity Products*.

History of the Standard

The ASB periodically reviews the completeness of 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. In October 2014, the ASB Life Committee distributed a Request for Comments regarding an ASOP focused on life insurance and annuity pricing. Sixteen comment letters 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.

First Exposure Draft

In March 2016, the ASB approved an exposure draft of this proposed ASOP. Seventeen comment letters were received and considered in making changes that were reflected in the second exposure draft.

Second Exposure Draft

In June 2017, the ASB approved a second exposure draft with a comment deadline of October 31, 2017. Six comment letters were received and considered in making changes that are reflected in this final ASOP.

The ASB thanks all those who made comments on each of the exposure drafts.

Notable Changes from the Second Exposure Draft

Notable changes from the second exposure draft in response to the comment letters include the following:

1. The fifth paragraph of section 1.2 was clarified by adding the following: "To the extent that a product does not clearly fall into the scope just described, the actuary should use professional judgment to determine whether the product is in scope."

2. An example was added to the sixth paragraph of section 1.2 to clarify that the ASOP would apply in the case of a product written on an individual policy form that offers both a death benefit and a long-term care benefit.

3. A seventh paragraph was added to section 1.2 to clarify that the standard "does not apply to actuaries when performing actuarial services with respect to the pricing of reinsurance contracts."

4. The definition of pricing in section 2.2 was revised by adding the phrase "including evaluating the product's profitability and underlying risks" to the first sentence;

5. Section 3.5.1, Cost of Capital, was removed. The concept is now covered in section 3.1.1(c).

6. Several clarifying revisions were made to section 3.6, Governance and Controls.

7. Guidance was added to section 4.1 to state that the actuary should disclose "the material results of any additional profitability analysis that was performed."

The ASB voted in June 2018 to adopt this standard.

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.

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, including riders attached to such products. Throughout the remainder of the ASOP, the use of the term "product" includes riders attached to 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 when a product is initially developed or when charges or benefits are changed for future sales.

This standard does not apply to any changes made on in-force policies. Such resetting of nonguaranteed elements, including dividends, on products in force is outside the scope of this ASOP and is addressed in ASOP No. 2, *Nonguaranteed Charges or Benefits for Life Insurance Policies and Annuity Contracts*, and No. 15, *Dividends for Individual Participating Life Insurance, Annuities, and Disability Insurance*. The actuary should also refer to ASOP Nos. 2 or 15 when determining nonguaranteed elements or dividends when a product is initially developed or when charges or benefits are changed for future sales.

The standard does not include guidance on compliance with federal antitrust laws or the evaluation of other considerations (such as marketing, sales, and competition) that may affect the ultimate price.

The standard applies to actuaries when performing actuarial services related to life insurance and annuity products written on individual policy forms and to group master contracts with individual certificates that are priced in a similar manner to products written on individual life and annuity policy forms.

Products not priced in a similar manner to those written on individual life and annuity policy forms or products that do not have material mortality or morbidity risk are not in scope. Two examples are traditional group term life and certain retirement funding products (for example, synthetic guaranteed interest contracts). To the extent that a product does not clearly fall into the scope just described, the actuary should use professional judgment to determine whether the product is in scope.

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 benefits, the guidance in other ASOPs will govern the **pricing** of such other specific benefits. For example, the **pricing** of a product that offers both a death benefit and a long-term care benefit written on an individual policy form would be within the scope of this ASOP. However, to the extent that the guidance in this standard conflicts with guidance in other ASOPs regarding the **pricing** of the long-term care benefit, the guidance in other ASOPs would govern the **pricing** of such long-term care benefits.

This standard does not apply to actuaries when performing actuarial services with respect to the **pricing** of reinsurance contracts.

This standard does not apply to actuaries when performing actuarial 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 4.2.

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 December 1, 2018.

Section 2. Definitions

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

2.1 Modeling Cell—Policies or contracts that are treated in a model as being completely alike with regard to, for example, demographic characteristics, assumptions, policy provisions, and underwriting class.

2.2 Pricing—The process of determining charges for, and benefits provided by, an insurance policy or annuity contract at issue, including evaluating the product's profitability and underlying risks. 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, interest credits, dividends, and income benefits.

2.3 Profitability Analysis—An evaluation of a product's expected financial results using a set of assumptions, a specified model, and specified **profitability metric(s)**.

2.4 Profitability Metric—A measurement used to assess a product's expected level of financial results.

2.5 Risk Capital—The amount of capital a company chooses to hold to meet a business objective, given its risk profile.

2.6 Sensitivity Analysis—Analysis performed by changing an assumption or set of assumptions and comparing the results to those resulting from the baseline assumption(s).

2.7 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 Initial Pricing Considerations—When preparing for the **pricing** exercise, the actuary should take into account the criteria of the actuary's principal and the relevant characteristics of the product.

3.1.1 Criteria of the Actuary's Principal—Criteria of the actuary's principal, which are usually related to profitability and risk, include, but are not limited to, the following:

a. the choice of **profitability metrics**;

b. targets for **profitability metrics**, including any special circumstances, such as targets for shorter periods of time or situations where profits are expected to be followed by losses. Targets often are stated at an aggregate product level and may be stated at other levels as determined by the principal, such as at the **modeling cell** level;

c. the approach for incorporating the cost of maintaining a defined level of **risk capital** into the **profitability analysis**; and

d. how risk management policies of the company relate to product **pricing**; for example, how tolerant the actuary's principal is to volatility in earnings and the balance sheet.

3.1.2 Relevant Characteristics of the Product—Relevant characteristics of the product include, but are not limited to, the following:

a. the intended design objectives of the product;

b. the intended market, anticipated sales, and the competitive alternatives to the product;

c. how the product will be sold, for example, underwriting, distribution, and marketing;

d. how the product will be administered, including any limitations in administrative and valuation systems that could impact product design or operational risks;

e. potential risk mitigation strategies such as reinsurance and hedging;

f. applicable law (statutes, regulations, and other legally binding authority); and

g. the tax treatment of the product as it applies to both the owner and the insurer.

3.2 Selecting Profitability Metrics—The actuary should select one or more **profitability metrics** in a manner consistent with the criteria of the actuary's principal and the underlying design and risks of the product.

3.2.1 Profitability Metrics—The actuary should consider using more than one **profitability metric** when evaluating the expected profitability and underlying risks. Examples of **profitability metrics** include, but are not limited to, the following:

a. the expected return on initial invested capital, often referred to as the internal rate of return;

b. the average of expected future periodic returns on capital, often referred to as average return on equity;

c. a measure of profitability expressed as a percentage of premium, often referred to as profit margin;

d. the present value of expected future profits as a percentage of the present value of expected assets, often referred to as return on assets;

e. the present value of expected future profits, often referred to as the value of new business; and

f. the time period when a measure of cumulative profits turns positive, often referred to as break-even year.

The actuary should use discount rates that are appropriate for the selected **profitability metric**, where applicable.

3.2.2 Considerations When Selecting a Profitability Metric—When selecting a **profitability metric**, the actuary should consider the following:

a. the expected pattern of profits over time (for example, the pattern of gains and losses, however measured);

b. the significance of the product's underlying risks (for example, the size and pattern of **risk capital**); and

c. any other considerations that the actuary determines are relevant (for example, limitations of the **profitability metric** for the product being priced).

3.3 Developing or Selecting the Model—The actuary should develop or select the model to support **pricing** in a manner consistent with the criteria of the actuary's principal. The actuary should develop or select a model that accommodates the design of the product and the selected **profitability metrics** and reasonably simulates the future financial impact of the product.

When developing or selecting the model, the actuary should consider the following:

a. Time Horizon—the degree to which the model extends over a sufficient time period such that the profitability results and underlying risks of the product are adequately captured;

b. Granularity—the degree to which the model accommodates the necessary detail of model components, such as time intervals, **modeling cell** structure, and assumptions that vary by **modeling cell**, to appropriately represent the expected profitability and underlying risk of future sales;

c. Dynamic Assumptions—the degree to which the model accommodates how certain assumptions, such as policy behavior assumptions, may vary based on other factors;

d. Asset Returns—the degree to which the model accommodates asset returns consistent with how returns are expected to be recognized and allocated to the product;

e. Economic Scenarios—the degree to which the model accommodates, if appropriate, market consistent or real world scenarios that represent an appropriate range of future economic conditions;

f. Accounting and Actuarial Bases—the degree to which the model accommodates the accounting standards and practices (for example, statutory, GAAP, and tax) and the assumptions and methods used to calculate reserves and other actuarial balances that underlie the **profitability metrics** to be used in **pricing**;

g. Risk Capital Framework—the degree to which the model accommodates a **risk capital** framework that is expected to be used in practice;

h. Taxes—the degree to which the model accommodates a tax structure that is expected to apply, given the product, the tax position of the company, and the company's tax allocation practices;

i. Risk Evaluation—the degree to which the model accommodates an appropriate method to evaluate risks, as described in section 3.5;

j. Risk Mitigation—the degree to which the model appropriately accommodates risk mitigation strategies that are expected to be used to support the product;

k. Model Validation—the degree to which the model is sufficiently transparent to support validation, as described in section 3.6; and

l. any other items the actuary determines are significant to the model.

3.4 <u>Pricing Assumptions</u>—The actuary should use professional judgment to set assumptions that are reasonable for the intended purpose and reflect expected future experience based on the following considerations.

3.4.1 <u>Historical Experience Used When Setting Assumptions</u>—The actuary should use professional judgment to ensure that relevant historical experience is reflected when setting assumptions.

3.4.1.1 <u>Assumptions Based on Relevant and Credible Data</u>—The actuary should use assumptions based on relevant and credible data, such as company experience, industry experience, and other relevant experience, which may be modified to reflect any data deficiencies.

3.4.1.2 <u>Assumptions Based on Historical Experience</u>—When using historical experience, the actuary should consider whether there are reasons to expect that future experience will differ from past experience.

3.4.1.3 <u>Assumptions When There Is No Relevant Historical Experience</u>—In some instances, no relevant historical experience is available to the actuary. In this situation, the actuary should use professional judgment, considering available sources of data, when setting assumptions.

3.4.2 <u>Assumption Margins</u>—The actuary should consider the appropriateness of including a margin in the assumptions. When setting a margin, the actuary should consider the following:

a. the degree to which there is uncertainty around the assumptions due to lack of relevant, credible company or industry experience data to support the assumptions;

b. whether the degree of uncertainty may vary over different periods of time within the time horizon of the model; and

c. whether the level of margins is appropriate for each assumption individually and in aggregate for all assumptions.

3.4.3 Consistency of Assumptions—The actuary should use assumptions that are internally consistent and reflect any interdependencies with each other, consistent with current and anticipated company practices, and, where appropriate, consistent with similar assumptions used for other assignments within the company and its associated entities.

3.4.4 Assumption Setting—When setting assumptions, the actuary should consider the following:

a. sales mix assumptions that reflect the anticipated distribution of sales across **modeling cells**;

b. investment assumptions and economic market assumptions that reflect real world or market consistent theory, where appropriate, and that include assumptions for reinvestment, asset default, and investment expenses;

c. mortality and morbidity assumptions that incorporate the effects of risk selection and classification of future applicants, the impact of expected trends on future assumptions, and product features such as conversion and level premium periods on term coverage;

d. for experience that is elective in nature, such as the policyholder's ability to pay or not pay premiums, to receive certain types of benefits, or to terminate the contract, assumptions that consider the causal variables impacting the policyholder's behavior, such as relevant policyholder characteristics (for example, age), policy or rider characteristics (for example, size of policy), tax treatment of the product as it applies to the owner, and the value of guaranteed benefits driven by external factors (for example, the current interest rate environment and underlying market performance);

e. expense assumptions that reflect anticipated future trends in expenses (for example inflation or expense efficiencies). The actuary should consider the appropriateness of the basis (for example, fully allocated, marginal) when developing expense assumptions; and

f. the principal's capacity and intent with regard to in-force management strategies, including the determination of nonguaranteed elements and dividends.

The actuary should consider the extent to which certain of these assumptions may also be influenced by the following:

1. product design;

2. the intended market and the competitive alternatives to the product; and

3. how the product will be sold, for example, underwriting, distribution, and marketing.

When setting assumptions in areas outside the actuary's area of expertise, the actuary should consider incorporating the views of experts. However, the actuary should set assumptions that reflect his or her professional judgment.

3.4.5 Capital Market Assumptions—When analyzing the cost of a benefit that can be replicated using liquid capital market instruments, the actuary should consider comparing the cost of the benefit using market consistent assumptions to the price of a comparable investment guarantee observed in capital markets to assess how well the results of the analysis align with the profitability goals and risk management policy of the actuary's principal.

3.4.6 Documentation of Assumptions, Rationale, and Data Modifications—The actuary should document the assumptions, the rationale behind the assumptions, and any modifications made to data sources. If margins are included in assumptions, the actuary should document the approach used and, where practicable, the margin component of each assumption.

In setting assumptions, the actuary should refer to ASOP No. 25, *Credibility Procedures*, for guidance.

3.5 Risk Evaluation—The actuary should evaluate the risks in the product when performing a **profitability analysis**.

3.5.1 Sensitivity Analysis—The actuary should use **sensitivity analysis** to evaluate the impact of deviations in assumptions on profitability results and should consider performing more analysis for assumptions that have a significant impact on the **profitability analysis** than for assumptions that have less impact.

3.5.2 Stochastic Analysis—The actuary should consider using **stochastic analysis** to evaluate the distribution of the results of the **profitability analysis** from variations in key assumptions, in particular interest rates and equity returns. When performing **stochastic analysis**, the actuary should evaluate the results of the **profitability analysis** not only in the aggregate but also for a selection of individual scenarios.

The actuary may consider other risk evaluation techniques, as appropriate.

The actuary should 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.

3.6 Governance and Controls—The actuary should use, or, if appropriate, may rely on others to use, reasonable governance and controls over the actuarial services provided as part of **pricing**. Examples of possible governance and controls include the following:

a. effective oversight of methods and assumptions used in **pricing**;

b. preservation and protection of the model from unintentional or untested changes;

c. validation of the appropriate use of the inputs in model calculations;

d. validation that values from the models are consistent with independent calculations of such values from outside the model;

e. validation that the model reasonably simulates the expected future financial impact of the product; and

f. review of assumptions and other aspects of the model by another knowledgeable person who conducts the review in an objective way.

The actuary should document the governance and controls used by the actuary as part of **pricing**. The actuary should disclose any reliance on governance and controls used by others.

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. The actuary should disclose the extent of any such reliance.

3.8 Reliance on Assumptions Provided by Others—When relying on assumptions provided by others, the actuary should refer to ASOP No. 41, *Actuarial Communications*. The actuary should disclose the extent of any such reliance.

3.9 Documentation—The actuary should prepare and retain documentation in accordance with ASOP No. 41.

Section 4. Communications and Disclosures

4.1 Actuarial Communications—When issuing any actuarial communication relating to this ASOP, the actuary should refer to ASOP No. 41. The actuary should consider the needs of the intended user in communicating the actuarial findings in any actuarial report. In addition, in any actuarial report concerning **pricing**, the actuary should disclose the following, if practical and relevant:

a. criteria of the actuary's principal, as described in section 3.1.1;

b. relevant characteristics of the product, as described in section 3.1.2;

c. the **profitability metrics** used in the **profitability analysis** and how these metrics are consistent with the criteria of the actuary's principal, as described in section 3.2;

d. the considerations used to determine the model, as described in section 3.3;

e. material pricing assumptions and the manner in which the actuary established these assumptions to reflect expected future experience, adjusted to include any margin, as described in section 3.4;

f. results of risk evaluation, as described in section 3.5;

g. any reliance on governance and controls used by others, as described in section 3.6;

h. any reliance on data or other information supplied by others, as described in section 3.7;

i. any reliance on assumptions provided by others, as described in section 3.8; and

j. results of the **profitability analysis**, in a format comparable to the **profitability metric** targets described in section 3.1.1(b), and the material results of any additional **profitability analysis** that was performed.

4.2 Additional Disclosures—The actuary should also include the following disclosures, as applicable, in an actuarial communication:

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.

Appendix 1

Background and Current Practices

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

Background

Pricing 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 when 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 when setting the parameters for a proposed new product. Actuaries are typically asked to evaluate the profitability and risk inherent in those parameters. Management relies on actuarial analyses to make decisions that impact the ability of the insurance company to meet its goals in the future.

Several ASOPs currently address various aspects of the pricing of life insurance and annuity products. Examples include the following:

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

This 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, including riders attached to such 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 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. It is critical that the actuarial analyses supporting that commitment meet accepted standards.

Current Practices

Pricing life insurance and annuity products typically requires developing an actuarial 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:

- Principle-based approaches to determining statutory accounting requirements 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.

Appendix 2

Comments on the Second Exposure Draft and Responses

The second exposure draft of this proposed ASOP, *Pricing of Life Insurance and Annuity Products*, was issued in June 2017 with a comment deadline of October 31, 2017. Six comment letters were received, some of which were submitted on behalf of multiple commentators, such as by firms or committees. For purposes of this appendix, the term "commentator" may refer to more than one person associated with a particular comment letter. The Life Insurance and Annuity Pricing Task Force carefully considered all comments received, reviewed the exposure draft, and proposed changes. The Life Committee and the ASB reviewed the proposed changes and made modifications where appropriate.

Summarized below are the significant issues and questions contained in the comment letters and responses.

The term "reviewers" in appendix 2 includes the Life Insurance and Annuity Pricing Task Force, the ASB Life Committee, and the ASB. Also, unless otherwise noted, the section numbers and titles used in appendix 2 refer to those in the second exposure draft.

TRANSMITTAL MEMORANDUM QUESTIONS	
Question 1: Is it clear what actuarial services are covered in section 1.2, Scope? If not, please give an example of an actuarial service or a product whose exclusion is unclear and how to clarify.	
Comment	All commentators who answered this question answered "yes." Three of these commentators included additional comments, which the reviewers addressed in the relevant section.
Question 2: Throughout the ASOP, there are references to "the criteria of the actuary's principal." Are the examples in section 3.1.1, Criteria of the Actuary's Principal, adequate to apply the guidance included in the draft ASOP?	
Comment	All commentators who answered this question answered "yes." Two of these commentators included additional comments, which the reviewers addressed in the relevant section.
Question 3: Is the guidance in section 3.6, Governance and Controls, clear?	
Comment	All commentators who answered this question answered "yes." Two of these commentators included additional comments, which the reviewers addressed in the relevant section.
GENERAL COMMENTS	
Comment Response	One commentator suggested organizational changes to the document. The reviewers considered the suggestions and made those that they believe improve the ASOP.
Comment Response	Several commentators suggested minor editorial changes throughout the ASOP. The reviewers considered the suggestions and made those that they believe improve the ASOP.

Comment Response	One commentator encouraged the ASB to minimize areas of overlap between the life and annuity pricing ASOP and ASOPs that are currently in development and, where overlap is unavoidable, to strive for consistency. The reviewers note that sections in the life and annuity pricing ASOP were created with other draft ASOPs in mind for consistency. Specifically, the reviewers believe it is appropriate to include guidance regarding modeling and assumption setting, two areas being addressed by draft ASOPs, in the life and annuity pricing ASOP.
SECTION 1. PURPOSE, SCOPE, CROSS REFERENCES, AND EFFECTIVE DATE	
Section 1.2, Scope	
Comment Response	One commentator suggested clarifying whether long-term care riders or benefits were included in the scope of this ASOP. The reviewers addressed the comment by adding an example to the fifth paragraph of section 1.2.
Comment Response	One commentator said that the second paragraph seemed to contradict section 3.1.2. The reviewers note that items listed in section 3.1.2 are items that should be taken into account when preparing for pricing. The reviewers do not believe clarification is needed, and therefore made no change.
Comment Response	One commentator suggested adding language stating that the actuary should use professional judgment to determine whether a product is in scope if the product does not obviously fall into the scope described in section 1.2. The reviewers agree and added language consistent with the suggestion.
Comment Response	One commentator suggested including the review of pricing work in the scope of the ASOP. The reviewers believe that the review of actuarial services is already included per the definition of “actuarial service” in the *Code of Professional Conduct* and ASOP No. 1, *Introductory Actuarial Standard of Practice*, and therefore made no change.
Comment Response	One commentator suggested deleting the sentence “Actuarial services may also include advising on the design of the product” and adding “design” in the following sentence: “Although the actuary needs to be mindful of all considerations that may affect the ultimate price and design of the product.” The reviewers noted the comment and deleted the reference to design.
Comment Response	One commentator suggested revisions to clarify the types of investment products that are out of scope of this ASOP. The reviewers revised the language to address the commentator’s concern.
SECTION 2. DEFINITIONS	
Section 2.1, Modeling Cell	
Comment Response	Two commentators suggested changes to the definition to clarify it and make it more consistent with existing ASOPs. The reviewers note that the use of the definition within this ASOP is focused on the liability model rather than the asset model. The definition is consistent with the definition in ASOP No. 52, *Principle-Based Reserves for Life Products under the NAIC Valuation Manual*, but has been slightly revised to better fit the scope of this ASOP. Therefore, the reviewers made no change.

Section 2.2, Pricing	
Comment	One commentator said that the definition of pricing seemed too narrow, considering the scope of the guidance in the rest of the ASOP. The commentator also said that the definition did not recognize that the actuary may not set final charges and benefits/credits.
Response	The reviewers believe that the definition adequately describes the pricing process. The reviewers also believe that further guidance with regard to the pricing process is more appropriately presented in other sections of the ASOP. Therefore, the reviewers made no change.
Comment	One commentator recommended expanding the definition to include "credits" along with charges and benefits and address guaranteed and nonguaranteed elements.
Response	The reviewers incorporated some of the suggested revisions to the definition.
Section 2.3, Profitability Analysis	
Comment	One commentator recommended including analysis of various levels (for example, model cell) in the definition.
Response	The reviewers believe that further guidance with regard to the pricing process is more appropriately presented in other sections of the ASOP, and therefore made no change.
Section 2.4, Profitability Metric	
Comment	One commentator suggested replacing "metric" with "measure" for clarification.
Response	The reviewers believe that the definition is consistent with common usage and is used appropriately throughout the ASOP, and therefore made no change.
Comment	One commentator recommended including the examples of profitability metrics as part of the definition.
Response	Given the importance of profitability metrics, the reviewers believe it is more appropriate to list the examples in section 3.2.1, and therefore made no change.
Section 2.5, Risk Capital	
Comment	One commentator questioned the reference to "severe risk," stating that "risk capital" is designed to address events significant enough to adversely affect the expected profitability of a product, and that some people may not consider such events "severe."
Response	The reviewers agree that the definition needed to be clarified and revised the language.
SECTION 3. ANALYSIS OF ISSUES AND RECOMMENDED PRACTICES	
Section 3.1, Initial Pricing Considerations	
Comment	One commentator suggested that the ASOP focused on profitability metrics to the exclusion of items such as the patterns of reserves and capital and the examination of individual scenarios in stochastic testing.
Response	The reviewers note that section 3.1.1(b) addresses patterns of reserves. The reviewers agree with the comment regarding stochastic testing and added language to section 3.5.3 (now section 3.5.2) consistent with the suggestion.
Comment	One commentator suggested replacing the phrase "take into account the criteria of the actuary's principal and the relevant characteristics of the product" in the first paragraph with "consider the following."
Response	The reviewers disagree with the suggestion, and therefore did not make the change.

Section 3.1.1, Criteria of the Actuary's Principal	
Comment Response	One commentator suggested moving "criteria of the actuary's principal" to the end of section 3.1. The reviewers disagree with the suggestion, and therefore did not make the change.
Comment Response	One commentator suggested changing the language from "include, but not limited to" to "may" in the first sentence. The reviewers disagree with the suggestion, and therefore did not make the change.
Section 3.1.1(a)	
Comment Response	One commentator stated that the description contributed to confusion about whether metrics are a measurement basis or a number, and suggested revisions. The reviewers believe that metrics are appropriately defined in section 2.4 as measurements and distinguished from numbers via section 3.1.1(b), which addresses targets for these metrics. The reviewers made revisions to address the commentator's suggestions, including moving the reference to aggregate product and modeling cell levels from 3.1.1(a) to 3.1.1(b).
Section 3.1.1(b)	
Comment Response	One commentator noted the absence of guidance on setting targets if they are not included in the criteria of the principal. The reviewers believe that guidance on setting targets for profitability metrics that are not included in the criteria of the principal is outside the scope of the ASOP, and therefore made no change.
Comment Response	One commentator suggested changing "metrics" to "results." The reviewers disagree and retained the word "metrics."
Section 3.1.1(c) (now section 3.1.1[d])	
Comment Response	One commentator suggested adding the words "the type and" prior to "the level of risk contained in the product being priced." The reviewers addressed the comment by revising section 3.1.1(c) (now section 3.1.1[d]) and by adding a new section 3.1.1(c).
Comment Response	One commentator asked for clarification of "risk management policies" and noted that concrete examples would be helpful. The reviewers addressed the comment by revising section 3.1.1(c) (now section 3.1.1[d]), adding a new section 3.1.1(c), and revising the example.
Section 3.1.2, Relevant Characteristics of the Product	
Comment Response	One commentator questioned whether the actuary should consider unintended consequences for the product. The reviewers believe this situation is addressed in section 3.5.2 (now section 3.5.1), and therefore made no change.
Comment Response	One commentator suggested replacing this section with a term such as "policy considerations" and defining the term in section 2, citing concerns that the list was not all-inclusive. The reviewers prefer to enumerate these characteristics in the body of the standard to give these considerations appropriate emphasis. Given that the section states that considerations are not limited to this list, additional considerations may apply. The reviewers therefore made no change.

Comment Response	One commentator stated that laws and regulations are not product characteristics. The reviewers believe that applicable laws directly impact the product, and therefore made no change.
Comment Response	One commentator proposed adding risk mitigation strategies to the list of product characteristics. The reviewers agree and made revisions consistent with the suggestion in a new section 3.1.2(e).
Section 3.1.2(b)	
Comment Response	One commentator suggested adding “anticipated” before “sales” and deleting “goals.” The reviewers agree and made the changes.
Section 3.2.2, Considerations When Selecting Profitability Metrics	
Comment Response	One commentator suggested moving discount rates from section 3.4.4(f) to section 3.2.2, because they are not assumptions. The reviewers agree with the commenter’s reasoning and moved the language on discount rates to section 3.2.1.
Section 3.2.2(b)	
Comment Response	One commentator pointed out that product risk and capital-intensity are not necessarily related, and cited Whole Life as an example. The reviewers revised the language to address the commentator’s concern.
Comment Response	One commentator suggested adding a point to refer to the limitations of the profitability metric. The reviewers agree and modified section 3.2.2(c) to include limitations as an example of other considerations the actuary may determine to be relevant.
Section 3.3, Developing the Model	
Comment Response	One commentator suggested including the situation of the actuary as user but not developer of the model. The reviewers added “or select” after “the actuary should develop” the model.
Comment Response	One commentator suggested changing “uses” to “reflects” in section 3.3(g). The reviewers addressed the comment by replacing “use” and “incorporate” with “accommodate” throughout section 3.3.
Section 3.3(b), Granularity	
Comment Response	One commentator suggested shortening the description of granularity to “the degree to which (1) the number of modeling cells represents the number of different policy characteristics, and (2) the modeling cells reflect different assumptions or time intervals,” and deleting the example. The reviewers revised the language to address the commentator’s concerns.
Section 3.3(f), Accounting and Actuarial Bases	
Comment Response	Several commentators asked for clarification or suggested revisions to “accounting and actuarial bases.” The reviewers revised the language to clarify “accounting and actuarial bases” and address the commentators’ concerns.

Section 3.3(j), Risk Mitigation	
Comment Response	One commentator suggested moving examples of risk mitigation strategies to section 3.1.2. The reviewers agree and made changes consistent with the comment.
Section 3.4, Pricing Assumptions	
Comment Response	One commentator noted that it was not clear how sections 3.4.1.2 and 3.4.1.3 differed from 3.4.1 and 3.4.1.1. The reviewers note that sections 3.4.1.1, 3.4.1.2, and 3.4.1.3 elaborate on the guidance provided in section 3.4.1.
Comment Response	One commentator asked whether this section was too detailed given that a proposed ASOP on setting assumptions is also in development. The commentator also asked whether there were any special considerations related specifically to setting pricing assumptions and noted the risk of guidance in different ASOPs conflicting. The reviewers believe the guidance is appropriate for actuaries when performing actuarial services as defined in section 1. The reviewers note that new standards address conflicts with other ASOPs. Therefore, the reviewers made no change in response to this comment.
Comment Response	One commentator suggested adding references to ASOP Nos. 23, *Data Quality*, and 25, *Credibility Procedures*, in section 3.4. The reviewers moved the reference to ASOP No. 25 to the end of the section so that it applies to all of section 3.4. The reviewers note that a reference to ASOP No. 23 is already included in section 3.7, and therefore did not add another in this section.
Section 3.4.1, Historical Experience Used When Setting Assumptions	
Comment Response	One commentator suggested deleting this section. The reviewers note that this section sets up the associated considerations in sections 3.4.1.1, 3.4.1.2, and 3.4.1.3, and therefore made no change.
Section 3.4.1.1, Assumptions Based on Relevant and Credible Data	
Comment Response	One commentator suggested adding “smoothness and data quality” as a reason to modify the assumptions. The reviewers revised the language by adding a reference to data deficiencies. The reviewers also eliminated the reference to “circumstances being modeled” and added “are reasonable for the intended purpose” to the first paragraph of section 3.4. The reviewers believe that, with this revision, smoothness is adequately addressed in the first paragraph of section 3.4, and therefore did not make the suggested change.
Comment Response	One commentator suggested moving the reference to ASOP No. 25 to section 3.4. The reviewers agree and made the change.
Section 3.4.2, Assumption Margins	
Comment Response	One commentator suggested deleting “such as when a new product is being introduced to the marketplace” in section 3.4.2(a). The reviewers agree and made the change.

Section 3.4.3, Consistency of Assumptions	
Comment Response	One commentator suggested clarifying the phrase "other components of the model." The reviewers agree and revised the sentence to read, "The actuary should use assumptions that are internally consistent and reflect any interdependencies with each other …."
Comment Response	One commentator suggested that the interaction of different assumptions should be considered. The reviewers agree and added appropriate language.
Comment Response	One commentator suggested that examples be included after the phrase "… consistent with assumptions used for other assignments within the entity." The reviewers believe the language is sufficiently clear and therefore made no change.
Section 3.4.4, Product Design and Assumption Setting (now Assumption Setting)	
Comment Response	One commentator suggested deleting "Product Design" from the title. The reviewers agree and made the change.
Comment Response	One commentator sought clarification of the phrase "classification of future applicants" in 3.4.4(c). The reviewers replaced "classification" with "risk selection and classification."
Comment Response	One commentator suggested adding "population characteristics" to the mortality and morbidity assumptions considerations in 3.4.4(c). The reviewers believe the comment is adequately addressed, and therefore made no change.
Comment Response	One commentator suggested adding the phrase "if those features exist in the product" to the end of section 3.4.4(g) (now section 3.4.4[f]). The reviewers do not believe the suggested wording is necessary, and therefore made no change.
Comment Response	One commentator suggested adding "other" before "nonguaranteed elements" in section 3.4.4(g) (now section 3.4.4[f]). The reviewers revised the sentence to reference nonguaranteed elements prior to dividends.
Comment Response	One commentator suggested replacing "distribution channel through which the product will be sold" in the second-to-last paragraph of section 3.4.4 with the "relevant product considerations" that are listed in section 3.1.2. The reviewers deleted "distribution channel through which the product will be sold" and added the items from section 3.1.2 that the actuary should consider in setting assumptions.
Comment Response	One commentator suggested deleting the word "incorporating" from the last paragraph and that the paragraph should be broadened to apply to more sections of the proposed ASOP. The reviewers believe including "incorporating" is appropriate and did not delete it. The reviewers believe that expanding "incorporating the view of experts" into other areas of the ASOP is not necessary, and therefore did not make that change.
Section 3.4.5, Capital Market Assumptions	
Comment Response	One commentator recommended revising the language in the last sentence from "to assure that it aligns" to "to assess how well it aligns." The reviewers agree and made revisions consistent with the comment.

Comment Response	One commentator recommended deleting the entire "Capital Markets Assumption" section, stating that the first sentence is covered in both "Consistency of Assumptions" and "Assumption Setting," and the second sentence is too detailed and prescriptive for an ASOP. The reviewers agree with regard to the first sentence and deleted it. The reviewers disagree with regard to the second sentence and retained it, but note that the sentence has been revised in response to another comment.
Section 3.4.6, Documentation of Assumptions, Their Rationale, and Data Modifications (now Documentation of Assumptions, Rationale, and Data Modifications)	
Comment Response	One commentator recommended moving all references of documentation to section 3.8. The reviewers did not move all references to documentation to section 3.8, as it is ASB practice to include guidance relating to documentation, as appropriate, throughout section 3.
Comment Response	One commentator suggested adding a documentation requirement if the company sets a design or price that is different from what the actuary recommends. The reviewers disagree, and therefore made no change.
Section 3.5, Risk Evaluation	
Comment Response	One commentator suggested replacing "evaluate the impact on profitability metrics from deviations in assumptions" with "conduct a risk evaluation." The reviewers made changes consistent with the comment.
Comment Response	One commentator suggested including "the impact of product design features" in addition to risk mitigation strategies in the last paragraph. The reviewers believe that the existing reference to product design features in section 3.4.4(g) (now section 3.4.4[f]) already addresses the comment. Therefore, the reviewers made no change.
Section 3.5.1, Cost of Capital (deleted)	
Comment Response	One commentator asked for clarification of "Cost of Capital," because "Cost of Capital" could be the hurdle rate, which is the estimated minimum required rate given the level of risk, and it is usually determined by a company's Treasury department. The commentator also said that "Cost of Capital" in the draft guidance might be interpreted as the required capital amount. The reviewers eliminated the term "cost of capital" throughout the ASOP. The concept of cost of capital was moved from section 3.5.1 to section 3.1.1(c).
Comment Response	One commentator suggested that Cost of Capital may fit better under "Initial Pricing Considerations." The reviewers agree and moved the section to section 3.1.1(c).
Comment Response	One commentator stated that the three uses of "profitability metrics" in this section description contributed to confusion about whether metrics are a measurement basis or a number, and suggested replacing "profitability metrics" with "profitability targets." The reviewers agree and revised sections 3.5 and 3.5.1 (now section 3.1.1[c]) to eliminate the use of "profitability metrics" and replaced "metrics" with "results" in section 3.5.3 (now section 3.5.2).
Section 3.5.2, Sensitivity Analysis (now section 3.5.1)	
Comment Response	One reviewer suggested that sensitivity analysis should not be required. The reviewers disagree and therefore made no change.

Section 3.5.3, Stochastic Analysis (now section 3.5.2)	
Comment	One commentator suggested deleting the phrase "the level of" in the last sentence.
Response	The reviewers revised the language to address the commentator's concern.
Suggested Addition: Section 3.5.4, Risk Identification and Classification	
Comment	One commentator suggested adding a risk evaluation technique, "Risk Identification and Classification - The actuary should consider identifying the types of risk in the product and classifying them (for example, high, medium, or low)."
Response	The reviewers believe that this type of exercise is outside the scope of the ASOP, and therefore did not make the change.
Section 3.6, Governance and Controls	
Comment	One commentator said that the language used in the second sentence may imply that the list of governance and controls are requirements and suggested changing the sentence to "examples of governance and controls may include the following."
Response	The reviewers clarified the language by adding the word "possible" before "governance and controls" and eliminating the phrase "but are not limited to."
Comment	One commentator suggested replacing "the product's expected impact on the company's future financial and risk position" with "the future financial impact of the product," noting that in practice, pricing is done on a standalone product basis, rather than on a portfolio basis. The process of considering the impact on the company's financials and risk profile can be part of the forecasting and Enterprise Risk Management process rather than a pricing exercise.
Response	The reviewers agree and made the change, but also added the word "expected" before "future financial impact."
Comment	One commentator suggested that documenting the governance and controls in pricing is a reasonable requirement and recommended replacing the phrase "should consider" with "should."
Response	The reviewers agree and made the change.
Comment	One commentator sought clarification for item (c), "separation of duties."
Response	The reviewers deleted "separation of duties" from the list of examples because the phrase could be a component of each of the other examples.
Comment	One commentator suggested adding "another" before the words "knowledgeable party."
Response	The reviewers agree and made the change.
SECTION 4. COMMUNICATIONS AND DISCLOSURES	
Section 4.1, Actuarial Communications	
Comment	One commentator suggested documenting in the actuarial report the competitive analysis that was used in the pricing analysis.
Response	The reviewers believe the comment is addressed in the revised section 4.1(a), "relevant characteristics of the product, as described in section 3.1.2."
Comment	One commentator suggested replacing "profitability metrics used to evaluate profitability" with "profitability metrics used in the profitability analysis."
Response	The reviewers agree and made the change.