

# Asset Retirement Obligations

## Valuation Techniques

*The following provides guidance associated with government's stated accounting policy for Asset Retirement Obligations (AROs). This document does not impede any application of professional judgment when applying Canadian Public Sector Accounting Standards (PSAS).*

### A. Guiding Principles

- A.1 Public Sector Accounting Board (PSAB)
  - A.1.1 PS 1000 – Financial Statement Concepts
  - A.1.2 PS 3280 – Asset Retirement Obligations

### B. Purpose and Scope

- B.1 Applies to all public sector entities (except government business enterprises for the purposes of the policy) that are included in the government reporting entity (GRE) for the Province of Alberta.
- B.2 The public sector entity's Tangible Capital Asset (TCA) accounting policy should be used in conjunction with this guidance.
- B.3 For AROs, the objective is to measure the obligation at each reporting date until the obligation is fulfilled. It reflects the amount that the public sector entity would require to settle the obligation as of the reporting date.
- B.4 PS 3280 does not include prescriptive guidance on the appropriate technique to use to measure the ARO liability.
  - B.4.1 - As a result, professional judgment will be required to determine the measurement technique that is most appropriate in each circumstance. For instance, an entity may apply the present value technique to estimate the ARO liability of some individual assets and apply a cost escalation technique for other individual assets.

### C. Definitions

- C.1 Present Value Technique –
  - C.1.1 - A method for evaluating the current value of a future sum of money or stream of cash flows given a specified rate of return. The method accounts for the time value of money.
  - C.1.2 - Future cash flows are discounted at the discount rate, and the higher the discount rate, the lower the present value of the future cash flows (and vice-versa).
  - C.1.3 - Generally represented by the following formula (or similar variations):

	<b>FV</b>			
<b>PV</b>	=	-----		<i>where:</i> <b>PV</b> = present value of cash flows (discounted) <b>FV</b> = future value of cash flows (undiscounted) <b>r</b> = discount rate <b>n</b> = number of periods in the future
		<b>(1+r)<sup>n</sup></b>		

## C. Definitions (continued)

### C.2 Time Value of Money –

C.2.1 - Dictates that time affects the value of cash flows.

C.2.2 - Based on the principle that a cash flow today is more valuable than an identical cash flow in the future because a present flow can be invested immediately and begin earning returns, while a future flow cannot. This is often referred to as the “opportunity cost”.

### C.3 Present Value of Cash Flows –

C.3.1 - Is the discounted amount of future cash flows expected to be required to settle a liability.

C.3.2 - Present value is not a basis of measurement, but a valuation technique that may be used within historical cost-based or current-value models.

### C.4 Settlement Value –

C.4.1 - Is the cost for an entity to be released from its obligation at the reporting date, either by settling the obligation or by transferring the obligation to a third party.

### C.5 Future Value of Cash Flows –

C.5.1 - Estimated total undiscounted expenditures required to settle or otherwise extinguish a current liability. In other words, the value of a current liability at a specified date in the future based on an assumed rate of growth.

### C.6 Discount Rate –

C.6.1 - Typically comprises of both a “risk-free rate” (to account for the time value of money) and “risk rate” (to account for the risks specific to the liability).

C.6.2 - The “risk-free” rate is typically the interest rate an investor can expect to earn on an investment that carries zero risk. In other words, the investment return that can be garnered if cash flows are invested today rather than spending the cash flows today. Spending cash flows today means the entity foregoes the opportunity to invest those cash flows today and earn a return (i.e. the opportunity cost). Similarly, the concept can be applied to borrowing environment type decisions such as where settlement of ARO liabilities today will require borrowed funds and the payment of annual interest on debt.

C.6.3 - The “risk” rate is specific to the liability and would be consistent with the assumptions applied to the future value of cash flows. It is the price for bearing the uncertainty inherent in the cash flows. For example, the effects of inflation, building construction price index, and other factors identified.

### C.7 Number of Periods in the Future –

C.7.1 - Represents the overall time frame over which retirement activities will occur. In other words, the time period over which the undiscounted expenditures are to be incurred (i.e. settlement of expenditures).

C.7.2 - Typical expectation is that it is a representation of “extended future periods”.

### C.8 Cost Escalation Technique –

C.8.1 - A method whereby an ARO liability is initially recorded at today’s estimated cost to settle, without applying present value techniques. In other words, an approximation of today’s required cash flows to settle or otherwise extinguish the liability.

C.8.2 - Subsequent re-measurement of the ARO obligation at each financial statement date may be based on accepted escalator methodologies or re-assessments. For example, the effects of inflation or other documented evidence.

## **D. Budgeting Considerations**

- D.1 ARO costs should be capitalized or expensed on a reasonable and appropriate basis as determined by management and planned with the public sector entity's budget authority.
- D.2 Consideration should be given to the effects of subsequent re-measurement such as changes in assumptions, annual amortization on ARO costs capitalized, and accretion of ARO liabilities measured using the present value technique.

## **E. General Policy Requirements and Application**

### **Thresholds**

- E.1 To achieve completeness of estimates, no accounting threshold has been prescribed for departments and entities.
  - E.1.1 - Use of a prescribed dollar threshold to apply or not apply present value techniques may not be appropriate at all levels of government due to varying levels of quantifiable materiality.
  - E.1.2 - Reporting entities should use professional judgement and consider both the quantitative and qualitative materiality aspects as it applies to their estimates.

### **Variability by Sector**

- E.2 Valuation methodology may vary by asset type and sector. Where possible, consistency should be achieved in methodology by asset type within each sector. For example, the robustness and composition of buildings varies by sector which factors in valuation methodology. Some building types by sector may include:
  - E.2.1 - Core government commercial buildings (low rise, high rise)
  - E.2.2 - Residential buildings
  - E.2.3 - Schools
  - E.2.4 - University and College campuses and related facilities
  - E.2.5 - Hospitals and other health facilities

### **Costing**

- E.3 An ARO should be estimated based on information available at the financial statement date. This is management's best estimate based on professional judgement, previous experience, industry standards, third party quotes, the use of experts, and the expected technology to be used in the asset retirement activities.
- E.4 Internal expertise to determine estimates may not be adequate. A team of knowledgeable people from different backgrounds may be needed for successful implementation, which can include:
  - E.4.1 - Finance
  - E.4.2 - Asset management personnel
  - E.4.3 - Engineers
  - E.4.4 - Legal counsel
  - E.4.5 - Third-party valuers or experts

## **E. General Policy Requirements and Application (continued)**

### **Costing (continued)**

- E.5 Documentation of key assumptions should consider sensitivity of inputs and variables. For example, costing rates may vary for assumptions related to:
- E.5.1 - Inflation
  - E.5.2 - Site specific factors
  - E.5.3 - Contingencies for discovery of unexpected hazardous materials
  - E.5.4 - Risk profiles
- E.6 The risk profile should be vetted with people who understand the regulations (engineers, plant managers, etc.)

### **Evaluating the Appropriateness of a Valuation Technique**

- E.7 Selection of a valuation technique should be based on assessments performed on a case-by-case basis. This approach should enable the most accurate valuation of AROs in today's money.
- E.7.1 - The rationale of the valuation technique chosen is required to be documented. Entities choosing not to use present value techniques should demonstrate why discounting is not appropriate.
  - E.7.2 - Uncertainties affecting the measurement of a liability for an ARO should be disclosed in accordance with MEASUREMENT UNCERTAINTY, Section PS 2130.
  - E.7.3 - The measurement of a liability for an ARO in today's dollars may not be materially different between methods as the financial statements should fairly represent liabilities at today's estimated cash flows required to settle obligations.
- E.8 The appropriate valuation technique depends on factors such as:
- E.8.1 - the extent and complexity of the future costs; and
  - E.8.2 - the time frame over which activities will occur.
- E.9 A present value technique is often the best method to use in estimating the liability when:
- E.9.1 - the cash flows required to settle the liability will occur over "extended future periods"; and
  - E.9.2 - information is available to perform the valuation.
- E.10 For the present value technique to be viably utilized by a public sector entity, all three parameters of the present value technique (i.e. future value of cash flows (undiscounted), discount rate, and timing of settlement) should be known with reasonable certainty.
- E.10.1 - Uncertainty in even one parameter will be a key decision point.
  - E.10.2 - The absence of reliable information on discounting parameters may allow for other valuation techniques to be entertained.

## **E. General Policy Requirements and Application (continued)**

### **Evaluating the Appropriateness of a Valuation Technique (continued)**

- E.11 Application of the cost escalation technique may be most appropriate when:
- E.11.1 - one or more of the three parameters of the present value technique (i.e. future value of cash flows (undiscounted), discount rate, and timing of settlement) are not known with reasonable certainty; or
  - E.11.2 - timing of settlement of the liability is expected to occur in 5 years and under from the financial statement date (as a present value technique is often the best available technique when the cash flows are expected to occur over "extended future periods").
- E.12 The carrying amount of the liability should be reassessed at each financial reporting date, which includes taking into account:
- E.12.1 - new information; and
  - E.12.2 - the appropriateness of assumptions used.
- E.13 Regardless of the valuation technique applied, an entity would adjust the computation of reported liabilities annually based on any changes to assumptions. Consideration should also be given to the required reassessment of the following assumptions at each financial reporting date:
- E.13.1 - The appropriateness of costing information applied to the future undiscounted value of cash flows.
  - E.13.2 - The appropriateness of discount rates and risks specific to the liability for each asset/asset type. This may add a significant amount of time to preparing financial information where calculations are done on a case-by-case basis. Complexities of financial reporting can also arise as the discount rate used during budget preparation (i.e. February 20x2) may likely differ from reported actuals 13 months later (i.e. March 20x3).
  - E.13.3 - The basis to estimate the timing of settlement where this is usually at the discretion of management.
  - E.13.4 - The appropriateness of cost escalation rates used in estimates.
- E.14 When applying a present value technique, determining the appropriate discount rate should be based on the financial reporting concepts set out in the conceptual framework, which includes:
- E.14.1 - the objectives of financial statements;
  - E.14.2 - benefit versus cost constraint; and
  - E.14.3 - the qualitative characteristics of useful financial information such as relevance, reliability, comparability and understandability.

## E. General Policy Requirements and Application (continued)

### Evaluating the Appropriateness of a Valuation Technique (continued)

- E.15 A present value technique requires management to estimate the timing of future settlement. There may be challenges in coming up with this estimate as asset management plans, which project the timing of retirement activities for many assets such as buildings, may not be consistently available. Hence, this may hinder management's ability to determine the timing of future cash flows. As cash flow timing becomes more estimable, they tend to be in the nearer future, where present value techniques have less of an impact to the liability.
- E.15.1 - For example, from a practical perspective, for buildings in productive use with asbestos and other designated substances, it is known that abatement should occur during or at the end of the useful life of the building. However, assessments generally do not project the timing of when remediation will occur. As there is no requirement to remove undisturbed or unfallen asbestos, management would typically not project the timing of such activities, and hence, abatement may not necessarily be performed at the end of the useful life of the asset. The asset may be re-purposed for an alternative use or sold off before disposal is considered. The timing of abatement activities is generally an ongoing discretionary management decision, often determined by when abatement professionals have already been mobilized (i.e. for low quality asbestos abatement). Due to the lack of reliable cash flow timing projections, the application of present value discounting would not increase the estimate's reliability in these circumstances.
- E.15.2 - Conversely, some AROs may be established by contracts that define specific amounts and timing for payments. With these variables clearly defined, there is a significant improvement in the reliability for long term liabilities calculated from the present value of cash flows and management should specifically assess the value of applying present value techniques for these assets.
- E.16 In assessing the appropriate valuation technique, consideration should also be given to the following factors:
- E.16.1 - There may be challenges with applying complex discounting models with a large number of assumptions on a large number of assets with generally small obligations relative to the asset cost. This creates the risk of mechanical error and the effort to update the individual liabilities on a large number of assets when the broad assumptions change.
- E.16.2 - The cost of processing complex appropriation approvals and G/L adjustments (such as for accretion expense) may be significant due to the widespread impact across different public sector entities, assets, cost centers and accounts. In particular, any change in liability must still be linked to the specific asset when capitalized or previously expensed.
- E.16.3 - Future changes in legislation, technology, processes, or additional information may affect timing of settlement and expected future cash flows.

### Present Value of Cash Flows

- E.17 An entity will measure and incorporate changes due to the passage of time into the carrying amount of the liability before measuring changes resulting from a revision to either the timing, the amount of the original estimate of undiscounted cash flows or the discount rate.
- E.17.1 - In other words, any change in assumptions to any of the three parameters used in the present value technique will require bringing the liability up to the present value as of the date there is a change in assumptions. This is done through accretion expense to account for the passage of time.
- E.17.2 - The present value as of the change in assumptions date would then be compared to a revised present value calculation at that same date with the calculated difference being accounted for in accordance with the policy (i.e. as part of the historical cost of the related TCA still in productive use or expensed for TCAs no longer in productive use/ Unrecognized TCAs). It is possible that revised present value calculations may decrease or increase (especially from the effects of a decrease or increase to the discount rate applied), requiring an adjustment to a previously capitalized historical cost or expenditure.

## E. General Policy Requirements and Application (continued)

### Future Value of Cash Flows

- E.18 The assumptions applied in the future cash flows and the discount rate should be internally consistent. If the future cash flows include the effect of inflation, then the discount rate also incorporates the same inflation assumptions.
- E.18.1 - In other words, assumptions on the timing of cash flows impacts the appropriate rate to use (e.g. using a 10-year rate for cash flows estimated in 10 years and a 30-year rate for cash flows estimated in 30 years).

### Discount Rate

- E.19 If applying the present value technique, a key input factor is the discount rate. Where a present value technique is used, the obligation at each reporting date is measured by applying a discount rate to the best estimate of the amount required to retire a TCA.
- E.19.1 - As the discount rate has not been prescribed, this allows the entity to choose a rate that best reflects the risks specific to the liability for an ARO for that particular entity.
- E.19.2 - Consideration should be given to principles inherent in the Standard, such as the use of consistent assumptions and no double counting.
- E.20 The discount rate should best reflect the time value of money (i.e. "risk-free rate") and the risks specific to the liability (i.e. "risk rate"), for which future cash flow estimates have not been adjusted.
- E.20.1 - For example: 3% Government Borrowing Rate (risk-free rate) + 2% Inflation Rate (risk rate) = 5% Discount Rate.
- E.21 Decisions on the applicable rate for public sector entities should be based on the fiscal environment and reliance on government funding.
- E.21.1 - For example, in an overall government deficit environment, the Province's estimated borrowing rate for long-term debt may be the most appropriate risk-free rate. In an overall government surplus environment, the Province's estimated borrowing rate for long-term debt may still be the most appropriate risk-free rate unless other rates such as the average Government of Canada bond yield rates are determined to be a more appropriate risk-free rate. Similarly, for individual entities which may not be in a borrowing type fiscal environment, use of a different risk-free rate may be more appropriate (e.g. portfolio investment rate of return).
- E.22 The Province's estimated borrowing rate for long-term debt (i.e. "GoA Borrowing Rate") may likely be the most commonly applied "risk-free rate" in present value technique calculations as bond rates are backed by the government.
- E.22.1 - Using the Province's cost of borrowing as the discount rate basis would provide an estimate at the reporting date of how much the GRE would borrow to meet its obligations.
- E.22.2 - Entities interested in obtaining information on the GoA Borrowing Rate should direct enquires to TBF Treasury and Risk Management (Capital Markets team). The posted average GoA Borrowing Rates are available in 3, 5, 7, 10, 15, 20, 25, and 30 year time frames. Any requests for rates beyond this time frame can be prepared on an ad-hoc basis.
- E.22.3 - As confirmed with TBF Treasury and Risk Management, rates that may be posted for Loans to Local Authorities (aka. ACFA Rate) may not be appropriate for use by the public sector entity unless the entity itself is defined as a local authority.

## **E. General Policy Requirements and Application (continued)**

### **Discount Rate (continued)**

- E.23 The projected future inflation rate may likely be the most commonly applied “risk rate” in present value technique calculations as the prices of goods and services rise over time, which lowers the purchasing power of money.
- E.23.1 - The Bank of Canada (as of 2021) aims to keep inflation at the 2 per cent midpoint of an inflation-control target range of 1 to 3 per cent. The inflation target is expressed as the year-over-year increase in the total consumer price index (CPI), which is obtained from Statistics Canada. The CPI is widely used as an indicator of the change in the general level of consumer prices or the rate of inflation. Since the purchasing power of money is affected by changes in prices, the CPI is useful to virtually all Canadians.
- E.24 Alternative discount rates may also be considered where appropriate and reflect a current, an average or a projected rate.
- E.25 At each financial reporting date, the discount rate used should be reviewed to assess its ongoing appropriateness.
- E.25.1 - The rate selected (initially and at each financial statement date) should appropriately reflect the estimated long-term timing of settlement of the liability.
- E.25.2 - As a result, the entity would have to adjust the computation of the present value of undiscounted future cash flows on an ongoing basis.

### **Number of Periods in the Future**

- E.26 In determining the “number of periods in the future” parameter for present value calculations, an appropriate basis is to be selected at management’s discretion to determine the long-term timing of settlement. It must be assessed for validity using professional judgement. For example, this could be based on:
- E.26.1 - a TCAs useful life, lease agreement provisions, legislation, internal financial policy directives, management’s historical actions, piecemeal building maintenance/repair plans, long-term capital spending plan, retirement plan, etc.

## **F. Retention of Records**

- F.1 The public sector entity should have appropriate authorizations, processes, and supporting documentation as it relates to any assessment made under this guidance and the associated policy.
- F.2 ARO costs capitalized should be readily and separately identifiable as part of the public sector entity’s asset module and/or other accounting records to assist in evaluation of associated ARO liabilities and related impacts from applied valuation techniques.