



Singapore Actuarial Society

SAS SAP X01

Standard of Actuarial Practice

**Effective from
1 January 2018**

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1. General

1.1. Purpose – This SAP provides guidance to actuaries when performing actuarial services to give intended users confidence that

- Actuarial services are carried out professionally and with due care;
- The results are relevant to their needs, are presented clearly and understandably, and are complete; and
- The assumptions and methodology (including, but not limited to, models and modelling techniques) used are disclosed appropriately.

1.2. Scope

1.2.1. This SAP is a general standard. The standard applies to Members of the Singapore Actuarial Society wherever they operate. If the Member is operating outside of Singapore then the Member should comply with local Actuarial Standards if they exist. It applies to all actuarial services performed by an actuary unless an element of guidance is explicitly superseded by another standard such as a practice-specific standard or by law.

1.2.2. Usually, the intent of a practice-specific standard is to narrow the range of practice considered acceptable under the general standards. In exceptional cases, however, the intent of a practice-specific standard is to define as acceptable a practice which would not be acceptable under the general standards, in which case that intent is specifically noted by words in a practice-specific standard like: “Notwithstanding the general standards, the actuary should . . .”, followed by a description of the exception.

1.3. Compliance – There are situations where an actuary may deviate from the guidance of this SAP but still comply with the SAP:

1.3.1. Law may impose obligations upon an actuary. Compliance with requirements of law that conflict with this SAP is not a deviation from the SAP.

1.3.2. The actuarial code of professional conduct applicable to the work may conflict with this SAP. Compliance with requirements of the code that conflict with this SAP is not a deviation from the SAP.

1.3.3. The actuary may depart from the guidance in this SAP while still complying with the SAP if the actuary provides, in any report, an appropriate statement with respect to the nature, rationale, and effect of any such departure.

1.4. Applicability – This SAP applies to actuaries when performing actuarial services. An actuary who is performing these actuarial services may be acting in one of several capacities such as an employee, management, director, external adviser, auditor, or supervisory authority of the entity.

1.4.1. The application of this SAP is clear when a single consulting actuary is performing actuarial services for a client who is not affiliated with the actuary.

1.4.2. There are at least two general cases which do not meet the criterion stated in 1.4.1:

a. A team of actuaries is performing actuarial services; or

b. An actuary is performing actuarial services for an affiliated party (such as the actuary's employer or affiliated entities within a group under common control).

1.4.3. When a team is performing actuarial services, most paragraphs of this SAP apply to every actuary on the team. However, requirements in some paragraphs need not be met by every actuary on the team personally (e.g., 2.1.1). In the case of such paragraphs, each actuary on the team should identify, if relevant to that actuary's work, which member of the team is responsible for complying with such requirements and be satisfied that the other team member accepts that responsibility.

1.4.4. If an actuary is performing actuarial services for an affiliated party the actuary should interpret this SAP in the context of practices that apply normally within or in relation to the affiliated party, except that, if there are substantive inconsistencies between these practices and this SAP, the actuary must endeavour to observe the spirit and intent of this SAP as fully as possible.

a. The actuary should consider the expectations of the principal. These expectations might suggest that it may be appropriate to omit some of the otherwise required content in the report. However, limiting the content of a report may not be appropriate if that report or the findings in that report may receive broad distribution.

b. If the actuary believes circumstances are such that including certain content in the report is not necessary or appropriate, the actuary should be prepared (if challenged by a professional actuarial body with jurisdiction over the actuarial services) to describe these circumstances and provide the rationale for limiting the content of the report.

1.5. Reasonable Judgment – The actuary must exercise reasonable judgment in applying this SAP.

1.5.1. A judgment is reasonable if it takes into account:

a. The spirit and intent of the SAPs;

- b. The type of assignment; and
 - c. Appropriate constraints on time and resources.
- 1.5.2. Nothing in this standard should be interpreted as requiring work to be performed that is not proportionate to the scope of the decision or the assignment to which it relates and the benefit that intended users would be expected to obtain from the work.
- 1.5.3. Any judgment required by the SAP (including implicit judgment) is intended to be the actuary's professional judgment unless otherwise stated.

1.6. Language

- 1.6.1. Some of the language used in all SAPs is intended to be interpreted in a very specific way in the context of a decision of the actuary. In particular, the following verbs are to be understood to convey the actions or reactions indicated:
- a. "Must" means that the indicated action is mandatory and failure to follow the indicated action will constitute a departure from this SAP.
 - b. "Should" (or "shall") means that, under normal circumstances, the actuary is expected to follow the indicated action, unless to do so would produce a result that would be inappropriate or would potentially mislead the intended users of the actuarial services. If the indicated action is not followed, the actuary must disclose that fact and provide the reason for not following the indicated action.
 - c. "May" means that the indicated action is not required, nor even necessarily expected, but in certain circumstances is an appropriate activity, possibly among other alternatives. Note that "might" is not used as a synonym for "may", but rather with its normal meaning.
- 1.6.2. This document uses various expressions whose precise meaning is defined in the Glossary.

1.7. Cross-References – When this SAP refers to the content of another document, the reference relates to the referenced document as it is effective on the adoption date as shown on the cover page of this SAP. The referenced document may be amended, restated, revoked, or replaced after the adoption date. In such a case, the actuary must consider the extent the modification is applicable and appropriate to the guidance in this SAP.

1.8. Effective Date – This SAP is effective for actuarial services performed on or after 1 January 2018.

2. Appropriate Practices

2.1. Acceptance of Assignment

2.1.1. When providing actuarial services, the actuary should confirm with the principal the nature and scope of actuarial services to be provided, including:

- a. The role of the principal;
- b. Any limitations or constraints on the actuary;
- c. Any requirements that the actuary is required to satisfy;
- d. Identification of the schedule and expected cost or resources needed (especially if they are substantial); and
- e. The information needed to be communicated to and by the actuary, especially if it is sensitive or confidential.

2.1.2. In accepting an assignment for actuarial services, the actuary shall:

- a. Be competent and appropriately experienced to perform the services;
- b. Be satisfied that the assignment can be performed under the applicable code of professional conduct; and
- c. Have reasonable assurance of time, resources, access to relevant employees and other relevant parties, access to documentation and information, and the right of the actuary to communicate information, as may be necessary for the work.

2.2. Knowledge of Relevant Circumstances – The actuary should have or obtain sufficient knowledge and understanding of the data and information available, including the relevant history, processes, nature of the business operations, law, and business environment of the entity, to be appropriately prepared to perform the actuarial services required by the assignment.

2.3. Reliance on Others – The actuary may use information prepared by another party such as data, relevant contracts, insurance contract or pension plan provisions, opinions of other professionals, projections, and supporting analyses (but excluding assumptions or methodology). The actuary may select the party and information on which to rely, or may be given the information by the principal. The actuary may take responsibility for such information, or the actuary may state that reliance has been placed upon the source of this information and disclaim responsibility.

2.3.1. If the actuary selects the party on whom to rely, the actuary should consider the following:

- a. The other party's qualifications;
- b. The other party's competence, integrity, and objectivity;

- c. The other party's awareness of how the information is expected to be used;
 - d. Discussions and correspondence between the actuary and the other party regarding any facts known to the actuary that are likely to have a material effect upon the information used; and
 - e. The need to review the other party's supporting documentation.
- 2.3.2. If the actuary uses information prepared by another party without disclaiming responsibility for that information, the actuary:
- a. Should determine that the use of that information conforms to accepted actuarial practice in the jurisdiction(s) of the actuary's services;
 - b. Should establish appropriate procedures for the management and review of the information that the actuary intends to use; and
 - c. Does not need to disclose the source of the information.
- 2.3.3. If the actuary states reliance on the information prepared by another party and disclaims responsibility for it, the actuary should:
- a. Disclose that fact (including identifying the other party) in any report or other appropriate communication;
 - b. Disclose the nature and extent of such reliance;
 - c. Examine the information for evident shortcomings;
 - d. When practicable, review the information for reasonableness and consistency; and
 - e. Report the steps, if any, that the actuary took to determine whether it was appropriate to rely on the information.
- 2.3.4. If the information was prepared by the other party under a different jurisdiction, the actuary should consider any differences in the law or accepted actuarial practice between Singapore and the other jurisdictions and how that might affect the actuary's use of the information.
- 2.4. Materiality** – In case of omissions, understatements, or overstatements, the actuary should assess whether or not the effect is material. The threshold of materiality under which the work is being conducted should be determined by the actuary unless it is imposed by another party such as an auditor or the principal. When determining the threshold of materiality, the actuary should:
- 2.4.1. Assess materiality from the point of view of the intended user(s), recognizing the purpose of the actuarial services; thus, an

omission, understatement, or overstatement is material if the actuary expects it to affect significantly either the intended user's decision-making or the intended user's reasonable expectations;

2.4.2. Consider the actuarial services and the entity that is the subject of those actuarial services; and

2.4.3. Consult with the principal if necessary.

2.5. Data Quality

2.5.1. Sufficient and Reliable Data – The actuary should consider whether sufficient and reliable data are available to perform the actuarial services. Data are sufficient if they include the appropriate information for the work. Data are reliable if that information is materially accurate.

2.5.2. Validation – The actuary should take reasonable steps to review the consistency, completeness, and accuracy of the data used. These might include:

- a. Undertaking reconciliations against audited financial statements, trial balances, or other relevant records, if these are available;
- b. Testing the data for reasonableness against external or independent data;
- c. Testing the data for internal consistency; and
- d. Comparing the data to that for a prior period or periods.

The actuary should describe this review in the report.

2.5.3. Sources of Data for Entity-Specific Assumptions - To the extent possible and appropriate when setting entity-specific assumptions, the actuary should consider using data specific to the entity for which the assumptions are being made. Where such data are not available, relevant, or credible, the actuary should consider industry data, data from other comparable sources, population data, or other published data, adjusted as appropriate. The data used, and the adjustments made, should be described in the report.

2.5.4. Data Deficiencies - The actuary should consider the possible effect of any data deficiencies (such as inadequacy, inconsistency, incompleteness, inaccuracy, and unreasonableness) on the results of the work. If such deficiencies in the data are not likely to materially affect the results, then the deficiencies need not be considered further. If the actuary cannot find a satisfactory way to resolve the deficiencies, then the actuary should consider whether to:

- a. Decline to undertake or continue to perform the actuarial services;

- b. Work with the principal to modify the actuarial services or obtain appropriate additional data; or
- c. Subject to compliance with the actuary's code of professional conduct, perform the actuarial services as well as possible and disclose the data deficiencies in the report (including an indication of the potential impact of those data deficiencies).

2.6. Assumptions and Methodology

2.6.1. The assumptions and methodology may be

- a. Set by the actuary (2.7);
- b. Prescribed by the principal or another party (2.8); or
- c. Mandated by law (2.9).

2.6.2. Where the report is silent about who set an assumption or methodology, the actuary who authored the report will be assumed to have taken responsibility for such assumption or methodology.

2.7. Assumptions and Methodology Set by Actuary – Where the actuary sets the assumptions and methodology, or the principal or another party sets an assumption or methodology that the actuary is willing to support:

2.7.1. Selection of Assumptions and Methodology - The actuary should select the assumptions and methodology that are appropriate for the work. The actuary should consider the needs of the intended users and the purpose of the actuarial services. In selecting assumptions and methodology, the actuary should consider the circumstances of the entity and the assignment, as well as relevant industry and professional practices. The actuary should consider to what extent it is appropriate to adjust assumptions or methodology to compensate for known deficiencies in the available data.

2.7.2. Appropriateness of Assumptions - The actuary should consider the appropriateness of the assumptions underlying each component of the methodology used. Assumptions generally involve significant professional judgment as to the appropriateness of the methodology used and the parameters underlying the application of such methodology. Assumptions may (if permitted in the circumstances) be implicit or explicit and may involve interpreting past data or projecting future trends. The actuary should consider to what extent it is appropriate to use assumptions that have a known significant bias to underestimation or overestimation of the result.

2.7.3. Margins for Adverse Deviations - In cases where unbiased calculations are not required, the actuary should consider to what extent it is appropriate to adjust the assumptions or methodology

with margins for adverse deviations in order to allow for uncertainty in the underlying data, assumptions, or methodology. The actuary should disclose any incorporation of margins for adverse deviations in assumptions or methodology.

- 2.7.4. Discontinuities - The actuary should consider the effect of any discontinuities in experience on assumptions or methodology. Discontinuities could result from:
- a. Internal circumstances regarding the entity such as changes in an insurer's claims processing or changes in the mix of business; or
 - b. External circumstances impacting the entity such as changes in the legal, economic, legislative, regulatory, supervisory, demographic, technological, and social environments.
- 2.7.5. Individual Assumptions and Aggregate Assumptions - The actuary should assess whether an assumption set is reasonable in the aggregate. While assumptions might be justifiable individually, it is possible that prudence or optimism in multiple assumptions will result in an aggregate assumption set that is no longer valid. If not valid, the actuary should make appropriate adjustments to achieve a reasonable assumption set and final result.
- 2.7.6. Internal Consistency of Assumptions – The actuary should determine if the assumptions used for different components of the work are materially consistent, and that any significant interdependencies are modelled appropriately. The actuary should disclose any material inconsistency in the report.
- 2.7.7. Alternative Assumptions and Sensitivity Testing – The actuary should consider and address the sensitivity of the methodology to the effect of variations in key assumptions, when appropriate. In determining whether sensitivity has been appropriately addressed, the actuary should take into account the purpose of the actuarial services and whether the results of the sensitivity tests reflect a reasonable range of variation in the key assumptions, consistent with that purpose.

2.8. Assumptions and Methodology Prescribed – Where the assumptions or methodology are prescribed by the principal or another party:

- 2.8.1. If the actuary is willing to support the prescribed assumption or methodology (following paragraph 2.7 as applicable), the actuary may disclose the party who prescribed the assumption or methodology and the actuary's support.
- 2.8.2. If the actuary is unwilling to support the prescribed assumption or methodology because:

- a. It significantly conflicts with what would be appropriate for the purpose of the actuarial services, the actuary should disclose in the report that fact, the party who prescribed the assumption or methodology, and the reason why this party, rather than the actuary, set the assumption or methodology; or
 - b. The actuary has been unable to judge the appropriateness of the prescribed assumption or methodology without performing a substantial amount of additional work beyond the scope of the assignment, or the actuary was not qualified to judge the appropriateness of the assumption, the actuary should disclose in the report that fact, the party who prescribed the assumption or methodology, and the reason why this party, rather than the actuary, set the assumption or methodology.
- 2.8.3. When the principal requests an additional calculation using an assumption set which the actuary does not judge to be reasonable for the purpose of the actuarial services, the actuary may provide the principal with the results based on such assumptions. If those results are communicated to any party other than the principal, the actuary must disclose the source of those assumptions and the actuary's opinion of their appropriateness.

2.9. Assumptions and Methodology Mandated by Law in the jurisdiction covering the actuarial service in question – When an assumption or methodology is mandated by law, the actuary should disclose in the report that the assumption or methodology was mandated by law and that the report should not be used for other purposes where the assumptions and methodology used are not appropriate (unless appropriately adjusted).

2.10. Process Management

- 2.10.1. Process Controls - The actuary should consider to what extent, if any, the procedures used to carry out the work should be controlled, and if so, how.
- 2.10.2. Reasonableness Checks - The actuary should review the results produced by the selected assumptions and methodology for overall reasonableness.

2.11. Peer Review – The actuary should consider to what extent, if at all, it is appropriate for the report to be independently reviewed, in totality or by component, before the final report is delivered to the principal or distributed to the intended users. The purpose of peer review is to ensure the quality of the report, with the process tailored to the complexity of the work and the specific environment in which the actuary works. If a peer review is deemed to be appropriate:

2.11.1. The actuary should select a reviewer who is independent of involvement with the specific component(s) reviewed and is knowledgeable and experienced in the practice area of the actuarial services.

2.11.2. If the reviewer is an actuary, the reviewer should comply with the guidance of this SAP, as applicable, in performing the review.

2.12. Treatment of Subsequent Events – The actuary should consider any subsequent event that has the potential of materially changing the results of the actuarial services if the event had been reflected in the work and disclose such an event in the actuary’s communication.

2.13. Retention of Documentation

2.13.1. The actuary should retain, for a reasonable period of time, sufficient documentation for purposes such as:

- a. Peer review, regulatory review, and audit;
- b. Compliance with law; and
- c. Assumption of any recurring assignment by another actuary.

2.13.2. Documentation is sufficient when it contains enough detail for another actuary qualified in the same practice area to understand the work and assess the judgments made.

2.13.3. Nothing in this SAP is intended to give any person access to material beyond the access that they are already authorized to have.

3. Communication

3.1. General Principles – Any communication should be appropriate to the particular circumstances and take the skills, understanding, levels of relevant technical expertise, and needs of the intended user into consideration to allow the intended user to understand the implications of the actuary’s communication.

3.1.1. Form and Content - The actuary should determine the form, structure, style, level of detail, and content of each communication to be appropriate to the particular circumstances, taking into account the intended users.

3.1.2. Clarity - The actuary should word each communication to be clear and use language appropriate to the particular circumstances, taking into account the intended users.

3.1.3. Timing of Communication - The actuary should issue each communication within a reasonable time period. The timing of the communication should reflect any arrangements that have been made with the principal. The actuary should consider the needs of the intended users in setting the timing.

3.1.4. Identification of the Actuary - A communication shall clearly identify the issuing actuary. When two or more individuals jointly issue a communication, at least some of which is actuarial in nature, the communication shall identify all responsible actuaries, unless the actuaries judge it inappropriate to do so. The name of an organization with which each actuary is affiliated also may be included in the communication, but the actuary's responsibilities are not affected by such identification. Unless the actuary judges it inappropriate, any communication shall also indicate to what extent and how supplementary information and explanation can be obtained from the actuary or another party.

3.2. Report – The actuary should complete a report unless any intended users will otherwise be adequately informed about the results of actuarial services (including access to the supporting information which is necessary to understand these results). The actuary should present all information with sufficient detail that another actuary qualified in the same practice area could make an objective appraisal of the reasonableness of the actuary's work.

3.2.1. Content - In the report, the actuary should include, if applicable:

- a. The scope and intended use of the report;
- b. The results of actuarial services, including the potential variability of these results;
- c. The methodology, assumptions, and data used;
- d. Any restrictions on distribution;
- e. The date of the report; and
- f. Information on the authorship of the report.

3.2.2. Disclosures - In the report, the actuary issuing the report should disclose, if applicable:

- a. Any material deviation from the guidance in this SAP (1.3);
- b. Any reliance on information prepared by another party for which the actuary disclaims responsibility (2.3.3);
- c. Any data modification, validation and deficiencies (2.5);
- d. The actuary's assessment of the uncertainty inherent in the information used by the actuary (2.5.4.c);
- e. Any material inconsistency in the assumptions used (2.7.6);
- f. Where the report contains the results of an additional calculation using an assumption set requested by the principal which the actuary does not judge to be reasonable for the purpose of the assignment (2.8.3);
- g. Assumptions and methodology that have been prescribed by another party (2.8);

- h. Assumptions and methodology that are mandated by law (2.9); and
 - i. Any material subsequent event (2.12).
- 3.2.3. Authorship - The actuary issuing the report should include in the report:
 - a. The actuary's name;
 - b. If applicable, the name of the organization on whose behalf the actuary is issuing the report, and the actuary's position held;
 - c. The capacity in which the actuary serves;
 - d. The actuary's qualifications;
 - e. The code of professional conduct and actuarial standards under which the work was performed, if there is any possible ambiguity; and
 - f. If applicable, attestations and reliances.
- 3.2.4. Form - A report may comprise one or several document(s) that may exist in several different formats. Where a report comprises multiple documents, the actuary should communicate to all intended users which documents comprise the report. The actuary should ensure that report components (especially those in electronic media) are such that they can be reliably reproduced for a reasonable period of time.
- 3.2.5. Constraints - The content of a report may be constrained by circumstances such as legal, legislative, regulatory, or supervisory proceedings. Constraints could also include other standards such as financial reporting standards or an entity's accounting policy. The actuary should follow the guidance of this SAP to the extent reasonably possible within such constraints.