



**ACTUARIAL STANDARDS BOARD**

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**Actuarial Standard  
of Practice  
No. 43**

**Property/Casualty Unpaid Claim Estimates**

**Developed by the  
Subcommittee on Reserving of the  
Casualty Committee of the  
Actuarial Standards Board**

**Adopted by the  
Actuarial Standards Board  
June 2007  
Updated for Deviation Language Effective May 1, 2011**

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June 2007

**TO:** Members of Actuarial Organizations Governed by the Standards of Practice of the Actuarial Standards Board and Other Persons Interested in Property/Casualty Unpaid Claim Estimates

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

**SUBJ:** Actuarial Standard of Practice (ASOP) No. 43

This booklet contains the final version of ASOP No. 43, *Property/Casualty Unpaid Claim Estimates*.

### Background

Currently, no ASOP exists to provide guidance to actuaries developing unpaid claim estimates. ASOP No. 36, *Statements of Actuarial Opinion Regarding Property/Casualty Loss and Loss Adjustment Expense Reserves*, provides guidance to the actuary in issuing a written statement of actuarial opinion but not in developing an unpaid claim estimate. The Casualty Actuarial Society's *Statement of Principles Regarding Property and Casualty Loss and Loss Adjustment Expense Reserves* contains some guidance. However, that document is currently under review and the revised document is expected to contain significantly less guidance than the current version. Therefore, to address this issue, the ASB charged the Subcommittee on Reserving of the ASB Casualty Committee with creating an ASOP to provide guidance to actuaries regarding property/casualty unpaid claim estimates.

### First Exposure Draft

The first exposure draft of this ASOP was approved for exposure in February 2006 with a comment deadline of June 30, 2006. Thirty-two comment letters were received and considered in developing modifications that were reflected in the second exposure draft.

### Second Exposure Draft

The second exposure draft of this ASOP was approved for exposure in February 2007 with a comment deadline of May 1, 2007. The Subcommittee on Reserving carefully considered the nine comment letters received and made changes to the language in several sections in response. For a summary of the issues contained in these comment letters, please see appendix 2.

Due to the volume of comments received throughout the exposure period on the Actuarial Central Estimate concept, an additional appendix (see appendix 3) was added to address the

comments.

The Subcommittee on Reserving thanks everyone who took the time to contribute comments and suggestions on both exposure drafts.

The ASB voted in June 2007 to adopt this standard.

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# ACTUARIAL STANDARD OF PRACTICE NO. 43

## PROPERTY/CASUALTY UNPAID CLAIM ESTIMATES

### 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 professional services relating to the estimation of loss and loss adjustment expense for unpaid claims for property/casualty coverages. Any reference to “unpaid claims” in this standard includes (unless explicitly stated otherwise) the associated unpaid claim adjustment expense even when not accompanied by the estimation of unpaid claims.
- 1.2 Scope—This standard applies to actuaries when performing professional services related to developing unpaid claim estimates only for events that have already occurred or will have occurred, as of an accounting date, exclusive of estimates developed solely for ratemaking purposes. This standard applies to the actuary when estimating unpaid claims for all classes of entities, including self-insureds, insurance companies, reinsurers, and governmental entities. This standard applies to estimates of gross amounts before recoverables (such as deductibles, ceded reinsurance, and salvage and subrogation), estimates of amounts after such recoverables, and estimates of amounts of such recoverables.

This standard applies to the actuary only with respect to unpaid claim estimates that are communicated as an actuarial finding (as described in ASOP No. 41, *Actuarial Communications*) in written or electronic form. Actions taken by the actuary’s principal regarding such estimates are beyond the scope of this standard.

The terms “reserves” and “reserving” are sometimes used to refer to “unpaid claim estimates” and “unpaid claim estimate analysis.” In this standard, the term “reserve” is limited to its strict definition as an amount booked in a financial statement. Services described above are covered by this standard, regardless as to whether the actuary refers to the work performed as “reserving,” “estimating unpaid claims” or any other term.

This standard does not apply to the estimation of items that may be a function of unpaid claim estimates or claim outcomes, such as (but not limited to) loss-based taxes, contingent commissions and retrospectively rated premiums.

This standard does not apply to unpaid claims under a “health benefit plan” covered by ASOP No. 5, *Incurred Health and Disability Claims*, or included as “health and disability liabilities” under ASOP No. 42, *Determining Health And Disability Liabilities Other Than Liabilities for Incurred Claims*. However, this standard does apply to health benefits

associated with state or federal workers compensation statutes and liability policies.

With respect to discounted unpaid claim estimates for property/casualty coverages, this standard addresses the determination of the undiscounted value of such estimates. The actuary should be guided by ASOP No. 20, *Discounting of Property and Casualty Loss and Loss Adjustment Expense Reserves*, to address additional considerations to reflect the effects of discounting.

An actuary may develop an unpaid claim estimate in the context of issuing a written statement of actuarial opinion regarding property/casualty loss and loss adjustment expense reserves. This standard addresses the determination of the unpaid claim estimate. The actuary should be guided by ASOP No. 36, *Statements of Actuarial Opinion Regarding Property/Casualty Loss and Loss Adjustment Expense Reserves*, to address additional considerations associated with the issuance of such a statement.

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.

- 1.3 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 work product covered by this standard’s scope produced on or after September 1, 2007.

## Section 2. Definitions

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

- 2.1 Actuarial Central Estimate—An estimate that represents an expected value over the range of reasonably possible outcomes.
- 2.2 Claim Adjustment Expense—The costs of administering, determining coverage for, settling, or defending claims even if it is ultimately determined that the claim is invalid.
- 2.3 Coverage—The terms and conditions of a plan or contract, or the requirements of applicable law, that create an obligation for claim payment associated with contingent events.
- 2.4 Event—The incident or activity that triggers potential for claim or claim adjustment expense payment.

- 2.5 Method—A systematic procedure for estimating the unpaid claims.
- 2.6 Model—A mathematical or empirical representation of a specified phenomenon.
- 2.7 Model Risk—The risk that the methods are not appropriate to the circumstances or the models are not representative of the specified phenomenon.
- 2.8 Parameter Risk—The risk that the parameters used in the methods or models are not representative of future outcomes.
- 2.9 Principal—The actuary’s client or employer. In situations where the actuary has both a client and an employer, as is common for consulting actuaries, the facts and circumstances will determine whether the client or the employer (or both) is the principal with respect to any portion of this standard.
- 2.10 Process Risk—The risk associated with the projection of future contingencies that are inherently variable, even when the parameters are known with certainty.
- 2.11 Unpaid Claim Estimate—The actuary’s estimate of the obligation for future payment resulting from claims due to past events.
- 2.12 Unpaid Claim Estimate Analysis—The process of developing an unpaid claim estimate.

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

- 3.1 Purpose or Use of the Unpaid Claim Estimate—The actuary should identify the intended purpose or use of the unpaid claim estimate. Potential purposes or uses of unpaid claim estimates include, but are not limited to, establishing liability estimates for external financial reporting, internal management reporting, and various special purpose uses such as appraisal work and scenario analyses. Where multiple purposes or uses are intended, the actuary should consider the potential conflicts arising from those multiple purposes and uses and should consider adjustments to accommodate the multiple purposes to the extent that, in the actuary’s professional judgment, it is appropriate and practical to make such adjustments.
- 3.2 Constraints on the Unpaid Claim Estimate Analysis—Sometimes constraints exist in the performance of an actuarial analysis, such as those due to limited data, staff, time or other resources. Where, in the actuary’s professional judgment, the actuary believes that such constraints create a significant risk that a more in-depth analysis would produce a materially different result, the actuary should notify the principal of that risk and communicate the constraints on the analysis to the principal.
- 3.3 Scope of the Unpaid Claim Estimate—The actuary should identify the following:
- a. the intended measure of the unpaid claim estimate;



1. Examples of various types of measures for the unpaid claim estimate include, but are not limited to, high estimate, low estimate, median, mean, mode, actuarial central estimate, mean plus risk margin, actuarial central estimate plus risk margin, or specified percentile.

As defined in section 2.1, the actuarial central estimate represents an expected value over the range of reasonably possible outcomes. Such range of reasonably possible outcomes may not include all conceivable outcomes, as, for example, it would not include conceivable extreme events where the contribution of such events to an expected value is not reliably estimable. An actuarial central estimate may or may not be the result of the use of a probability distribution or a statistical analysis. This description is intended to clarify the concept rather than assign a precise statistical measure, as commonly used actuarial methods typically do not result in a statistical mean.

The terms “best estimate” and “actuarial estimate” are not sufficient identification of the intended measure, as they describe the source or the quality of the estimate but not the objective of the estimate.

2. The actuary should consider whether the intended measure is appropriate to the intended purpose or use of the unpaid claim estimate.
  3. The description of the intended measure should include the identification of whether any amounts are discounted.
    - b. whether the unpaid claim estimate is to be gross or net of specified recoverables;
    - c. whether and to what extent collectibility risk is to be considered when the unpaid claim estimate is affected by recoverables;
    - d. the specific types of unpaid claim adjustment expenses covered in the unpaid claim estimate (for example, coverage dispute costs, defense costs, and adjusting costs);
    - e. the claims to be covered by the unpaid claim estimate (for example, type of loss, line of business, year, and state); and
    - f. any other items that, in the actuary’s professional judgment, are needed to describe the scope sufficiently.
- 3.4 Materiality—The actuary may choose to disregard items that, in the actuary’s professional judgment, are not material to the unpaid claim estimate given the intended purpose and use. The actuary should evaluate materiality based on professional judgment, taking into account the requirements of applicable law and the intended purpose of the unpaid claim estimate.

- 3.5 Nature of Unpaid Claims—The actuary should have an understanding of the nature of the unpaid claims being estimated. This understanding should be based on what a qualified actuary in the same practice area could reasonably be expected to know or foresee as being relevant and material to the estimate at the time of the unpaid claim estimate analysis, given the same purpose, constraints, and scope. The actuary need not be familiar with every aspect of potential unpaid claims.

Examples of aspects of the unpaid claims (including any material trends and issues associated with such elements) that may require an understanding include the following:

- a. coverage;
- b. conditions or circumstances that make a claim more or less likely or the cost more or less severe;
- c. the underlying claim adjustment process; and
- d. potential recoverables.

- 3.6 Unpaid Claim Estimate Analysis—The actuary should consider factors associated with the unpaid claim estimate analysis that, in the actuary’s professional judgment, are material and are reasonably foreseeable to the actuary at the time of estimation. The actuary is not expected to become an expert in every aspect of potential unpaid claims.

The actuary should consider the following items when performing the unpaid claim estimate analysis:

- 3.6.1 Methods and Models—The actuary should consider methods or models for estimating unpaid claims that, in the actuary’s professional judgment, are appropriate. The actuary should select specific methods or models, modify such methods or models, or develop new methods or models based on relevant factors including, but not limited to, the following:

- a. the nature of the claims and underlying exposures;
- b. the development characteristics associated with these claims;
- c. the characteristics of the available data;
- d. the applicability of various methods or models to the available data; and
- e. the reasonableness of the assumptions underlying each method or model.

The actuary should consider whether a particular method or model is appropriate in light of the purpose, constraints, and scope of the assignment. For example, an

unpaid claim estimate produced by a simple methodology may be appropriate for an immediate internal use. The same methodology may be inappropriate for external financial reporting purposes.

The actuary should consider whether, in the actuary's professional judgment, different methods or models should be used for different components of the unpaid claim estimate. For example, different coverages within a line of business may require different methods.

The actuary should consider the use of multiple methods or models appropriate to the purpose, nature and scope of the assignment and the characteristics of the claims unless, in the actuary's professional judgment, reliance upon a single method or model is reasonable given the circumstances. If for any material component of the unpaid claim estimate the actuary does not use multiple methods or models, the actuary should disclose and discuss the rationale for this decision in the actuarial communication.

In the case when the unpaid claim estimate is an update to a previous estimate, the actuary may choose to use the same methods or models as were used in the prior unpaid claim estimate analysis, different methods or models, or a combination of both. The actuary should consider the appropriateness of the chosen methods or models, even when the decision is made not to change from the previously applied methods or models.

- 3.6.2 Assumptions—The actuary should consider the reasonableness of the assumptions underlying each method or model used. Assumptions generally involve significant professional judgment as to the appropriateness of the methods and models used and the parameters underlying the application of such methods and models. Assumptions may be implicit or explicit and may involve interpreting past data or projecting future trends. The actuary should use assumptions that, in the actuary's professional judgment, have no known significant bias to underestimation or overestimation of the identified intended measure and are not internally inconsistent. Note that bias with regard to an expected value estimate would not necessarily be bias with regard to a measure intended to be higher or lower than an expected value estimate.

The actuary should consider the sensitivity of the unpaid claim estimates to reasonable alternative assumptions. When the actuary determines that the use of reasonable alternative assumptions would have a material effect on the unpaid claim estimates, the actuary should notify the principal and attempt to discuss the anticipated effect of this sensitivity on the analysis with the principal.

When the principal is interested in the value of an unpaid claim estimate under a particular set of assumptions different from the actuary's assumptions, the actuary may provide the principal with the results based on such assumptions, subject to appropriate disclosure.

- 3.6.3 Data—The actuary should refer to ASOP No. 23, *Data Quality*, with respect to the selection of data to be used, relying on data supplied by others, reviewing data, and using data.
- 3.6.4 Recoverables—Where the unpaid claim estimate analysis encompasses multiple types of recoverables, the actuary should consider interaction among the different types of recoverables and should adjust the analysis to reflect that interaction in a manner that the actuary deems appropriate.
- 3.6.5 Gross vs. Net—The scope of the unpaid claim estimate analysis may require estimates both gross and net of recoverables. Gross and net estimates may be viewed as having three components, which are the gross estimate, the estimated recoverables, and the net estimate. The actuary should consider the particular facts and circumstances of the assignment when choosing which components to estimate.
- 3.6.6 External Conditions—Claim obligations are influenced by external conditions, such as potential economic changes, regulatory actions, judicial decisions, or political or social forces. The actuary should consider relevant external conditions that are generally known by qualified actuaries in the same practice area and that, in the actuary’s professional judgment, are likely to have a material effect on the actuary’s unpaid claim estimate analysis. However, the actuary is not required to have detailed knowledge of or consider all possible external conditions that may affect the future claim payments.
- 3.6.7 Changing Conditions—The actuary should consider whether there have been significant changes in conditions, particularly with regard to claims, losses, or exposures, that are likely to be insufficiently reflected in the experience data or in the assumptions used to estimate the unpaid claims. Examples include reinsurance program changes and changes in the practices used by the entity’s claims personnel to the extent such changes are likely to have a material effect on the results of the actuary’s unpaid claim estimate analysis. Changing conditions can arise from circumstances particular to the entity or from external factors affecting others within an industry. When determining whether there have been known, significant changes in conditions, the actuary should consider obtaining supporting information from the principal or the principal’s duly authorized representative and may rely upon their representations unless, in the actuary’s professional judgment, they appear to be unreasonable.
- 3.6.8 Uncertainty—The actuary should consider the uncertainty associated with the unpaid claim estimate analysis. This standard does not require or prohibit the actuary from measuring this uncertainty. The actuary should consider the purpose and use of the unpaid claim estimate in deciding whether or not to measure this uncertainty. When the actuary is measuring uncertainty, the actuary should consider the types and sources of uncertainty being measured and choose the methods, models, and

assumptions that are appropriate for the measurement of such uncertainty. For example, when measuring the variability of an unpaid claim estimate covering multiple components, consideration should be given to whether the components are independent of each other or whether they are correlated. Such types and sources of uncertainty surrounding unpaid claim estimates may include uncertainty due to model risk, parameter risk, and process risk.

- 3.7 Unpaid Claim Estimate—The actuary should take into account the following with respect to the unpaid claim estimate:
- 3.7.1 Reasonableness—The actuary should assess the reasonableness of the unpaid claim estimate, using appropriate indicators or tests that, in the actuary’s professional judgment, provide a validation that the unpaid claim estimate is reasonable. The reasonableness of an unpaid claim estimate should be determined based on facts known to, and circumstances known to or reasonably foreseeable by, the actuary at the time of estimation.
  - 3.7.2 Multiple Components—When the actuary’s unpaid claim estimate comprises multiple components, the actuary should consider whether, in the actuary’s professional judgment, the estimates of the multiple components are reasonably consistent.
  - 3.7.3 Presentation—The actuary may present the unpaid claim estimate in a variety of ways, such as a point estimate, a range of estimates, a point estimate with a margin for adverse deviation, or a probability distribution of the unpaid claim amount. The actuary should consider the intended purpose or use of the unpaid claim estimate when deciding how to present the unpaid claim estimate.
- 3.8 Documentation—The actuary should consider the intended purpose or use of the unpaid claim estimate when documenting work, and should refer to ASOP No. 41, *Actuarial Communications*.

## Section 4. Communications and Disclosures

- 4.1 Actuarial Communication—When issuing an actuarial communication subject to this standard, the actuary should consider the intended purpose or use of the unpaid claim estimate and refer to ASOP Nos. 23 and 41.

In addition, consistent with the intended purpose or use, the actuary should disclose the following in an appropriate actuarial communication:

- a. the intended purpose(s) or use(s) of the unpaid claim estimate, including adjustments that the actuary considered appropriate in order to produce a single work product for multiple purposes or uses, if any, as described in section 3.1;
- b. significant limitations, if any, which constrained the actuary’s unpaid claim estimate analysis such that, in the actuary’s professional judgment, there is a significant risk that a more in-depth analysis would produce a materially different result, as described in section 3.2;
- c. the scope of the unpaid claim estimate, as described in section 3.3;
- d. the following dates: (1) the accounting date of the unpaid claim estimate, which is the date used to separate paid versus unpaid claim amounts; (2) the valuation date of the unpaid claim estimate, which is the date through which transactions are included in the data used in the unpaid claim estimate analysis; and (3) the review date of the unpaid claim estimate, which is the cutoff date for including information known to the actuary in the unpaid claim estimate analysis, if appropriate. An example of such communication is as follows: “This unpaid claim estimate as of December 31, 2005 was based on data evaluated as of November 30, 2005 and additional information provided to me through January 17, 2006.”;
- e. specific significant risks and uncertainties, if any, with respect to whether actual results may vary from the unpaid claim estimate;
- f. significant events, assumptions, or reliances, if any, underlying the unpaid claim estimate that, in the actuary’s professional judgment, have a material effect on the unpaid claim estimate, including assumptions provided by the actuary’s principal or an outside party or assumptions regarding the accounting basis or application of an accounting rule. If the actuary depends upon a material assumption, method, or model that the actuary does not believe is reasonable or cannot determine to be reasonable, the actuary should disclose the dependency of the estimate on that assumption/method/model and the source of that assumption/method/model. The actuary should use professional judgment to determine whether further disclosure would be appropriate in light of the purpose of the assignment and the intended users

of the actuarial communication;

- g. 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);
- h. 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
- i. 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 Additional Disclosures—In certain cases, consistent with the intended purpose or use, the actuary may need to make the following disclosures in addition to those in section 4.1:

- a. In the case when the actuary specifies a range of estimates, the actuary should disclose the basis of the range provided, for example, a range of estimates of the intended measure (each of such estimates considered to be a reasonable estimate on a stand-alone basis); a range representing a confidence interval within the range of outcomes produced by a particular model or models; or a range representing a confidence interval reflecting certain risks, such as process risk and parameter risk.
- b. In the case when the unpaid claim estimate is an update of a previous estimate, the actuary should disclose changes in assumptions, procedures, methods or models that the actuary believes to have a material impact on the unpaid claim estimate and the reasons for such changes to the extent known by the actuary. This standard does not require the actuary to measure or quantify the impact of such changes.

## Appendix 1

### Background and Current Practices

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

#### Background

This standard defines issues and considerations that an actuary should take into account when estimating unpaid claim and claim adjustment expense for property and casualty coverages or hazard risks. The *Statement of Principles Regarding Property and Casualty Loss and Loss Adjustment Expense Reserves* was adopted by the Board of Directors of the Casualty Actuarial Society in May 1988. The *Statement of Principles* has served as the primary guidance regarding estimation of unpaid property and casualty claim and claim adjustment expense amounts providing both principles and considerations related to practice. In conjunction with the development of this standard, the *Statement of Principles* is undergoing revision to focus on principles rather than also discussing considerations.

A decision was made to exclude unpaid claim estimates developed for ratemaking purposes from the scope of this standard. This was done to avoid placing inappropriate requirements on unpaid claim estimates in the ratemaking context, and to keep the scope workable by excluding additional considerations only applicable to the ratemaking context. Ratemaking requires more of a hypothetical analysis of possible future events than an analysis of the cost of past events. Hence, the selection and evaluation of assumptions and methods for ratemaking purposes may be different from the selection and evaluation of such for past event unpaid claim estimates.

#### Current Practices

Actuaries are guided by the *Statement of Principles Regarding Property and Liability Loss and Loss Adjustment Expense Reserves* of the Casualty Actuarial Society. Other ASOPs issued by the Actuarial Standards Board pertaining to claim and claim adjustment expense estimates have included ASOP No. 9, *Documentation and Disclosure in Property and Casualty Insurance Ratemaking, Loss Reserving, and Valuations*; ASOP No. 20, *Discounting of Property and Casualty Loss and Loss Adjustment Expense Reserves*; ASOP No. 23, *Data Quality*; ASOP No. 36, *Statement of Opinion Regarding Property/Casualty Loss and Loss Adjustment Expense Reserves*, and ASOP No. 41, *Actuarial Communications*. In addition, since 1993, the Casualty Practice Council of American Academy of Actuaries has published practice notes addressing current National Association of Insurance Commissioners' requirements for the statement of actuarial opinion. The practice notes describe some current practices and show illustrative wording for handling issues and problems. While these practice notes (and future practice notes issued after the effective date of this standard) can be updated to react in a timely manner to new concerns or requirements, they are not binding, and they have not gone through the exposure and adoption process of the standards of actuarial practice promulgated by the Actuarial Standards



Board.

There are also numerous educational papers in the public domain relevant to the topic of unpaid claim estimates, including those published by the Casualty Actuarial Society. Some of these are refereed and others are not. While these may provide useful educational guidance to practicing actuaries, none is an actuarial standard.

## Appendix 2

### Comments on the Second Exposure Draft and Responses

The second exposure draft of this ASOP, *Property/Casualty Unpaid Claim Estimates*, was issued in February 2007 with a comment deadline of May 1, 2007. Nine 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 Subcommittee on Reserving carefully considered all comments received and the Casualty Committee and ASB reviewed (and modified, where appropriate) the proposed changes.

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

The term “reviewers” in appendix 2 includes the subcommittee, the Casualty Committee, and the ASB. Also, unless otherwise noted, the section numbers and titles used in appendix 4 refer to those in the second exposure draft.

<b>GENERAL COMMENTS</b>	
Comment	Two commentators requested that the standard comment on what would constitute reasonable review of a previous estimate. Specifically, they were concerned with actuaries reviewing an earlier estimate with the benefit of hindsight, particularly in a litigation situation.
Response	A sentence has been added to section 3.7.1, Reasonableness, to address this issue.
<b>SECTION 1. PURPOSE, SCOPE, CROSS REFERENCES, AND EFFECTIVE DATE</b>	
<b>Section 1.2, Scope</b>	
Comment	One commentator suggested a clarification to section 1.2, inserting the words “or will have occurred” immediately after the words “for events that have already occurred.”
Response	The reviewers agree and made the change.
Comment	One commentator was concerned that the development of unpaid claim estimates for ratemaking purposes would benefit from much of what is in this standard, despite the ratemaking scope exclusion in this standard. The recommendation was to retain the ratemaking exclusion in this standard but to then begin work on a revision that would remove such an exclusion.
Response	The reviewers agree with retaining the ratemaking scope exclusion for this standard but believe the ratemaking situation is outside their current charge.

Comment	One commentator suggested adding the words “specific types of” before the word “recoverables” in the first paragraph of section 1.2, as otherwise it might imply that all types of recoverables are being discussed.
Response	The reviewers disagree with the suggestion, as the intent is to potentially include all types of recoverables related to unpaid claims, relying on the actuary in section 3.3, Scope of the Unpaid Claim Estimate, to identify the particular recoverables (if any) applicable to the given purpose or use of the unpaid claim estimate(s) being developed. The reviewers made no change.
Comment	Two commentators were concerned that some may be confused by the use of the term “unpaid claim estimates” rather than “reserves.”
Response	The reviewers added a paragraph to section 1.2 for clarity.
Comment	One commentator was concerned that the scope exclusion for items that “may be a function of unpaid claim estimates” would inadvertently exclude recoverables that are included in unpaid claims.
Response	The reviewers believe that the standard is sufficiently clear (as reflected in the first paragraph, last sentence of section 1.2) that such recoverables are covered by the standard.
Comment	One commentator suggested adding “pricing” and “premiums” to the list of items that are a function of unpaid claim estimates or claim outcomes but not included in this standard’s scope.
Response	The reviewers do not feel this is necessary, as ratemaking is already excluded in the section’s first paragraph, and this list is not meant to be all inclusive.
Comment	Two commentators expressed concern that health insurance written by companies filing property/casualty annual statements may be included in the scope. One of these commentators recommended addressing this by explicitly excluding health insurance from the scope. The other commentator recommended that there was no need for a separate property casualty standard on unpaid claim estimates, as the property/casualty perspective could probably be addressed in the current ASOP No. 5, <i>Incurred Health and Disability Claims</i> . The latter commentator also suggested a definition of “property/casualty” be provided if a separate property/casualty standard was to be adopted.
Response	The reviewers agree that such confusion may exist, and added a paragraph to section 1.2, Scope.
Comment	One commentator stated the end of section 1.2 dealing with conflict with applicable law, etc. is not necessary, and that the term “provision” (found in section 1.3, Cross References) is also used in some jurisdictions in place of policy or loss reserves.
Response	The reviewers disagree as this wording is standard for all ASOPs and made no change.

<b>SECTION 2. DEFINITIONS</b>	
<b>Section 2.1, Actuarial Central Estimate</b>	
Comment	One commentator objected to the term “actuarial central estimate,” due to the concern that it would be a truncated mean in most situations, biased low relative to the expected value, and recommended that if absolutely needed in the standard that it be relabeled without the word “actuarial” as part of the label.
Response	The reviewers disagree with the deletion of the term “actuarial” and made no change. Refer to appendix 3.
Comment	One commentator was concerned that the use of the term “expected value” in the definition of “actuarial central estimate” would imply a statistical mean. The commentator suggested changing “expected value” to “central tendency...such as an average or an expected value.”
Response	The reviewers considered similar wording in the drafting process and made no change. Refer to appendix 3.
Comment	One commentator suggested that different terms be used to describe the results from methods vs. models. Specifically, the commentator suggested the term “actuarial central estimate” be limited to describing a result from a method, while the term “actuarial distribution estimate” or some other term be used to describe the results of a model.
Response	The reviewers believe the standard allows the actuary to describe the results using whatever term the actuary sees fit to use (the term “actuarial central estimate” is provided as just one of many possible terms that can be used) and made no change.
<b>Section 2.3, Coverage</b>	
Comment	One commentator was concerned that the definition of “coverage” did not include self-insured first party claims.
Response	The reviewers could not envision a situation where a “liability” or claim would exist with regard to first party self-insured losses. Rather, this was viewed as more of a reduction in asset value. As such, the reviewers did not agree with the need to address self-insured first party claims and made no change.
<b>Section 2.5, Method and 2.6, Model</b>	
Comment	One commentator stated, “There are definite differences between ‘methods’ and ‘models’ that are much more substantial and fundamental than” what is in the proposed standard. The commentator suggested that more complete definitions be taken from the CAS Working Party paper on reserve variability.
Response	The definitions in the standard are abbreviated versions of what is in the referenced Working Party paper. The reviewers believe that further elaboration is unnecessary, although reference to various CAS publications has been added to appendix 1.
<b>Section 2.7. Model Risk</b>	
Comment	One commentator believed that combining reference to methods and models in the definition of “model risk” in section 2.7 caused grammatical problems. The suggested fix was to create a new term, “method risk,” which would also lead to a slight change in paragraph 3.6.8, Uncertainty.
Response	The reviewers believe that common usage is to include what was described as “method risk” in the category of “model risk.” Hence, a change was made to the definition, but a separate term (and definition) for “method risk” was not added.

<b>Section 2.8, Parameter Risk</b>	
Comment	One commentator objected to the reference to “methods” in the definition of “parameter” risk, due to a belief that “since a ‘method’ does not have an underlying distribution there are no parameters to estimate.”
Response	The reviewers believe that this is within the purview of common usage of the terms “methods” and “parameters,” and made no change.
Comment	One commentator suggested adding a definition of “parameter” for consistency purposes.
Response	The reviewers believe that such a definition is unnecessary and made no change.
<b>Section 2.11, Unpaid Claim Estimates</b>	
Comment	One commentator suggested modifying this definition (and the unpaid claim estimate analysis definition) to clarify that unpaid claim estimates are synonymous with loss reserve estimates or unpaid claim liability estimates in financial reporting contexts.
Response	The reviewers added language to section 1.2, Scope, for clarity.
<b>SECTION 3. ANALYSIS OF ISSUES AND RECOMMENDED PRACTICES</b>	
<b>Section 3.1, Purpose or Use of the Unpaid Claim Estimate</b>	
Comment	One commentator agreed with the use of the term “unpaid claim estimate” rather than “reserve” to avoid the financial reporting context, but believed that reference to the “intended purpose” of the estimate forced the discussion back solely to reserves and financial reporting. The suggested fix was to remove any discussion of “intended purpose” in the standard, and focus solely on estimating the distribution of possible future outcomes in the standard. (This concern also led to minor changes suggested in section 1.2, Scope.)
Response	The reviewers disagree that the only “intended purposes” would be those relating to financial reporting. Other “intended purposes” (some of which are listed in section 3.1) include merger/acquisition-related valuations, scenario analyses for risk management purposes, valuations as part of commutation discussions, etc. The reviewers made no change.
Comment	The last sentence of this section states “the actuary...should consider adjustments to accommodate the multiple purposes to the extent...it is appropriate and practical” to do so. One commentator asked if the intent was for the actuary to adjust the estimate or to provide different estimates for each purpose/use.
Response	The reviewers discussed different possible approaches to addressing this situation and decided that the standard should be silent on whether to produce multiple estimates, produce a single estimate that attempts to accommodate both purposes (assuming that this is possible), or some other option. Instead, the standard requires the actuary to consider some adjustment and leaves it up to the actuary’s professional judgment as to whether or what kind of adjustment to make. The reviewers made no change.

<b>Section 3.2, Constraints on the Unpaid Claim Estimate Analysis</b>	
Comment	One commentator suggested replacing “staff” with “resources” in this section as to be more general.
Response	The reviewers agree and changed the language.
Comment	One commentator suggested replacing “result” with “estimate” in this section so that it is more consistent with the rest of the ASOP.
Response	The reviewers disagree. As worded, “result” could incorporate other parts of the analysis beyond the estimate, such as analysis of uncertainty (if included in the assignment’s scope). The reviewers made no change.
Comment	Where there is a significant risk of the type described in this section, one commentator recommended that this situation be a required disclosure.
Response	The reviewers disagree noting that required disclosure is already addressed in section 4.1(b) and made no change.
<b>Section 3.3, Scope of the Unpaid Claim Estimate</b>	
Comment	One commentator was concerned that the wording in 3.3(a)(1) may cause actuaries to limit themselves to only the alternatives listed. Alternate wording was suggested.
Response	The reviewers agree and changed the wording in response.
Comment	One commentator suggested an editorial change for section 3.3(c), whereby “is to be considered” would be changed to “is considered.”
Response	The reviewers disagree with the suggestion, as section 3.3 addresses identification of the scope of the work in advance of the actual analysis. Hence, “is to be” is more appropriate than “is” in this context. The reviewers made no change.
Comment	One commentator suggested replacing the phrase “any other items” in section 3.3(f) with “other items” or “any other significant items,” due to a concern that the current wording would be too all inclusive and could result in excessive procedures.
Response	The reviewers disagree, as the reference at the end of the paragraph (“needed to describe the scope sufficiently”) already addresses the stated concern, and made no change.
Comment	One commentator suggested replacing “material to the actuary” with “material to the estimate” in section 3.5, Nature of Unpaid Claims, first paragraph.
Response	The reviewers agree and made the change.
<b>Section 3.6, Unpaid Claim Estimate Analysis</b>	
Comment	One commentator was concerned with the possible ambiguity with the term “factors” in this paragraph.
Response	The reviewers believe that this possible ambiguity is sufficiently addressed by the discussion in section 3.6.

Comment	One commentator suggested that additional guidance on unpaid claim adjustment expenses be provided for situations involving prepaid expenses and third party administrators (TPAs).
Response	The standard already includes claim adjustment expenses in its scope, as “unpaid claims” is defined in section 1.1, Purpose, as including the related claim adjustment expenses. The reviewers also believe that prepayments to TPAs for the expense of adjusting claims is a specific situation and, as such, is too detailed for the general guidance in this standard. The reviewers made no change.
<b>Section 3.6.1, Methods and Models</b>	
Comment	One commentator stated that “we should be doing all we can to foster the rigorous use of stochastic models in favor of traditional deterministic methods” and objected to the use of “methods” and “models” as essentially interchangeable terms.
Response	The reviewers consider judgment to be a major component of the application of both methods and models. As such, the reviewers do not consider one to be clearly superior to the other in all situations. The reviewers made no change.
Comment	In section 3.6.1, in the phrase that says, “For example, different coverages within a line of business may require different methods,” one commentator questioned whether the word “require” was appropriate.
Response	The reviewers believe that the word “require” is appropriate in this context, given that it is used in the context of an example and not in providing a direct requirement. The reviewers made no change.
Comment	One commentator suggested wording with regard to required disclosure if multiple methods were not used for “any component.” The suggestion limited the disclosure to only material components. The same commentator also asked for clarification of the term “component.”
Response	The reviewers reworded the section to clarify that the requirement only existed for material components. The suggested clarification of the term “component” was not adopted, as the reviewers felt that it would lead to a list of component examples that would never be complete for all applications.
<b>Section 3.6.3, Data</b>	
Comment	One commentator suggested adding guidance that “additional liabilities may be necessary if the data does not balance to recorded claim expenses, i.e., if there is a timing difference between when a claim is shown as paid in the actuarial data and when it is recorded by the principal.”
Response	The reviewers believe that this is a specific situation and is covered by the general guidance in section 3.6.1(c). The reviewers made no change.
<b>Section 3.6.6, External Conditions</b>	
Comment	One commentator suggested that section 3.6.6, External Conditions, focused on past or current conditions, while section 3.6.7, Changing Conditions, focused on current or future conditions, and that these time horizons might be clarified in the standard.
Response	The reviewers do not agree that the time horizons in the two sections are constrained as suggested by the commentator and made no change.

<b>Section 3.6.7, Changing Conditions</b>	
Comment	Two commentators suggested that the actuary should be required to evaluate the reasonableness of management’s representations (as referred to in section 3.6.7) under certain circumstances. One of these commentators stated the reference to “reasonable representations” in section 3.6.7 already implies the actuary is required to perform such an evaluation but suggested the standard state this requirement explicitly.
Response	The reviewers disagreed that the standard should require an actuary to perform an evaluation affirming the reasonableness of management’s representations and have revised the language to indicate the actuary may rely upon their representations unless, in the actuary’s professional judgment, they appear to be unreasonable.
<b>Section 3.6.8, Uncertainty</b>	
Comment	One commentator suggested that examples of uncertainty measures be provided.
Response	The reviewers did not believe that such a list was necessary and made no change.
Comment	One commentator suggested that the original reference to the covariance of multiple component’s estimates implied particular statistical tests or relationships that may not be amenable to testing. Replacement wording was suggested.
Response	The reviewers acknowledge the concern and developed new wording that addressed the concern expressed.
Comment	One commentator stated that since the concept of a risk margin is implied by this section, this section should discuss risk margins explicitly.
Response	The reviewers disagree that discussion of uncertainty requires discussion of a risk margin and made no change.
<b>Section 3.7.1, Reasonableness</b>	
Comment	One commentator asked if the actuary should also be assessing the reasonableness of the estimate relative to its intended purpose.
Response	The reviewers believe that the required disclosures in section 4.1, Actuarial Communications, and ASOP No. 41, <i>Actuarial Communications</i> , sufficiently address the commentator’s concerns and made no change.



<b>Section 3.7.2, Multiple Components</b>	
Comment	One commentator stated, “I am not certain how ‘estimates of the multiple components’ can be consistent. I can see how the assumptions used can be consistent, the methods can be consistent, or they can be consistently developed.” As a result, the commentator suggested that this section be clarified.
Response	The reviewers believe that the correct focus is on consistency of the estimates of the multiple components as stated. It is not always apparent whether or not the assumptions and/or models/methods underlying the estimates are consistent until the results of those assumptions/models/methods are evaluated. For example, an estimate of gross claim liabilities and a separate estimate of net claim liabilities may each seem to be reasonable when evaluated individually based on the underlying assumptions/models/methods used in their estimation, but the resulting relationship between gross and net estimates may be found to be unreasonable, indicating that the estimates were not reasonably consistent. The reviewers made no change.
<b>Section 3.7.3, Presentation</b>	
Comment	One commentator recommended that the standard require that the methods and/or models be appropriate to the intended purpose of the estimate, and that this is more important than requiring such of the estimate presentation.
Response	The wording in section 3.6.1, Methods and Models, already addresses this issue and no change was made.
<b>Section 4. Communications and Disclosures</b>	
<b>Section 4.1, Actuarial Communications</b>	
Comment	One commentator noted that the definition of “valuation date” found in section 4.1(d) differed from that found in ASOP No. 41, <i>Actuarial Communications</i> , “the date as of which the liabilities are determined.”
Response	The reviewers believe that the definition in section 4.1(d) of this standard conforms with standard usage of the term among casualty actuaries and made no change.
Comment	One commentator suggested further elaborating on this disclosure requirement by requiring “specific comments regarding the major factors or particular conditions applicable to the unpaid claim estimate.” Otherwise, the commentator was concerned that this would result in too many boilerplate disclosures about the risk.
Response	The reviewers acknowledge the concern and addressed it by adding the word “specific” before “significant” in section 4.1(e).
<b>Section 4.2, Additional Disclosures</b>	
Comment	Where the unpaid claim estimate is an update of a previous estimate, one commentator suggested requiring that the amount of change in estimate be disclosed, with reasons provided whenever the change was significant and the reasons for the change were known.
Response	The reviewers did not agree and made no change.

**Appendix**

**Appendix 1—Background**

Comment	One commentator suggested a change to appendix 1 regarding the proposed revision to the CAS <i>Statement of Principles Regarding Property and Casualty Loss and Loss Adjustment Expense Reserves</i> . The commentator recommended that the wording be changed from “focus more narrowly on principles” to “focus more broadly on principles.”
Response	The reviewers disagree, as the proposed revision would remove various sections in the current Principles statement, including extensive discussion on Considerations, and made no change.

### Appendix 3

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

#### Comments on “Actuarial Central Estimate”

During this standard’s development, the “actuarial central estimate” concept and definition elicited the most comments of any of the topics covered. The subcommittee believes that the issues raised by this topic are worthy of expanded discussion. The following is meant to provide additional clarity to these key concepts.

This appendix is organized by first providing a background as to the originally proposed wording regarding the actuarial central estimate, followed by a summary of comments received on the actuarial central estimate proposal and subcommittee responses.

#### Background

The term “actuarial central estimate” was originally created by the subcommittee due to a desire to have a “default” intended measure for the unpaid claim estimate.

The standard requires that the actuary identify (and disclose) the intended measure. The subcommittee had debated whether or not to require disclosure of the estimate’s intended measure in all cases, or to allow for a default intended measure.<sup>1</sup> If a default did exist, the subcommittee felt that it needed to allow for many of the traditional actuarial estimation methods. But many traditional actuarial methods do not explicitly define the intended measure that results from their application. Implicitly, they attempt to produce a central estimate<sup>2</sup> of some sort with regard to the distribution of possible outcomes, but the resulting intended measure does not have a well-defined statistical definition. Hence, if the standard were to include a default intended measure, the subcommittee believed that it would have to create a new term and a corresponding definition.

As to the definition of the term, it is generally agreed that most traditional actuarial methods are meant to produce some measure of central tendency. But what measure? There are several different measures of central tendency, including (for example) mean, median, mode, and truncated mean. The subcommittee believed that “mean” best represented the central tendency measure implicitly underlying most traditional actuarial methods, even if such traditional methods are not statistical in nature. (For further discussion, this will be referred to as a “conceptual mean” rather than a “statistical mean.”)

Next, the subcommittee considered the issue of whether this conceptual mean is intended to

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<sup>1</sup> Note that several accounting frameworks use the term “measurement objective” for this concept, rather than “intended measure.”

<sup>2</sup> Note that “central estimate” does not imply a midpoint. One respondent suggested using the words “medium or intermediate” estimate to avoid any incorrect interpretation that a “central estimate” must be a midpoint.

incorporate the entire range of all possible outcomes. In some lines of business, the subcommittee felt that this would be problematic due to the potential for doomsday and/or systemic shocks in the tail of the distribution. For example, it is doubtful whether any actuarial estimate (stochastic or deterministic) in 1999 considered the liability for Y2K events to the extent they were forecasted at that time. Many of those Y2K-event liability estimates proved to be overly pessimistic, and most financial statement preparers did not incorporate such estimates in their financial statements prior to January 1, 2000. Similarly, estimates of future mass torts that have yet to be identified (for example, “the next asbestos”) are generally viewed as not reliably estimable. Hence, the subcommittee felt that requiring that the entire range of all possible outcomes be considered in the estimation of the mean is unrealistic.

In looking for other approaches for dealing with this situation, the subcommittee looked at developments in other parts of the world. The subcommittee found that the term “central estimate” was being used in various locations to describe the intended measure of traditional methods.<sup>3 4</sup> Initial drafts of this standard also used the same term, but it was eventually decided that the phrase “central estimate” was too generic, with risk of confusion and misinterpretation due to common meanings of the term “central.” The subcommittee felt that a new term needed to be developed that conveyed the same concepts but without the same risk of misinterpretation. This led to the term “Actuarial Central Estimate,” which was designed to be non-generic, and hence capable of being defined solely by this standard.

As a result of the deliberations discussed above, the subcommittee had developed a rudimentary definition (“conceptual mean,” excluding remote or speculative outcomes) and a name for a default intended measure consistent with the desired default. The resulting paragraph in the first exposure draft was as follows:

*2.1 Actuarial Central Estimate—An estimate that represents a mean excluding remote or speculative outcomes that, in the actuary’s professional judgment, is neither optimistic nor pessimistic. An actuarial central estimate may or may not be the result of the use of a probability distribution or a statistical analysis. This definition is intended to clarify the concept rather than assign a precise statistical measure, as commonly used actuarial methods typically do not result in a statistical mean.*

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3 “‘Central Estimate’: an estimate that contains no deliberate or conscious over or under estimation,” from <http://www.actuaries.org.nz/publications/PS4%20General%20Insurance.pdf#search=%22central%20estimate%20actuarial%22>, September 5, 2006

4 As the recently modified AASB1023 now requires companies to disclose the central estimate of their liabilities (that is the 50% PoS or “best estimate” figure). INFORMATION FOR OBSERVERS, IASB Meeting: 19 April 2005, London, Topic: Insurance Contracts - Education session (Agenda item 3)

## Comments and Responses

The comments from this standard's first exposure draft on "actuarial central estimate" and its later usage could generally be grouped into the following five categories:

- Concern with the use of the term "mean" in the "actuarial central estimate" definition, as doing so may imply statistical approaches and distributions regardless of the caveats of such in the proposed definition.
- Concern with the exclusion of "remote or speculative" outcomes in the "actuarial central estimate" definition, as doing so may lead to an estimate biased low (relative to a mean reflecting the entire distribution of possible outcomes).
- Desire for the default to allow for or possibly even promote conservatism.
- Desire that the standard promote statistical techniques.
- Preference for the term "best estimate" over "actuarial central estimate."

As a result of the comments that were received, the subcommittee decided to eliminate the concept of prescribing a default measure since opinions differed widely on what the default measure ought to be. It was felt that requiring the actuary to identify the intended measure in all circumstances allowed the actuary to describe the intended measure in the actuary's own words. However, the subcommittee felt that it was important to have terminology for the measure that results from traditional actuarial methods where the actuary is conceptually aiming for a mean estimate. The subcommittee therefore retained the term "actuarial central estimate," revised the definition and included it as an example of an intended measure in the non-exhaustive list that was provided in section 3.3(a)(1).

More detailed responses to the comments are shown below:

### Comment:

Some commentators objected to the use of the term "mean" in the definition of "actuarial central estimate," as they believed that it was impossible to use the term without conveying an implied statistical approach.

### Response:

The final definition replaced the term "mean" with "expected value." Additional clarification is provided in 3.3(a)(1), where it states that the "description [of actuarial central estimate] is intended to clarify the concept rather than assign a precise statistical measure, as commonly used actuarial methods typically do not result in a statistical mean."

Comment:

Some commentators had a concern with the exclusion of “remote or speculative” outcomes in the originally proposed “actuarial central estimate” definition, as they felt that this would lead to estimates that were biased low (relative to a statistical mean reflecting the entire distribution).

Response:

The subcommittee believes that nearly all methods currently in use for estimating unpaid claims, whether stochastic or deterministic, do not reflect all possible outcomes, nor should they necessarily do so. The major concern of the subcommittee in this area are those outcomes where reliable determination of the outcomes’ contribution to a mean estimate are so problematic as to be speculative and which are not expected to be normal or recurring on a regular basis. Examples include the Y2K concerns prior to January 1, 2000, and estimates of future mass torts that have yet to be identified (for example, “the next asbestos”). This concern is also limited to those outcomes that could be material to an expected value estimate.

The exposure draft did not and the final standard does not require exclusion of such outcomes in the determination of the unpaid claim estimate, but the subcommittee believes that the actuary should consider whether truly all possible outcomes are included in the actuary’s unpaid claim estimate (where the intended measure purports to reflect the entire distribution of possible outcomes). With regard to the “actuarial central estimate” definition, the subcommittee has eliminated the terms “speculative” and “remote,” and has replaced them with wording that focused more directly on the concern that reliable estimates of such outcomes cannot be produced.

Comment:

Some commentators were concerned that the “actuarial central estimate” definition precluded the use of conservatism (described in some instances as a margin for adverse deviation) in the unpaid claim estimate intended measure.

Response:

This standard was meant to apply to work done in a variety of situations. In many of those situations, the purpose and/or use of the unpaid claim estimate will dictate whether a margin for adverse deviation is required, allowed or prohibited. The subcommittee does not believe it is the role of the actuary or ASB to dictate a certain singular treatment of margins for adverse deviation for all unpaid claim estimates. In fact, in certain instances the subcommittee believes that the treatment of such in the unpaid claim estimate is clearly not part of the role of the actuary.

The subcommittee also believes that the actuary should clearly disclose the basis of the unpaid claim estimate regarding all the items listed in section 3.3. Hence, in those instances where the unpaid claim estimate includes a margin for adverse deviation, the presence of such margin should be explicitly disclosed.

Comment:

Some of the commentators wanted the standard to advocate only certain techniques for calculating any unpaid claim estimate, regardless of the intended measure. In particular, these comments wanted the standard to dictate the use of stochastic models.

Response:

The subcommittee believes the choice of methodology should be determined by the actuary.