

# PSAB/Asset Management

## NEWSLETTER NO. 16

### Valuing Tangible Capital Assets – Estimating Historical Cost

*By John Rockx, KPMG*

In September 2006, the Public Sector Accounting Standards Board (PSAB) of the Canadian Institute of Chartered Accountants (CICA) issued revised standard PS 3150, *Tangible Capital Assets*. PS 3150 establishes the accounting and reporting standards for tangible capital assets in government financial statements. The transitional provisions of PS 3150 require governments to implement the new standards for fiscal years commencing on or after January 1, 2009.

One of the first steps in implementing PS 3150 is to identify, classify and categorize all owned tangible capital assets and create an inventory register that can hold pertinent fields of data (e.g. asset name, location, year of acquisition, useful life, original cost etc.). This task is critical to establishing the opening financial position of tangible capital assets.

The next step is to start populating the inventory register with appropriate information, including the historical cost of each tangible capital asset. PS 3150 states that, “Tangible capital assets should be recorded at cost.” Cost is generally considered to be historical cost, which represents the initial purchase price or construction cost of an asset. Previous editions of Newsletter elaborated on the various components of historical cost.

Historical cost should be used when accounting records are available and properly maintained as historical cost represents the most objective and measurable value amount. Unfortunately, financial records that provide historical cost information are not readily available for many tangible capital assets, particularly those assets that were acquired or constructed more than five or ten years ago or assets whose ownership was transferred to a government from a third party (e.g. developers, other government bodies). CICA standards acknowledge that when a government does not have historical cost accounting records for its tangible capital assets, it will need to use other methods to estimate the original cost and accumulated amortization of the assets. Furthermore, a government should apply a consistent method of estimating the original cost of tangible capital assets for which it does not have any historical records, except in circumstances where it can be demonstrated that a different method would provide a more accurate estimate of cost of a particular type of tangible capital asset.

Some of the suggested alternative approaches to estimate historical cost include:

- Deflated reproduction cost
- Deflated replacement cost
- Deflated appraisal value / market value

These three approaches value the tangible capital asset today and then discount the value back to the year in which the asset was initially purchased or constructed to estimate the original cost of the asset.

Deflated reproduction cost represents the current cost of reproducing an asset in its same physical form (with substantially the same materials and design) and then using an appropriate pricing index to discount the current cost of the asset to its estimated cost at the time of acquisition or construction.

Deflated replacement cost represents the current cost of replacing an asset in a different physical form but with the same productive capacity and then using an appropriate pricing index to discount the current cost of the asset to its estimated cost at the time of acquisition or construction. This method is generally used to determine the cost of older assets which have been replaced by new technologies or materials that supply the same or better asset utility or service capability. For example, a government would not replace a wooden water main with another wooden water main, but with a water main constructed of current materials such as concrete or PVC.

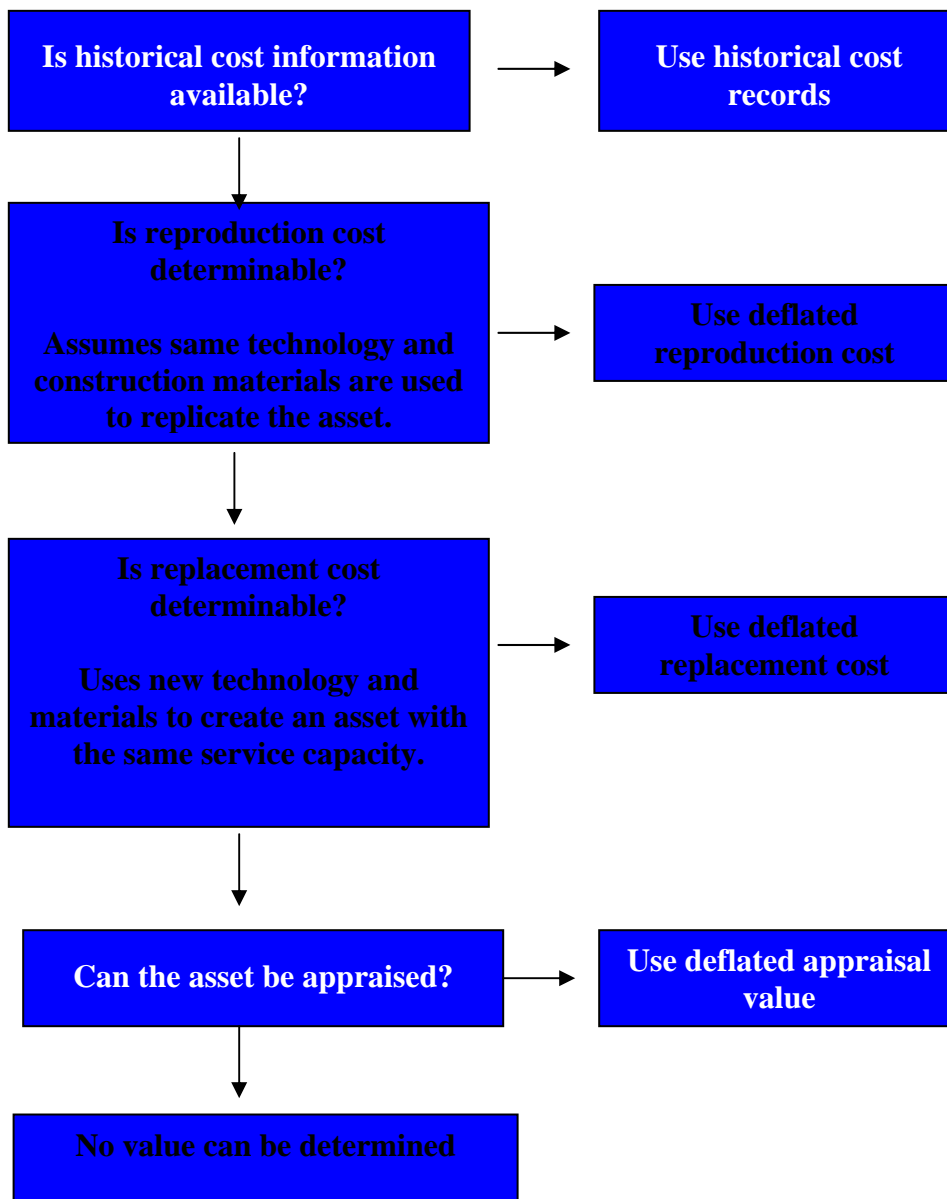
Deflated appraisal values must be approached with caution. Generally, appraised values establish a market value, taking into account an asset's age and condition. Deflating this value back to the year of asset purchase or construction may be double counting since the amortization and write-downs that will be applied to this estimated historic cost are proxies for the "age and condition of the asset." Appraisals might be used to estimate current replacement cost which can be deflated and amortization is then used to allocate that cost over its useful life.<sup>1</sup>

Indices used to discount current asset values to the year of original purchase or construction should be industry or asset class specific as these indices tend to be more accurate than generic price indices such as the Consumer Price Index ("CPI").

The chart below represents a decision tree for determining the appropriate valuation method to use in establishing the historical cost of a tangible capital asset.

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<sup>1</sup> This is not to be confused with a common term used by appraisers – Depreciated Replacement Cost. DCR is a valuation technique used "to arrive at a surrogate for the market value of specialised properties for which there are no readily available or otherwise dependable market data to analyse in developing a Market Value estimate." (International Valuation Standards 2001).



Where no value can be determined, a nominal value may be appropriate, if it meets the conditions of PS 3150.14 or PS 3150.48. Paragraph .14 allows the use of nominal value ‘in unusual circumstances’ where an estimate of ‘fair value’ of contributed assets cannot be made. Paragraph .48 also allows use of nominal value in the case of fully amortized assets when historic cost and accumulated amortization can not be estimated or residual value is unknown. It should be noted that PS 3150.48 still requires that a record of the asset be maintained. PS 3150.46 states “All government tangible capital assets would be recorded in a government's accounting system according to this Section.”

Considerable literature has been written and examples have been developed to assist government bodies who decide to use alternative valuation techniques to estimate the original cost of their tangible capital assets. Some useful practical information has been developed by the Ontario Municipal Benchmarking Initiative (OMBI) in a report of six pilot studies undertaken by local governments in Ontario. This information can be accessed at [www.ombi.ca](http://www.ombi.ca).

Two simple examples of estimating the original historical cost balances of tangible capital assets are provided in the balance of this article.

### **Example #1 – Deflated Reproduction Cost Approach - Land and Building**

#### ***Key Facts***

- Land was purchased in 1982.
- Institutional building of 50,000 square feet was constructed in 1983, is well maintained and has not received any major betterments except for the replacement of the roof in June 1998.
- Current reproduction cost of the property in July 2007 was \$10.0 million
- Land was appraised at \$1.5 million
- Current reproduction cost of building estimated at \$8.5 million (including \$500,000 reproduction cost of roof)
- Institutional construction indices were used for deflating building cost

It should be noted that this example assumes that the government is using a ‘component’ approach to recording buildings. As noted below, the example, for simplicity, assumes that there is land and a building comprised of two components; namely the roof and the remainder of the building. Under the whole asset approach, the replacement of the roof would be considered maintenance, not a betterment. The estimated replacement cost would be \$8.5 million with an expected useful life of 40 years. Amortization would be calculated at year 24 of a 40 year asset.

In order to estimate the original cost of the building in 1983, one would multiply the current reproduction cost of the building of \$8.0 million (excluding the roof which was substantially replaced in 1998) by the institution construction index of 0.4505. Based on the above calculation, the deflated cost of the building was approximately \$3.604 million in 1983 dollars. Similar calculations using appropriate price indices for the roof and land would yield the estimated historical cost of these components of the property. These calculations are presented in the table below:

	Reproduction Cost – July 2007	Cost Index (19XX/2007)	Estimate of Original Cost
Building	\$ 8,000,000	0.4505	\$ 3,604,000
Roof	500,000	0.6960	348,000
Total Building	8,500,000		3,952,000
Land	1,500,000	0.4100	615,000
Total	\$10,000,000		\$4,567,000

Once the original historical cost of the building (in 1983 and 1998 dollars) has been established, this cost must be amortized to the opening balance sheet date (assumed to be July 1, 2007) using appropriate amortization rates in order to establish the opening net book value.

At July 1, 2007	Age / Useful Life (Years)	Estimated Original Cost	Accumulated Amortization	Net Book Value
Building	24 / 40	\$ 3,604,000	\$2,162,400	\$ 1,441,600
Roof	9 / 15	348,000	208,800	139,200
Total Building		3,952,000	2,371,200	1,580,800
Land	N/A	615,000	0	615,000
Total		\$4,567,000	\$1,200,000	\$2,195,800

In this example, the historical cost of the land and building was estimated at \$4,567,000 (a mix of 1982, 1983 and 1998 dollars). The net book value of the property at July 1, 2007 was determined after calculating and deducting the accumulated amortization of the various components making up the property.

For government entities that own a significant portfolio of real estate properties, the process of estimating the historical cost of these properties can be expedited through the use of robust valuation tools such as Book Value Calculator, VFA, ReCapp and Municipal Dataworks, which incorporate a large number of relevant site-specific construction and condition factors.

## **Example #2 – Deflated Reproduction Cost Approach– Municipal Arterial Road**

### ***Key Facts***

- Originally built in 1960
- Well maintained with several resurfacing betterments (last resurfacing performed in July 2001)

- 1 km section of road
- No historical records are available
- Assumes that the component approach is being used to determine asset value
- Road components consist of road surface/pavement, road base, right-of-way land, road furniture (i.e. signs, guide rails, etc.).

In the absence of obtaining current reproduction costs from a qualified cost estimator, current contracts for road resurfacing and new road construction should be reviewed to determine the average unit costs for the various components that make up the road surface and road base. These costs can be expressed on a reproduction cost per square meter or lane-kilometer basis for road surface and road base. These costs can be used to determine the current reproduction cost of the road assets owned by a local government.

The deflated cost per square meter (or lane-kilometer) is then determined by applying appropriate construction indices to the date of the last major resurfacing or road base construction. Pavement condition indices can be used to estimate the last year of resurfacing for indexing purposes if this information is not known.

The current market value of the right-of-way lands can be estimated on a per acre or hectare basis using recent real estate transactions involving comparable land in rural and urban environments. The current market value would be applied to right-of-way lands and then deflated back to the original date of land acquisition using appropriate real estate indices for that community.

The value of the road furniture can be estimated by discounting the current replacement cost of new installations to the date of construction.

The task of deflating current reproduction and replacement costs to the date of original construction or purchase of an asset can be a time consuming process. Since construction costs for many assets have more than doubled over the past 20 years, newer capital assets will typically have higher historical cost values than older capital assets. From a materiality perspective, more effort should be spent on determining the historical cost of newer capital assets (i.e. assets secured over the last 25 years) than older assets whose original historical cost will be significantly deflated. This does not mean, of course, that older assets can be ignored. A record of the assets should be maintained, regardless of whether the asset is immaterial because of its age. As noted above, PS 3150.48 anticipates that all tangible capital assets are recorded at estimated cost and accumulate amortization recorded for all assets.

### **Concluding Remarks**

There are various valuation techniques that can be employed to estimate the historical cost of tangible capital assets when accounting records are not readily available. Since considerable cost and effort will likely be incurred to establish a comprehensive asset register containing

accurate historical cost information, it is important to ensure that the approaches used in the valuation process are reasonable and that the final historical cost determinations will be able to withstand the rigorous scrutiny of both internal reviews and external audits. Preliminary calculations should be circulated to interested parties, including external financial auditors, to ensure that the valuation approaches are defensible, reasonable and auditable. It is also important to be practical in the process of estimating the historical cost of an organization's capital assets, since all conclusions will only represent the "best estimate" of original cost.

As always, we invite you to let us know if there is an issue that you would like to see addressed in the Newsletters. We are also interested in having our members submit anything that you come across with regard to tangible capital assets, financial reporting, asset management or long-term financial planning including any reports or presentations that you have given or prepared that could be of use to others.

For more information and resources regarding tangible asset management, go to [PSAB/Asset Management](#), or contact:

Dan Cowin  
Executive Director  
MFOA  
[dan@mfoa.on.ca](mailto:dan@mfoa.on.ca)  
Tel: 416-362-9001 x 223

Andy Koopmans  
Executive Director  
AMCTO  
[akoopmans@amcto.com](mailto:akoopmans@amcto.com)  
Tel: 905-602-4294 x 26

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