ACTUARIAL STANDARDS BOARD

Actuarial Standard
of Practice
No. 4

Revised Edition

Measuring Pension Obligations and Determining Pension Plan Costs or Contributions

Developed by the
Pension Committee of the
Actuarial Standards Board

Adopted by the
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December 2021

TO: Members of Actuarial Organizations Governed by the Standards of Practice of the Actuarial Standards Board and Other Persons Interested in Measuring Pension Obligations and Determining Pension Plan Costs or Contributions

FROM: Actuarial Standards Board (ASB)

SUBJ: Actuarial Standard of Practice (ASOP) No. 4

This document contains a revision of ASOP No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions.*

History of the Standard

The ASB provides guidance for measuring pension and retiree group benefit obligations through the series of ASOPs listed below.

1. ASOP No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*;

2. ASOP No. 6, *Measuring Retiree Group Benefits Obligations and Determining Retiree Group Benefits Program Periodic Costs or Actuarially Determined Contributions*;

3. ASOP No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*;

4. ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*;

5. ASOP No. 44, *Selection and Use of Asset Valuation Methods for Pension Valuations*; and

6. ASOP No. 51, *Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions.*

The last revision of ASOP No. 4 was issued in December 2013.

In response to specific requests for changes in the ASOPs and other activity related to public pension plans, in July 2014 the ASB issued a Request for Comments on the topic of ASOPs and Public Pension Plan Funding and Accounting. Over 50 comment letters were received covering a wide variety of potential ASB actions. In December 2014, the ASB formed the Pension Task Force and charged it with reviewing these comments and other relevant reports and input to develop recommendations for ASB next steps. In July 2015, the ASB held a public hearing on actuarial standards of practice applicable to actuarial work regarding public plans. The Pension Task Force provided its report to the ASB in February 2016. The report included suggestions for changes to the ASOPs that would apply to all areas of pension practice. In June 2016, the ASB directed its Pension Committee to draft appropriate modifications to the actuarial standards of practice, in accordance with ASB procedures, to implement the suggestions of the Pension Task Force.

One of the suggestions made by the Pension Task Force was the calculation and disclosure of a solvency value for all valuations of pension plans done for funding purposes. In response to this suggestion, calculation and disclosure of an investment risk defeasement measure was added in the first exposure draft, and a low-default-risk obligation measure was added in the second and third exposure drafts as well as in this final version. The ASB believes that the calculation and disclosure of this measure provides appropriate, useful information for the intended user regarding the funded status of a pension plan. The calculation and disclosure of this additional measure is not intended to suggest that this is the "right" liability measure for a pension plan. However, the ASB does believe that this additional disclosure provides a more complete assessment of a plan's funded status and provides additional information regarding the security of benefits that members have earned as of the measurement date.

First Exposure Draft

The first exposure draft was approved in March 2018 with a comment deadline of July 31, 2018. Sixty-seven comment letters were received and considered in making changes that were reflected in the second exposure draft.

Second Exposure Draft

The second exposure draft was approved in December 2019 with a comment deadline of July 31, 2020. Nineteen comment letters were received and considered in making changes that were reflected in the third exposure draft.

Third Exposure Draft

The third exposure draft was approved in June 2021 with a comment deadline of October 15, 2021. Seven comment letters were received and considered in making changes that are reflected in the final ASOP.

Notable Changes from the Third Exposure Draft

Notable changes made to the third exposure draft are summarized below. Additional changes were made to improve readability, clarity, or consistency.

1. Section 3.2, General Procedures, added language directing the actuary to refer to ASOP No. 56, *Modeling*, for guidance on models when measuring pension obligations, determining periodic costs, or determining actuarially determined contributions. In addition, the list of ASOPs in section 4.1 now includes ASOP No. 56.

2. Section 3.11, Low-Default-Risk Obligation Measure, was clarified to state that, for purposes of the obligation measure, the actuary should consider reflecting the impact, if

any, of investing plan assets in low-default-risk fixed income securities on the pattern of benefits expected to be paid in the future, such as in a variable annuity plan.

Notable Changes from the Existing ASOP

Notable changes from the version of ASOP No. 4 adopted December 2013 include the following:

1. All references to "plan obligations" were changed to "pension obligations" for consistency.

2. All references to "actuarial assumptions" were changed to "assumptions" for consistency.

3. Section 1.2, Scope, was expanded to clarify the application of the standard when the actuary selects an output smoothing method and when an assumption or method is not selected by the actuary.

4. Section 2.8, Definition of Contribution Allocation Procedure, was clarified to state a contribution allocation procedure is one that determines one or more actuarially determined contributions for a plan.

5. Section 2.12, Funding Valuation, was added in conjunction with added guidance in section 3.

6. Section 2.13, Gain and Loss Analysis, was added in conjunction with added guidance in section 3.22.

7. Section 2.18, Output Smoothing Method, was clarified to state that for the purposes of this standard, an asset valuation method is not an output smoothing method.

8. Section 3.2, General Procedures, was revised to include specific references to sections 3.11, Low-Default-Risk Obligation Measure; 3.14, Amortization Methods; 3.16, Output Smoothing Method; 3.19, Implications of Contribution Allocation Procedure or Funding Policy; 3.20, Contribution Lag; 3.21, Reasonable Actuarially Determined Contribution; 3.22, Gain and Loss Analysis; 3.24, Assessment of Assumptions and Methods Not Selected by the Actuary; 3.25, Approximations and Estimates; and 3.26, Documentation. In addition, subsections of section 3 were reordered and renumbered.

9. The guidance in section 3.3.2, Uncertainty or Risk, was revised to refer only to the relevant ASOPs.

10. The title of section 3.8 was changed from "Actuarial Assumptions" to "Assumptions." This section was expanded to provide additional guidance regarding selection of assumptions. In addition, exceptions to significant bias now include when alternative assumptions are used for the assessment of risk, in accordance with ASOP No. 51. Section 3.8 also was revised for clarity.

11. Section 3.11, Low-Default-Risk Obligation Measure, was added to provide guidance regarding the calculation of this measure when the actuary is performing a funding valuation.

12. Section 3.14, Amortization Methods, was added to provide guidance on the selection of amortization methods.

13. Section 3.16, Output Smoothing Methods, was added to provide guidance on the selection of output smoothing methods.

14. Section 3.17 (previously 3.14), Allocation Procedure, was expanded to provide additional guidance regarding the selection of a cost allocation procedure or contribution allocation procedure.

15. Section 3.14.2 (now 3.19), Implications of Contribution Allocation Procedure or Funding Policy, was modified to eliminate exceptions to the requirement that the actuary should assess such implications whenever the actuary is performing a funding valuation.

16. Section 3.20, Contribution Lag, was added to provide guidance on calculating an actuarially determined contribution, and the passage of time between the measurement date and the expected timing of actual contributions.

17. Section 3.21, Reasonable Actuarially Determined Contribution, was added to provide further guidance on performing a funding valuation that does not include a prescribed assumption or method set by law.

18. Section 3.22, Gain and Loss Analysis, was added to provide guidance regarding the performance of a gain and loss analysis when performing a funding valuation.

19. Section 3.16 (now section 3.23), Volatility, was modified to direct an actuary analyzing potential economic and demographic volatility to refer to ASOP No. 51 for additional guidance.

20. Section 3.26, Documentation, was added to provide guidance on documenting work within the scope of this ASOP.

21. Section 4.1, Communication Requirements, was renamed "Required Disclosures in an Actuarial Report," was expanded to provide additional guidance concerning disclosures, and was reordered to follow the order of the guidance in section 3.

The ASB voted in December 2021 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.

ACTUARIAL STANDARD OF PRACTICE NO. 4

MEASURING PENSION OBLIGATIONS AND DETERMINING PENSION PLAN COSTS OR CONTRIBUTIONS

STANDARD OF PRACTICE

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

1.1 Purpose—This actuarial standard of practice (ASOP or standard) provides guidance to actuaries when performing actuarial services with respect to measuring obligations under a defined benefit pension plan (also referred to as "plan" or "pension plan" throughout this standard) and determining **periodic costs** or **actuarially determined contributions** for such plans. Other actuarial standards of practice address assumptions, asset valuation methods, and assessment of risk. This standard addresses broader measurement issues, including **cost allocation procedures** and **contribution allocation procedures**. This standard provides guidance for coordinating and integrating all of the elements of an **actuarial valuation** of a pension plan.

1.2 Scope—This standard applies to actuaries when performing actuarial services with respect to the following tasks in connection with a pension plan:

a. measurement of pension obligations, such as determinations of **funded status**, assessments of solvency upon plan termination, market measurements, and measurements for use in pricing benefit provisions;

b. assignment of the value of pension obligations to time periods, such as **actuarially determined contributions**, **periodic costs**, and **actuarially determined contribution** or **periodic cost** estimates for potential plan changes;

c. development of a **cost allocation procedure** used to determine **periodic costs** for a plan;

d. development of a **contribution allocation procedure** used to determine **actuarially determined contributions** for a plan;

e. determination of the types and levels of benefits supportable by specified cost or contribution levels; and

f. projection of pension obligations, **periodic costs** or **actuarially determined contributions**, and other related measurements, such as cash flow projections and projections of a plan's **funded status**.

Throughout this standard, any reference to selecting assumptions, **actuarial cost methods**, asset valuation methods, **amortization methods**, and **output smoothing methods** also includes giving advice on selecting assumptions, **actuarial cost methods**, asset valuation methods, **amortization methods**, and **output smoothing methods**. In addition, any reference to developing or modifying a **cost allocation procedure** or **contribution allocation procedure** includes giving advice on developing or modifying a **cost allocation procedure** or **contribution allocation procedure**.

ASOP No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, and ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*, provide guidance concerning assumptions. ASOP No. 44, *Selection and Use of Asset Valuation Methods for Pension Valuations*, provides guidance concerning asset valuation methods. In the event of a conflict between the guidance provided in this ASOP and the guidance in any of the aforementioned ASOPs, this standard governs.

This standard does not apply to actuaries when performing services with respect to individual benefit calculations, individual benefit statement estimates, annuity pricing, nondiscrimination testing, and social insurance programs as described in section 1.2, Scope, of ASOP No. 32, *Social Insurance* (unless an ASOP on social insurance explicitly calls for application of this standard).

As discussed in ASOP No. 41, *Actuarial Communications*, an assumption or method may be selected by the actuary or selected by another party. Nothing in this standard is intended to require the actuary to select an assumption or method that has otherwise been selected by another party. When performing actuarial services using an assumption or method not selected by the actuary, the guidance in section 3 and section 4 concerning assessment and disclosure applies.

This standard does not require the actuary to evaluate the ability or willingness of the plan sponsor or other contributing entity to make contributions to the plan when due.

If a conflict exists between this standard and applicable law (statutes, regulations, and other legally binding authority), the actuary should comply with applicable law. If the actuary departs from the guidance set forth in this standard in order to comply with applicable law 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 is effective for any actuarial report that meets the following criteria: (a) the actuarial report is issued on or after February 15, 2023; and (b) the

measurement date in the actuarial report is on or after February 15, 2023.

Section 2. Definitions

The terms below are defined for use in this actuarial standard of practice and appear in bold throughout the ASOP.

2.1 Actuarial Accrued Liability—The portion of the **actuarial present value of projected benefits** (and **expenses**, if applicable), as determined under a particular **actuarial cost method** that is not provided for by future **normal costs**. Under certain **actuarial cost methods**, the **actuarial accrued liability** is dependent upon the actuarial value of assets.

2.2 Actuarial Cost Method—A procedure for allocating the **actuarial present value of projected benefits** (and **expenses**, if applicable) to time periods, usually in the form of a **normal cost** and an **actuarial accrued liability**. For purposes of this standard, a pay-as-you-go method is not considered to be an **actuarial cost method**.

2.3 Actuarial Present Value—The discounted value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of assumptions with regard to future events, observations of market or other valuation data, or a combination of assumptions and observations.

2.4 Actuarial Present Value of Projected Benefits—The **actuarial present value** of benefits that are expected to be paid in the future, taking into account the effect of such items as future service, advancement in age, and anticipated future compensation (sometimes referred to as the "present value of future benefits").

2.5 Actuarial Valuation—The measurement of relevant pension obligations and, when applicable, the determination of **periodic costs** or **actuarially determined contributions**.

2.6 Actuarially Determined Contribution—A potential payment to the plan as determined by the actuary using a **contribution allocation procedure**. It may or may not be the amount actually paid by the plan sponsor or other contributing entity.

2.7 Amortization Method—A method under a **contribution allocation procedure** or **cost allocation procedure** for determining the amount, timing, and pattern of recognition of the unfunded **actuarial accrued liability**.

2.8 Contribution Allocation Procedure—A procedure that determines one or more **actuarially determined contributions** for a plan. The procedure uses an **actuarial cost method** and may use an asset valuation method, an **amortization method**, or an **output smoothing method**. The procedure may produce a single value, such as **normal cost** plus an amortization payment of the unfunded **actuarial accrued liability**, or a range of values, such as the range from the ERISA minimum required contribution to the maximum tax-deductible amount.

2.9 Cost Allocation Procedure—A procedure that determines the **periodic cost** for a plan (for example, the procedure to determine the net periodic pension cost under accounting standards). The procedure uses an **actuarial cost method**, and may use an asset valuation method or an **amortization method**.

2.10 Expenses—Administrative or investment fees or other payments borne or expected to be borne by the plan.

2.11 Funded Status—Any comparison of a particular measure of plan assets to a particular measure of pension obligations.

2.12 Funding Valuation—A measurement of pension obligations or projection of cash flows performed by the actuary intended to be used by the principal to determine plan contributions or to evaluate the adequacy of specified contribution levels to support benefit provisions.

2.13 Gain and Loss Analysis—An analysis of the effect on the plan's **funded status** between two **measurement dates** resulting from the difference between expected experience based upon a set of assumptions and actual experience.

2.14 Immediate Gain Actuarial Cost Method—An **actuarial cost method** under which actuarial gains and losses are included as part of the unfunded **actuarial accrued liability** of the pension plan, rather than as part of the **normal cost** of the plan.

2.15 Market-Consistent Present Value—An **actuarial present value** that is estimated to be consistent with the price at which benefits that are expected to be paid in the future would trade in an open market between a knowledgeable seller and a knowledgeable buyer. The existence of a deep and liquid market for pension cash flows or for entire pension plans is not a prerequisite for this present value measurement.

2.16 Measurement Date—The date as of which the values of the pension obligations and, if applicable, assets are determined.

2.17 Normal Cost—The portion of the **actuarial present value of projected benefits** (and **expenses**, if applicable) that is allocated to a period, typically twelve months, under the **actuarial cost method**. Under certain **actuarial cost method**s, the **normal cost** is dependent upon the actuarial value of assets.

2.18 Output Smoothing Method—A method to reduce volatility of the results of a **contribution allocation procedure**. The **output smoothing method** may be a component of the **contribution allocation procedure** or may be applied to the results of a **contribution allocation procedure**. **Output smoothing methods** include techniques such as 1) phasing in the impact of assumption changes on contributions, 2) blending a prior valuation with a subsequent valuation to determine contributions, or 3) placing a corridor around changes in the dollar amount, contribution rate, or percentage change in contributions from year to year. An **output smoothing method** may involve a combination of techniques. For purposes of this standard, an asset valuation method is not an **output smoothing method**.

2.19 Participant—An individual who satisfies the requirements for participation in the plan.

2.20 Periodic Cost—The amount assigned to a period using a **cost allocation procedure** for purposes other than funding. This may be a function of pension obligations, **normal cost**, **expenses**, or assets. In many situations, **periodic cost** is determined for accounting purposes.

2.21 Plan Provisions—The relevant terms of the plan document and any relevant administrative practices known to the actuary.

2.22 Prescribed Assumption or Method Set by Another Party—A specific assumption or method that is selected by another party, to the extent that law, regulation, or accounting standards gives the other party responsibility for selecting such an assumption or method. For this purpose, an assumption or method set by a governmental entity for a plan that such governmental entity or a political subdivision of that entity directly or indirectly sponsors is deemed to be a **prescribed assumption or method set by another party**.

2.23 Prescribed Assumption or Method Set by Law—A specific assumption or method that is mandated or that is selected from a specified range or set of assumptions or methods that is deemed to be acceptable by applicable law (statutes, regulations, or other legally binding authority). For this purpose, an assumption or method set by a governmental entity for a plan that such governmental entity or a political subdivision of that entity directly or indirectly sponsors is not deemed to be a **prescribed assumption or method set by law**.

2.24 Spread Gain Actuarial Cost Method—An **actuarial cost method** under which actuarial gains and losses are included as part of the current and future **normal costs** of the plan.

Section 3. Analysis of Issues and Recommended Practices

3.1 Overview—Measuring pension obligations and determining **periodic costs** or **actuarially determined contributions** are processes in which the actuary may be required to make judgments or recommendations on the choice of assumptions, **actuarial cost methods**, asset valuation methods, **amortization methods**, and **output smoothing methods**.

The actuary may have the responsibility and authority to select some or all assumptions, **actuarial cost methods**, asset valuation methods, **amortization methods**, and **output smoothing methods**. In other circumstances, the actuary may be asked to advise the individuals who have that responsibility and authority. In yet other circumstances, the actuary may perform actuarial calculations using **prescribed assumptions or methods set by another party** or **prescribed assumptions or methods set by law**.

3.2 General Procedures—When measuring pension obligations, determining **periodic costs**, or determining **actuarially determined contributions**, the actuary should perform the following general procedures:

a. identify the purpose of the measurement (section 3.3);

b. identify the **measurement date** (section 3.4);

c. identify **plan provisions** applicable to the measurement and any associated valuation issues (section 3.5);

d. gather data necessary for the measurement (section 3.6);

e. obtain from the principal other information necessary for the purpose of the measurement (section 3.7);

f. select assumptions (section 3.8);

g. measure accrued or vested benefits, if applicable (section 3.9);

h. measure **market-consistent present values**, if applicable (section 3.10);

i. calculate a low-default-risk obligation measure, if applicable (section 3.11);

j. reflect how plan or plan sponsor assets as of the **measurement date** are reported, if applicable (section 3.12);

k. select an **actuarial cost method**, if applicable (section 3.13);

l. select an **amortization method**, if applicable (section 3.14);

m. select an asset valuation method, if applicable (section 3.15);

n. select an **output smoothing method**, if applicable (section 3.16);

o. select a **cost allocation procedure** or **contribution allocation procedure**, if applicable (sections 3.17 and 3.18);

p. assess the implications of the **contribution allocation procedure** or plan's funding policy, if applicable (section 3.19);

q. take into account the contribution lag, if applicable (section 3.20);

r. calculate a reasonable **actuarially determined contribution**, if applicable (section 3.21);

s. perform a **gain and loss analysis**, if applicable (section 3.22);

t. take into account the sources of significant volatility, if applicable (section 3.23);

u. assess the assumptions and methods not selected by the actuary, if applicable (section 3.24); and

v. consider preparing and retaining documentation (section 3.26).

The actuary should refer to ASOP No. 56, *Modeling*, for guidance with respect to models when measuring pension obligations, determining **periodic costs**, or determining **actuarially determined contributions**.

In addition, the actuary may use approximations and estimates where circumstances warrant (section 3.25).

3.3 Purpose of the Measurement—The actuary should reflect the purpose of the measurement. Examples of measurement purposes include the following:

a. determining **periodic costs** or **actuarially determined contributions**;

b. assessing **funded status**;

c. pricing benefit provisions;

d. comparing benefit provisions between plans;

e. determining withdrawal liabilities or benefit plan settlements; and

f. measuring pension obligations for plan sponsor mergers and acquisitions.

3.3.1 Projected or Point-in-Time Measurements—The actuary should consider using different assumptions or methods for measurements projected into the future versus point-in-time measurements.

3.3.2 Uncertainty or Risk—The actuary should refer to the guidance on uncertainty and risk in ASOP No. 41 and ASOP No. 51, *Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions*.

3.4 Measurement Date Considerations—The actuary should address the following **measurement date** considerations:

3.4.1 Information as of a Different Date—The actuary may estimate asset and **participant** information at the **measurement date** on the basis of information as of a different date. In these circumstances, the actuary should make appropriate adjustments to the data. Alternatively, the actuary may calculate the obligations as of a different date and then adjust the obligations to the **measurement date** (see section 3.4.3 for additional guidance). In either case, the actuary should determine that any such adjustments are reasonable in the actuary's professional judgment, given the purpose of the measurement.

3.4.2 Events after the Measurement Date—If the actuary is aware of events that occur subsequent to the **measurement date** and prior to the date of the actuarial communication, the actuary should reflect those events appropriately for the purpose of the measurement. Unless the purpose of the measurement requires or prohibits the inclusion of such events, the actuary may, but need not, reflect these events in the measurement.

3.4.3 Adjustment of Prior Measurement—The actuary may adjust the results from a prior measurement in lieu of performing a new detailed measurement if, in the actuary's professional judgment, such an adjustment would produce a reasonable result for the purpose of the new measurement. To determine whether such an adjustment would produce a reasonable result, the actuary should consider reflecting items such as the following, if known to the actuary:

a. changes in the number of **participants** or the demographic characteristics of that group;

b. length of time since the prior measurement;

c. differences between actual and expected contributions, benefit payments, **expenses**, and investment performance;

d. changes in economic and demographic expectations; and

e. changes in **plan provisions**.

When adjusting obligations from a prior **measurement date**, the actuary should consider using revised assumptions to determine the obligations if appropriate for the purpose of the new measurement.

3.5 Plan Provisions—When measuring pension obligations and determining **periodic costs** or **actuarially determined contributions**, the actuary should reflect all significant **plan provisions** known to the actuary, as appropriate for the purpose of the measurement. However, if in the actuary's professional judgment, omitting a significant **plan provision** is appropriate for the purpose of the measurement, the actuary should disclose the omission in accordance with section 4.1(e).

3.5.1 Adopted Changes in Plan Provisions—Unless contrary to applicable law or not appropriate for the purpose of the measurement, the actuary should reflect **plan provisions** adopted on or before the **measurement date** for at least the portion of the period during which those provisions are in effect. Unless the purpose of the measurement requires or prohibits that such **plan provisions** be reflected, the actuary may, but need not, reflect **plan provisions** adopted after the **measurement date**.

3.5.2 Proposed Changes in Plan Provisions—The actuary should reflect proposed changes in **plan provisions** as appropriate for the purpose of the measurement.

3.5.3 Plan Provisions That are Difficult to Measure—Some **plan provisions** may create pension obligations that are difficult to appropriately measure using traditional valuation procedures. Examples of such **plan provisions** include the following:

a. gain-sharing provisions that trigger benefit increases when investment returns are favorable but do not trigger benefit decreases when investment returns are unfavorable;

b. floor-offset provisions that provide a minimum defined benefit in the event a **participant's** account balance in a separate plan falls below some threshold;

c. benefit provisions that are tied to an external index, but subject to a floor or ceiling, such as certain cost-of-living-adjustment provisions and cash-balance-crediting provisions; and

d. benefit provisions that may be triggered by an event such as a plant shutdown or a change in control of the plan sponsor.

For such **plan provisions**, the actuary should consider using alternative valuation procedures, such as stochastic modeling, option-pricing techniques, or deterministic procedures in conjunction with assumptions that are adjusted to reflect the impact of variations in experience from year to year. When selecting alternative valuation procedures for such **plan provisions**, the actuary should use professional judgment based on the purpose of the measurement and other relevant factors.

The actuary should disclose the valuation procedures used to value any significant **plan provisions** of the type described in this section 3.5.3, in accordance with section 4.1(f).

3.6 Data—With respect to the data used for measurements, including data supplied by others, the actuary should refer to ASOP No. 23, *Data Quality*, for guidance.

3.6.1 Participants—The actuary should include in the measurement all **participants** reported to the actuary, except in appropriate circumstances where the actuary may exclude persons such as those below a minimum age or service level. When appropriate, the actuary may include employees who might become **participants** in the future.

3.6.2 Hypothetical Data—When appropriate, the actuary may prepare measurements based on assumed demographic characteristics of current or future plan **participants**.

3.7 Other Information from the Principal—The actuary should obtain from the principal other information, such as accounting policies or funding elections, necessary for the purpose of the measurement.

3.8 Assumptions—The actuary should refer to ASOP Nos. 27 and 35 for guidance on the selection and assessment of assumptions.

In addition, the actuary should assess whether the combined effect of assumptions is expected to have no significant bias (i.e., it is not significantly optimistic or pessimistic) except when provisions for adverse deviation are included or when alternative assumptions are used for the assessment of risk, in accordance with ASOP No. 51. For this purpose, the actuary should assess assumptions other than 1) **prescribed assumptions or methods set by law** and 2) assumptions that the actuary has not selected and is unable to assess for reasonableness for the purpose of the measurement.

3.9 Measuring the Value of Accrued or Vested Benefits—Depending on the scope of the assignment, the actuary may measure the value of any accrued or vested benefits as of a **measurement date**. The actuary should take into account the following when making such measurements:

a. relevant **plan provisions** and applicable law;

b. the status of the plan (for example, whether the plan is assumed to continue to exist or be terminated);

c. the contingencies upon which benefits become payable, which may differ for ongoing-basis and termination-basis measurements;

d. the extent to which **participants** have satisfied relevant eligibility requirements for accrued or vested benefits and the extent to which future service or advancement in age may satisfy those requirements;

e. whether or the extent to which death, disability, or other ancillary benefits are accrued or vested;

f. whether the **plan provisions** regarding benefits earned provide an appropriate attribution pattern for the purpose of the measurement (for example, if the plan's benefit accruals are significantly back-loaded, it may be appropriate to value accrued benefits with a less back-loaded attribution pattern); and

g. the impact of a special event (such as a plant shutdown or plan termination), when applicable. Examples of factors that may impact the measurement include the following:

1. the effect of the special event on continued employment;

2. the impact of the special event on **participant** behavior due to factors such as subsidized payment options;

3. **expenses** associated with a potential plan termination, including transaction costs to liquidate plan assets; and

4. changes in investment policy.

3.10 Market-Consistent Present Values—When calculating a **market-consistent present value**, the actuary should do the following:

a. select assumptions based on the actuary's observation of the estimates inherent in market data in accordance with the guidance in ASOP Nos. 27 and 35, depending on the purpose of the measurement; and

b. reflect benefits earned as of the **measurement date**.

In addition, the actuary may reflect benefit payment default risk or the financial health of the plan sponsor in the calculation.

3.11 Low-Default-Risk Obligation Measure—When performing a **funding valuation**, the actuary should calculate and disclose a low-default-risk obligation measure of the benefits earned (or costs accrued if appropriate under the actuarial cost method used for this purpose) as of the **measurement date**. The actuary need not calculate and disclose this obligation measure more than once per year.

When calculating this measure, the actuary should use an **immediate gain actuarial cost method**.

When calculating this measure, the actuary should select a discount rate or discount rates derived from low-default-risk fixed income securities whose cash flows are reasonably consistent with the pattern of benefits expected to be paid in the future. Examples of discount rates that may meet these requirements include, but are not limited to, the following:

a. US Treasury yields;

b. rates implicit in settlement of pension obligations including payment of lump sums and purchases of annuities from insurance companies;

c. yields on corporate or tax-exempt general obligation municipal bonds that receive one of the two highest ratings given by a recognized ratings agency;

d. non-stabilized ERISA funding rates for single employer plans; and

e. multiemployer current liability rates.

When plan provisions create pension obligations that are difficult to appropriately measure using traditional valuation procedures, such as benefits affected by actual investment returns, movements in a market index, or other similar factors, the actuary should consider using alternative valuation procedures such as those described under section 3.5.3 to calculate the low-default-risk obligation measure of those benefits earned or costs accrued as of the **measurement date**.

For purposes of this obligation measure, the actuary should consider reflecting the impact, if any, of investing plan assets in low-default-risk fixed income securities on the pattern of benefits expected to be paid in the future, such as in a variable annuity plan.

When calculating this measure, the actuary should not reflect benefit payment default risk or the financial health of the plan sponsor.

Other than the discount rate or discount rates, the actuary may use the same assumptions used in the **funding valuation** for this measure. Alternatively, the actuary may select other assumptions that are consistent with the discount rate or discount rates and reasonable for the purpose of the measurement, in accordance with ASOP Nos. 27 and 35.

The actuary should provide commentary to help the intended user understand the significance of the low-default-risk obligation measure with respect to the **funded status** of the plan, plan contributions, and the security of **participant** benefits. The actuary should use professional judgment to determine the appropriate commentary for the intended user.

3.12 Relationship between Asset and Obligation Measurement—The actuary should reflect how plan or plan sponsor assets as of the **measurement date** are reported. For example, if the plan or plan sponsor assets have been reduced to reflect a lump sum paid, the lump sum or the related annuity value should also be excluded from the obligation.

3.13 Actuarial Cost Method—When selecting an **actuarial cost method** to assign **periodic costs** or **actuarially determined contributions** to time periods in advance of the time benefit payments are due, the actuary should select an **actuarial cost method** that meets the following criteria:

a. the period over which **normal costs** are allocated for a **participant** begins no earlier than the date of employment and does not extend beyond the last assumed retirement age. The period may be applied to each individual **participant** or to groups of **participants** on an aggregate basis;

When a plan has no active **participants** and no **participants** are accruing benefits, a reasonable **actuarial cost method** will not produce a **normal cost** for benefits. For purposes of this standard, an employee does not cease to be an active **participant** merely because he or she is no longer accruing benefits under the plan;

b. the attribution of **normal costs** bears a reasonable relationship to some element of the plan's benefit formula or the **participant's** compensation or service. The attribution basis may be applied on an individual or group basis. For example, the **actuarial present value of projected benefits** for each **participant** may be allocated by that **participant's** own compensation or may be allocated by the aggregated compensation for a group of **participants**;

c. **expenses** are considered when assigning **periodic costs** or **actuarially determined contributions** to time periods. For example, the **expenses** for a period may be added to the **normal cost** for benefits, or **expenses** may be reflected as an adjustment to the investment return assumption or the discount rate. As another example, **expenses** may be reflected as a percentage of pension obligation or **normal cost**; and

d. the sum of the **actuarial accrued liability** and the **actuarial present value** of future **normal costs** equals the **actuarial present value of projected benefits** and **expenses**, to the extent **expenses** are included in the **actuarial accrued liability** and **normal cost**. For purposes of this criterion, under a **spread gain actuarial cost method**, the sum of the actuarial value of assets and the unfunded **actuarial accrued liability**, if any, shall be considered to be the **actuarial accrued liability**.

When disclosing a **funded status** measurement using a **spread gain actuarial cost method**, the actuary should also calculate and disclose a **funded status** measurement using an **immediate gain actuarial cost method**.

3.14 Amortization Method—When selecting an **amortization method**, the actuary should select an **amortization method** for each amortization base that is expected to produce amortization payments that fully amortize the amortization base within a reasonable time period or reduce the outstanding balance by a reasonable amount each year.

For purposes of determining a reasonable time period or a reasonable amount, the actuary should take into account factors including, but not limited to, the following, if applicable:

a. whether the **amortization method** is open or closed;

b. the source of the amortization base;

c. the anticipated pattern of the amortization payments, including the length of time until amortization payments exceed nominal interest on the outstanding balance;

d. whether the amortization base is positive or negative;

e. the duration of the **actuarial accrued liability**;

f. the average remaining service lifetime of active plan **participants**; and

g. the **funded status** of the plan or period to plan insolvency.

When selecting an **amortization method**, the actuary should select an **amortization method** that is expected to produce total amortization payments that are expected to fully amortize the unfunded **actuarial accrued liability** within a reasonable time period or reduce the unfunded **actuarial accrued liability** by a reasonable amount within a sufficiently short period.

The actuary should assess whether the unfunded **actuarial accrued liability** is expected to be fully amortized.

For purposes of this section, the actuary should assume that all assumptions will be realized and **actuarially determined contributions** will be made when due.

3.15 <u>Asset Valuation Method</u>—The actuary should refer to ASOP No. 44 for guidance on the selection and use of an asset valuation method.

3.16 <u>Output Smoothing Method</u>—When selecting an **output smoothing method**, the actuary should select an **output smoothing method** that results in a reasonable relationship between the smoothed contribution and the corresponding **actuarially determined contribution** without output smoothing. A reasonable relationship includes the following:

a. the **output smoothing method** produces a value that does not fall below a reasonable range around the corresponding **actuarially determined contribution** without output smoothing; and

b. any shortfalls of the smoothed contribution to the corresponding **actuarially determined contribution** without output smoothing are recognized within a reasonable period of time.

3.17 <u>Allocation Procedure</u>—When selecting a **cost allocation procedure** or **contribution allocation procedure**, the actuary should take into account the following:

a. the balance among benefit security, intergenerational equity, and stability or predictability of **periodic costs** or **actuarially determined contributions**;

b. the timing and duration of expected benefit payments;

c. the nature and frequency of plan amendments; and

d. relevant input from the principal, for example, a desire to achieve a target funding level within a specified time frame.

3.18 Consistency between Contribution Allocation Procedure and the Payment of Benefits—When selecting a **contribution allocation procedure**, the actuary should select a **contribution allocation procedure** that, in the actuary's professional judgment, is consistent with the plan accumulating adequate assets to make benefit payments when due, assuming that all assumptions will be realized and that the plan sponsor or other contributing entity will make **actuarially determined contributions** when due. In some circumstances, a **contribution allocation procedure** may not be expected to produce adequate assets to make benefit payments when they are due even if the actuary uses a combination of assumptions selected in accordance with ASOP Nos. 27 and 35, an **actuarial cost method** selected in accordance with section 3.13 of this standard, and an asset valuation method selected in accordance with ASOP No. 44.

Examples of such circumstances include the following:

a. a plan covering a sole proprietor with funding that continues past an expected retirement date with payment due in a lump sum;

b. using the aggregate **actuarial cost method** for a plan covering three employees, in which the principal is near retirement and the other employees are relatively young; and

c. a plan amendment with an amortization period so long that overall plan **actuarially determined contributions** would be scheduled to occur too late to make plan benefit payments when due.

3.19 Implications of Contribution Allocation Procedure or Funding Policy—When performing a **funding valuation**, the actuary should do the following:

a. qualitatively assess the implications of the **contribution allocation procedure** or the plan's funding policy on the plan's expected future contributions and **funded status**;

b. estimate how long before any contribution as determined by the **contribution allocation procedure** or the plan's funding policy is expected to exceed the **normal cost**, plus interest on the unfunded **actuarial accrued liability**, if applicable;

c. estimate the period over which the unfunded **actuarial accrued liability**, if any, is expected to be fully amortized; and

d. assess whether the **contribution allocation procedure** or funding policy is significantly inconsistent with the plan accumulating assets adequate to make benefit payments when due, and estimate the approximate time until assets are depleted.

For purposes of this section, contributions set by law or by a contract, such as a collective bargaining agreement, constitute a funding policy.

For purposes of this section, the actuary may presume that all assumptions will be realized and the plan sponsor (or other contributing entity) will make contributions anticipated by the **contribution allocation procedure** or funding policy.

3.20 Contribution Lag—When calculating an **actuarially determined contribution**, the actuary should consider reflecting the passage of time between the **measurement date** and the expected timing of actual contributions.

3.21 Reasonable Actuarially Determined Contribution—When performing a **funding valuation**, except where the **actuarially determined contribution** is based on a **prescribed assumption or method set by law**, the actuary should also calculate and disclose a reasonable **actuarially determined contribution**. For this purpose, an **actuarially determined contribution** is reasonable if it uses a **contribution allocation procedure** that satisfies the following conditions:

a. all significant assumptions selected by the actuary are reasonable, all significant **prescribed assumptions or methods set by another party** do not significantly conflict with what in the actuary's professional judgment is reasonable in accordance with ASOP Nos. 27 and 35, and the combined effect of these assumptions is expected to have no significant bias (i.e., it is not significantly optimistic or pessimistic) except when provisions for adverse deviation are included;

b. the **actuarial cost method** used should be consistent with section 3.13. If an **actuarial cost method** with individual attribution is used, each **participant's normal cost** should be based on the **plan provisions** applicable to that **participant**;

c. if an **amortization method** is used, it should be consistent with section 3.14;

d. if an asset valuation method is used, it should be consistent with section 3.15;

e. if an **output smoothing method** is used, it should be consistent with section 3.16; and

f. the **contribution allocation procedure** should, in the actuary's professional judgment, be consistent with the plan accumulating assets adequate to make benefit payments when due, assuming that all assumptions will be realized and that the plan sponsor or other contributing entity will make **actuarially determined contributions** when due.

3.22 Gain and Loss Analysis—When performing a **funding valuation**, the actuary should perform a **gain and loss analysis** for the period between the prior **measurement date** and the current **measurement date**, unless in the actuary's professional judgment, successive **gain and loss analyses** would not be appropriate for assessing the reasonableness of the assumptions. For example, successive **gain and loss analyses** may not provide useful information about the reasonableness of the assumptions for a small plan in which a single individual accounts for most of the **actuarial accrued liability**. If a **gain and loss analysis** is performed, the actuary should at least separate the total gain or loss into investment gain or loss and other gain or loss.

3.23 Volatility—If the scope of the actuary's assignment includes an analysis of the potential range of future pension obligations, **periodic costs**, **actuarially determined contributions**, or **funded status**, the actuary should take into account sources of volatility that, in the actuary's professional judgment, are significant. Examples of potential sources of volatility include the following:

a. plan experience differing from that anticipated by the economic or demographic assumptions, as well as the effect of new entrants;

b. changes in economic or demographic assumptions;

c. the effect of discontinuities in applicable law or accounting standards, such as full funding limitations, the end of amortization periods, or liability recognition triggers;

d. the delayed effect of smoothing techniques, such as the pending recognition of prior experience losses; and

e. patterns of rising or falling **periodic cost** expected when using a particular **actuarial cost method** for the plan population.

When analyzing potential variations in economic and demographic experience or assumptions, the actuary should refer to ASOP No. 51 for additional guidance, where applicable.

3.24 Assessment of Assumptions and Methods Not Selected by the Actuary—For each **measurement date**, the actuary should assess whether an assumption or method not selected by the actuary is reasonable for the purpose of the measurement, other than 1) **prescribed assumptions or methods set by law** and 2) assumptions or methods that the actuary has not selected and is unable to assess for reasonableness for the purpose of the measurement. For purposes of this assessment, reasonable assumptions or methods are not necessarily limited to those the actuary would have selected for the measurement. In this assessment, the actuary should determine whether the assumption or method significantly conflicts with what, in the actuary's professional judgment, would be reasonable for the purpose of the measurement. If, in the actuary's professional judgment, there is a significant conflict, the actuary should disclose this conflict in accordance with section 4.2(a).

3.25 Approximations and Estimates—Where circumstances warrant, the actuary may use approximations or estimates in performing the actuarial services. The following are some examples of such circumstances:

a. situations in which the actuary reasonably expects the results to be substantially the same as the results of detailed calculations;

b. situations in which the actuary's assignment requires informal or rough estimates; and

c. situations in which the actuary reasonably expects the amounts being approximated or estimated to represent only a minor part of the overall pension obligation, **periodic cost**, or **actuarially determined contribution**.

When using approximations or estimates, the actuary should use professional judgment to establish a balance between the degree of refinement of methodology and whether the impact on the results is material.

3.26 Documentation—The actuary should consider preparing and retaining documentation to support compliance with the requirements of section 3 and the disclosure requirements of section 4. If preparing documentation, the actuary should consider preparing such documentation in a form such that another actuary qualified in the same practice area could assess the reasonableness of the actuary's work. The degree of such documentation should be based on the professional judgment of the actuary and may vary with the complexity and purpose of the actuarial services. In addition, the actuary should refer to ASOP No. 41 for guidance related to the retention of file material other than that which is to be disclosed under section 4.

Section 4. Communications and Disclosures

4.1 Required Disclosures in an Actuarial Report—When issuing an actuarial report to which this standard applies, the actuary should refer to ASOP Nos. 23, 27, 35, 41, 44, 51, and 56. In addition, such communication should contain the following disclosures when relevant and material. An actuarial communication can comply with some, or all, of the specific requirements of this section by making reference to information contained in other actuarial communications available to the intended users (as defined in ASOP No. 41), such as an annual **actuarial valuation** report.

a. a statement of the purpose of the measurement and a statement to the effect that the measurement may not be applicable for other purposes (see section 3.3);

b. the **measurement date** (see section 3.4);

c. a description of adjustments made for events after the **measurement date** (see section 3.4.2);

d. a description of adjustments of prior measurements (see section 3.4.3);

e. an outline or summary of the **plan provisions** reflected in the **actuarial valuation**, a description of known changes in significant **plan provisions** reflected in the **actuarial valuation** from those used in the immediately preceding measurement prepared for a similar purpose, and a description of any significant **plan provisions** not reflected in the **actuarial valuation**, along with the rationale for not reflecting such significant **plan provisions** (see section 3.5);

f. a description of the valuation procedures used to value any significant **plan provisions** of the type described in section 3.5.3, such that another actuary qualified in the same practice area could make an objective appraisal of the reasonableness of the actuary's work as presented in the actuarial report (see section 3.5.3);

g. the date(s) as of which the **participant** and financial information were compiled;

h. a summary of the **participant** information (see section 3.6.1);

i. if hypothetical data are used, a description of the data (see section 3.6.2);

j. a description of any accounting policies or funding elections made by the principal that are pertinent to the measurement (see section 3.7);

k. a description of known changes in significant assumptions and methods from those used in the immediately preceding measurement prepared for a similar purpose. For assumption and method changes that are not the result of a **prescribed assumption or method set by another party** or a **prescribed assumption or method set by law**, the actuary should include an explanation of the information and analysis that led to those changes. The explanation may be brief but should be pertinent to the plan's circumstances (see section 3.8);

l. a statement indicating whether, in the actuary's professional judgment, the combined effect of the assumptions other than 1) **prescribed assumptions or methods set by law** and 2) assumptions that the actuary has not selected and is unable to assess for reasonableness for the purpose of the measurement is expected to have no significant bias (i.e., it is not significantly optimistic or pessimistic), except when provisions for adverse deviation are included or when alternative assumptions are used for the assessment of risk, in accordance with ASOP No. 51 (see section 3.8);

m. a description of the types of benefits regarded as accrued or vested if the actuary measured the value of accrued or vested benefits, and, to the extent the attribution pattern of accrued benefits differs from or is not described by the **plan provisions**, a description of the attribution pattern (see section 3.9);

n. a description of whether and how benefit payment default risk or the financial health of the plan sponsor was included, if a **market-consistent present value** measurement was performed (see section 3.10);

o. if applicable, a low-default-risk obligation measure (see section 3.11). In addition to the measure, the actuary should disclose the following:

1. the discount rate or discount rates used and rationale for selection;

2. a description of other significant assumptions, if any, that differ from those used in the **funding valuation** and rationale for their selection;

3. the **immediate gain actuarial cost method** used;

4. a description of the valuation procedures that differ from those used in the **funding valuation** to value any significant **plan provisions** of the type described in section 3.5.3 such that another actuary qualified in the same practice area could make an objective appraisal of the reasonableness of the actuary's work; and

5. commentary to help the intended user understand the significance of the low-default-risk obligation measure with respect to the **funded status** of the plan, plan contributions, and the security of **participant** benefits;

p. a description of the **actuarial cost method** and the manner in which **normal costs** are allocated, in sufficient detail such that another actuary qualified in the same practice area would be able to understand the significant characteristics of the method (for example, how the **actuarial cost method** is applied to multiple benefit formulas, compound benefit formulas, or benefit formula changes, where such **plan provisions** are significant) (see section 3.13);

q. if applicable, a description of the particular measures of plan assets and obligations that are included in the actuary's disclosure of the plan's **funded status**. For **funded status** measurements that are not prescribed by federal law or regulation, the actuary should accompany this description with each of the following additional disclosures:

1. whether the **funded status** measure is appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations;

2. whether the **funded status** measure is appropriate for assessing the need for or the amount of future contributions; and

3. if applicable, a statement that the **funded status** measure would be different if the measure reflected the market value of assets rather than the actuarial value of assets;

r. **funded status** based on an **immediate gain actuarial cost method** if the actuary discloses a **funded status** based on a **spread gain actuarial cost method** (see section 3.13). A description of the **immediate gain actuarial cost method** used for this purpose should be disclosed;

s. the remaining balance to be amortized, the remaining amortization period, and the amortization payment included in the **periodic cost** or **actuarially determined contribution** for each amortization base along with a disclosure if the unfunded **actuarial accrued liability** is not expected to be fully amortized (see section 3.14);

t. a description of any **output smoothing method** used. If an **output smoothing method** is used, the actuary should also disclose the corresponding **actuarially determined contribution** without output smoothing (see section 3.16);

u. a description of the **cost allocation procedure** or **contribution allocation procedure** including a description of the **amortization method** and any pay-as-you-go funding (i.e., the intended payment by the plan sponsor of some or all benefits when due) (see section 3.17);

v. a description of all changes in **cost allocation procedures** or **contribution allocation procedures** that are not a result of a **prescribed assumption or method set by law**, including the resetting of an actuarial asset value. The actuary should disclose the reason for the change and the general effects of the change on relevant **periodic cost**, **actuarially determined contribution**, **funded status**, or other measures by words or numerical data, as appropriate. The disclosure of the reason for the change and the general effects of the change may be brief but should be pertinent to the plan's circumstances (see section 3.17);

w. a qualitative description of the implications of the **contribution allocation procedure** or plan's funding policy on future expected plan contributions and **funded status** (see section 3.19[a]), if applicable. The actuary should disclose the significant characteristics of the **contribution allocation procedure** or plan's funding policy, and the significant assumptions used in the assessment;

x. if applicable, an estimate of how long before any contribution as determined by the **contribution allocation procedure** or the plan's funding policy is expected to exceed the **normal cost**, plus interest on the unfunded **actuarial accrued liability** (see section 3.19[b]);

y. an estimate of the period over which the unfunded **actuarial accrued liability**, if any, is expected to be fully amortized (see section 3.19[c]);

z. if applicable, a statement indicating that the **contribution allocation procedure** or funding policy is significantly inconsistent with the plan accumulating adequate assets to make benefit payments when due, as well as an estimate of the approximate time until assets are depleted (see section 3.19[d]);

aa. if applicable, a reasonable **actuarially determined contribution**, the corresponding **funded status**, and any material assumptions or methods that were used in the calculation that are not otherwise disclosed. The actuary should include a description of how pertinent conditions discussed in section 3.17 have been taken into account in determining the reasonable **actuarially determined contribution** (see section 3.21). The disclosure may be brief but should be relevant to the plan's circumstances;

bb. if applicable, the results of the **gain and loss analysis** separating the total gain or loss into investment gain or loss and other gain or loss. The actuary may meet the disclosure requirements of this section by providing more detailed results of the **gain and loss analysis** performed (see section 3.22). For example, the actuary could separate the non-investment gain or loss into demographic and economic gains or losses, or could identify gains or losses caused by individual decrements (for example, withdrawal, retirement, mortality) and other economic factors (for example, salary growth, inflation);

cc. if, in the actuary's professional judgment, the actuary's use of approximations and estimates could produce results that differ materially from results based on a detailed calculation, a statement to this effect (see section 3.25); and

dd. a statement, appropriate for the intended users, indicating that future measurements (for example, of pension obligations, **periodic costs**, **actuarially determined contributions**, or **funded status**, as applicable) may differ significantly from the current measurement. For example, a statement such as the following could be applicable: "Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's **funded status**); and changes in **plan provisions** or applicable law." (See section 3.23)

    In addition, the actuarial communication should include one of the following:

    1. if the scope of the actuary's assignment included an analysis of the range of such future measurements, disclosure of the results of such analysis together with a description of the factors considered in determining such range; or

2. a statement indicating that, due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

4.2 Disclosures in an Actuarial Report about Assumptions or Methods Not Selected by the Actuary—The actuary should include disclosures in an actuarial report stating the source of any material assumptions or methods that the actuary has not selected.

With respect to any assumption or method that the actuary has not selected, other than **prescribed assumptions or methods set by law**, the actuary's report should identify the following, if applicable:

a. any assumption or method that the actuary has not selected that, individually or in combination with other assumptions or methods, significantly conflicts with what, in the actuary's professional judgment, is reasonable for the purpose of the measurement (see section 3.24); or

b. any assumption or method that the actuary has not selected and is unable to assess for reasonableness for the purpose of the measurement.

4.3 Additional Disclosures in an Actuarial Report—The actuary also should include disclosures in an actuarial report in accordance with ASOP No. 41 for the following circumstances:

a. 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

b. if in the actuary's professional judgment, the actuary has deviated materially from the guidance of this ASOP.

4.4 Confidential Information—Nothing in this ASOP is intended to require the actuary to disclose confidential information.

Appendix

Comments on the Third Exposure Draft and Responses

The third exposure draft of the proposed revision of ASOP No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*, was approved in June 2021 with a comment deadline of October 15, 2021. Seven comment letters were received, some of which were submitted on behalf of multiple commentators, such as by firms or committees. For purposes of the appendix, the term "commentator" may refer to more than one person associated with a particular comment letter. The Pension Committee carefully considered all comments received, and the ASB reviewed (and modified, where appropriate) the changes proposed by the Pension Committee.

Summarized below are the significant issues and questions contained in the comment letters and the responses to each. Minor wording or punctuation changes that were suggested but not significant are not reflected in the appendix, although they may have been adopted.

The term "reviewers" in the appendix includes the Pension Committee and the ASB. Also, the section numbers and titles used in the appendix refer to those in the third exposure draft.

GENERAL COMMENTS	
Comment	One commentator recommended that ASOP No. 4 explicitly recognize and state that many provisions would not apply to small defined benefit plans.
Response	The reviewers disagree and made no change.
SECTION 1. PURPOSE, SCOPE, CROSS REFERENCES AND EFFECTIVE DATE	
Section 1.2, Scope	
Comment	One commentator suggested a reference to ASOP No. 56, *Modeling*, be added to the scope section.
Response	The reviewers disagree and made no change in response to this comment. The reviewers note the paragraph in scope addresses potential conflicts with pension-related ASOPs that provide guidance directly related to this standard. The reviewers also note that a reference to ASOP No. 56 was added to section 3.2.
SECTION 2. DEFINITIONS	
Section 2.8, Contribution Allocation Procedure	
Comment	One commentator suggested changing the second sentence in section 2.8 to state, "The procedure uses an actuarial cost method and may use an asset valuation method, an amortization method, and/or an output smoothing method."
Response	The reviewers disagree and made no change as the use of "and/or" is inconsistent with ASOP style since the use of "or" incorporates "and."
Section 2.9, Cost Allocation Procedure	
Comment	One commentator suggested changing the second sentence in section 2.9 to state, "The procedure uses an actuarial cost method, and may use an asset valuation method and/or an amortization method."
Response	The reviewers disagree and made no change as the use of "and/or" is inconsistent with ASOP style since the use of "or" incorporates "and."

SECTION 3. ANALYSIS OF ISSUES AND RECOMMENDED PRACTICES	
Section 3.2, General Procedures	
Comment	One commentator suggested adding modeling to the list of general procedures, as well as adding a new subsection.
Response	The reviewers disagree on the inclusion of a new subsection but added a reference to ASOP No. 56 in section 3.2.
Section 3.4.3, Adjustments of Prior Measurements	
Comment	One commentator suggested changing the last sentence in section 3.4.3 to state, "When adjusting obligations from a prior measurement date, the actuary should consider using revised assumptions to determine the obligations if appropriate for the purpose of the measurement."
Response	The reviewers agree and modified the language in response to this comment.
Section 3.8, Assumptions	
Comment	One commentator suggested the term "assess" in section 3.8 should be clarified to determine whether the combined effect of assumptions significantly conflicts with what would be reasonable.
Response	The reviewers believe the guidance is sufficiently clear and made no change.
Section 3.9, Measuring the Value of Accrued or Vested Benefits	
Comment	One commentator recommended section 3.9(g)(3) (expenses associated with a potential plan termination, including transaction costs to liquidate plan assets) and (4) (changes in investment policy) be deleted, changed, or moved to section 3.3.
Response	The reviewers modified the guidance in section 3.9 in response to this comment.
Section 3.10, Market-Consistent Present Values	
Comment	One commentator suggested eliminating this section and stated that, if the concept is retained, it should be made clear that ABO and PBO under ASC 715 are likely not market consistent present values.
Response	The reviewers believe the guidance is appropriate and made no change in response to this comment.
Comment	One commentator suggested that if section 3.10 is retained, the portion permitting the reflection of payment default risk or the financial health of the sponsor should be eliminated.
Response	The reviewers disagree and made no change in response to this comment.
Comment	One commentator stated that in sections 3.10 and 3.11 it is not clear whether "benefits earned as of the valuation date" are the same thing as "accrued benefits" in section 3.9, Measuring the Value of Accrued or Vested Benefits. If so, the ASOP should use the same terminology in all three of these sections. If a distinction is intended, it should be made clear what the difference is.
Response	The reviewers clarified the guidance in section 3.9 in response to this comment.
Section 3.11, Low-Default-Risk Obligation Measure	
Comment	Several commentators suggested changing "…should calculate…" to "…should consider calculating…" in first paragraph of section 3.11.
Response	The reviewers disagree and made no change in response to this comment.
Comment	Several commentators provided alternative language for the variable annuity plan language in section 3.11.
Response	The reviewers modified the guidance to read, "For purposes of this obligation measure, the actuary should consider reflecting the impact, if any, of investing plan assets in low-default-risk fixed income securities on the pattern of benefits expected to be paid in the future, such as in a variable annuity plan."

Comment Response	One commentator felt the ASB should include an explanation about why and how including LDROM disclosure provides appropriate and useful information for the intended user for inclusion in all funding valuations. The reviewers believe the guidance is appropriate and note the transmittal memorandum of the ASOP states, "...this additional disclosure provides a more complete assessment of a plan's funded status and provides additional information regarding the security of benefits that members have earned as of the measurement date."
Comment Response	One commentator stated it is not clear what "costs accrued" means in the context of section 3.11. The reviewers agree and clarified the guidance in response to this comment.
Comment Response	One commentator suggested modifying the language in the fourth paragraph of section 3.11 to state, "When plan provisions create pension obligations that are difficult to appropriately measure using traditional valuation procedures, such as benefits affected by actual investment returns, movements in a market index, or other similar factors, the actuary should consider using alternative valuation procedures such as those described under section 3.5.3, including the use of alternative discount rates if indicated by such procedures, to calculate the low-default-risk obligation measure of those benefits earned or costs accrued as of the measurement date." The reviewers disagree and made no change in response to this comment. The reviewers note modifications were made to the fifth paragraph as follows: "For purposes of this obligation measure, the actuary should consider reflecting the impact, if any, of investing plan assets in low-default-risk fixed income securities on the pattern of benefits expected to be paid in the future, such as in a variable annuity plan."
Section 3.14, Amortization Method	
Comment Response	One commentator felt section 3.14 should state that the actuary should "consider" the items listed, not that the actuary should necessarily "take them into account," as some of them may not be necessary or appropriate to take into account. The reviewers note that the guidance in section 3.14 states, "the actuary should take into account factors including, but not limited to, the following, if applicable." Therefore, the reviewers made no change.
Comment Response	One commentator suggested requiring that a reasonable actuarially determined contribution use an amortization method that is designed to fully amortize the unfunded actuarial liability. The reviewers believe the guidance is appropriate and made no change.
Section 3.17, Allocation Procedure	
Comment Response	One commentator felt section 3.17 should state that the actuary should "consider" the items listed, not that the actuary should necessarily "take them into account," as some of them may not be necessary or appropriate to take into account (e.g., relevant input from the principal, potentially intergenerational equity). The reviewers disagree and made no change.
Section 3.19, Implications of Contribution Allocation Procedure or Funding Policy	
Comment Response	One commentator felt the disclosure contemplated in section 3.19(b) should not be required as long as the contribution allocation procedure produces an expected contribution that exceeds normal cost plus interest on the unfunded. The reviewers believe the guidance is appropriate and made no change. The reviewers note that the guidance states, "For purposes of this section, the actuary may presume that all assumptions will be realized and the plan sponsor (or other contributing entity) will make contributions anticipated by the contribution allocation procedure or funding policy."

Comment Response	One commentator suggested alternative wording for paragraphs (b), (c), and (d) in section 3.19 to clarify that "contribution" refers to "plan's expected future contributions." The reviewers believe the guidance is appropriate and made no change. The reviewers note that the guidance states, "For purposes of this section, the actuary may presume that all assumptions will be realized and the plan sponsor (or other contributing entity) will make contributions anticipated by the contribution allocation procedure or funding policy."
Section 3.21, Reasonable Actuarially Determined Contribution	
Comment Response	One commentator suggested alternative wording for 3.21(b). The reviewers agree and modified the language in response to this comment.
Comment Response	One commentator suggested section 3.21(b) should be clarified to allow an entry age normal cost calculation to use "the current plan of benefits for each participant," for the purposes of determining a reasonable actuarially determined contribution. The reviewers believe the guidance is appropriate and made no change in response to this comment.
Section 3.22, Gain and Loss Analysis	
Comment Response	In section 3.22, one commentator suggested replacing "single individual" with "limited group of individuals" to provide a more meaningful example. The reviewers believe the guidance is appropriate and made no change in response to this comment.
Section 3.26, Documentation	
Comment Response	In section 3.26, one commentator felt that the sentence, "In addition, the actuary should refer to ASOP No. 41 for guidance related to the retention of file material other than that which is to be disclosed under section 4" was unnecessary and should be deleted. The reviewers disagree and made no change.
SECTION 4. COMMUNICATIONS AND DISCLOSURES	
Section 4.1, Required Disclosures in an Actuarial Report	
Comment Response	Two commentators suggested adding ASOP No. 56 to the list of ASOPs in section 4.1. The reviewers note that guidance on ASOP No. 56 was added to section 3 and, therefore, was added to the list of ASOPs in section 4.1
Comment Response	One commentator suggested inserting "significant" before "assumptions" in section 4.1(k). The reviewers agree and modified the language in response to this comment.
Comment Response	One commentator objected to the requirement in section 4.1(o)(1) that the rationale for the selection of the discount rate be disclosed. The reviewers believe the guidance is appropriate and made no change.
Comment Response	One commentator suggested that the disclosure requirement in section 4.1(o)(5) be deleted as it is entirely unclear what the ASB expects the actuary to disclose in response to this requirement. The reviewers disagree and made no change in response to this comment. The reviewers note that the guidance in section 3.11 states, "The actuary should use professional judgment to determine the appropriate commentary for the intended user."
Comment Response	While one commentator appreciated the elimination of the second exposure draft's section 4.1(v) from the third exposure draft, the commentator stated the associated additions to section 4.1(aa) were equally, and unnecessarily, burdensome. The reviewers disagree and made no change. The reviewers note section 4.1(aa) states that, "the disclosure may be brief but should be relevant to the plan's circumstances."