Municipal Asset Cost and Revenue Projection Model

User Guide

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MFOA | MUNICIPAL FINANCE OFFICERS' ASSOCIATION OF ONTARIO

The Municipal Asset Cost and Revenue Projection Model has been developed by The Municipal Finance Officers' Association as part of MFOA's partnership with The Ministry of Municipal Affairs and Housing to provide assistance to municipalities in their efforts to develop or revise asset management plans. The model has been designed and flexibly sized to accommodate the varied sizes of municipalities as well as the level of detail in their asset inventory lists.

MFOA has provided three blank models with maximum inventory line items of 2,500, 10,000 and 25,000 as well as similar populated versions. The data utilized for the populated versions is actual data supplied to MFOA from different municipalities. These populated models were returned to the participating municipalities and in turn MFOA has amended the models to include their suggested improvements. In addition the models have been vetted by MMAH staff and again in response to their suggestions the models were revised.

The model is designed to project asset replacement costs over a fifty year horizon. As a result, the user must remember that the Long Term Financial Planning Model is not designed to coincide precisely to accounting driven data. The model requires an annual review of the items loaded in the model compared to physical inventory lists and adjustments to the model listings.

Throughout the model you will find red check cells calculated as "OK" or "Error". These ensure model integrity through the cross referencing row or column totals that should have like values.

Data Cleaning

Inventory lists required for compliance to accounting standards and physical asset management are very likely more detailed than the level of detail needed to adequately populate a long term financial planning model and forecast capital requirements to sustain municipal infrastructure into the future. The performance of the model on any computer is largely dependent on the number of items on the loaded inventory list. The 2,500 and 10,000 item models function efficiently on the computers used to build the models. The 25,000 line model tends to slow the computing power and performance considerably. It is therefore recommended that some data extraction and summation be performed before the data is loaded into the model to ensure the individual user's model performs efficiently on their computing platform. There are two data cleansing operations that can be applied to the data before loading that can make a significant reduction in the number of line items loaded in the model.

1) The extraction of line items representing assets that are deemed not to be replaced

2) Summing multiple items with identical "in service years" and life expectancies to create a single line item to load into the model

In the collection of data required to build and test the model a municipality supplied an inventory list with some 21,000 lines listing each of the assets owned by the municipality. A review of the data

revealed that approximately 9000 items were denoted, “not intended to be replaced”. Inasmuch as the model is designed to project future replacement and rehabilitation costs, if an item is “not intended to be replaced” it need not be loaded into the model. That list though should be saved as the value of the annual amortization accrued and it will be added to the amortization calculated in the model to equal the FIR Schedule 40 reported in column 16. See more on this issue in the section below titled, ”Detailed Asset Information Tab - Column 8 – Model Year minus 1 Amortization - Calculated Column”.

Further review found that there were 6,000 items with identical “in service years” and life expectancies. Sorting and summing blocks of these items prior to loading as a single line for each asset type, in service year and life expectancy reduced the number of loaded lines in the model by another 5,800 lines. It is assumed that the more detailed asset listing required for accounting and physical inventory lists will capture in year changes within the groupings created for the Long Term Financial Plan model and annual changes are incorporated into following model years.

In this case these two operations reduced the lines loaded into the model to approximately 6,800 from the more detailed supplied list of 21,000.

Column Definitions and Populating the Cost Side of the Model

Control and Info Tab

The municipality is responsible to fill in all of the yellow shaded areas on this tab. The data entered here will migrate through the automatically populated and calculated cells in the model. The user may wish to populate the Annualized Construction Index with a percentage greater than zero and all future replacement values will be indexed by that percentage. It is recommended that the cell be left at zero and accordingly all future replacement costs will be calculated in current model year dollars. It is assumed that revenues will rise at a minimum to keep up with inflation and offset future inflationary pressures on replacement costs.

The model year cannot exceed the most recent year preloaded on the Construction Index tab. The current version of the model includes construction index values to 2013. In future years the model will require an annual update to the Construction Index tab to capture the most current information and allow the user to move forward with the model.

Detailed Asset Information Tab - Municipal ID – Optional User Input Column

Optional and free form; loading data into this column has no affect on the outcomes produced by the model. It can be left blank, but the municipality may choose to populate and utilize as a cross reference to their asset inventory list or for any other requirement.

Detailed Asset Information Tab - Column 1 - Asset Description - Optional User Input Column

Optional and free form; loading data into this column has no affect on the outcomes produced by the model. It can be left blank, but the municipality may choose to populate and utilize as a cross reference to their asset inventory list or for any other requirement.

Detailed Asset Information Tab - Column 2 – Functional Description – Mandatory User Input Column

This column must be populated with the three or four digit number that matches functional descriptors utilized in Schedule 40 of municipalities Financial Information Return (FIR). To be included the summary information calculated in the model each line item must match to one of the functional descriptor numbers outlined in FIR Schedule 40 and must be entered as a three or four digit number. The leading zeros as shown on the FIR are not required. See the listing attached in Schedule 1.

Detailed Asset Information Tab - Column 3 – Segmented by Class – Mandatory User Input Column

This column must be populated with a four digit number matching the corresponding number on Schedule 51 of the Financial Information Return (FIR) submitted by each municipality annually to the Province. To be included the summary information calculated in the model each line item must match to one of the classification numbers outlined in FIR Schedule 51. See the listing attached in Schedule 1. You may also refer to the MMAH website at the following link for additional information on asset classification

http://csconramp.mah.gov.on.ca/fir/Instructions/FIR2011%20S51.pdf

Detailed Asset Information Tab - Column 4 – In Service Year - Mandatory User Input Column

This column must be populated with a four digit number corresponding to the year in which the asset was put in service in accordance with municipal records.

Detailed Asset Information Tab - Column 5 – Life Expectancy - Mandatory User Input Column

In this column all assets other than land are assigned an original life expectancy in years from the in service year. It is not the remaining useful life of the asset. For all assets that represent land enter zero in this column. In doing so you will find that the historic cost populates the Land Cost in column 11 in exactly the same value. All line items that represent land are entered with a life expectancy of zero.

Detailed Asset Information Tab - Column 6 – Delay Now Costs in Years - Optional User Input Column

Once all of the required user input is complete the model in columns 12, 13 and the sum in 14 will populate with all the assets that had net book values of zero either before or as of the model year. By definition the model is suggesting that these assets should be replaced or rehabilitated in the model year. The user may choose to circle back on these to determine if there are appropriate adjustments to be made that will better reflect how you will actually manage these assets.

By way of example you might decide that, for whatever reason, the asset is in good shape and can have the life extended past the normal life expectancy. For example, a water pipe with an expected life of 70 years is still in very good shape and is expected to provide service for an additional 20 years. You could, for this and other similar assets, assign a 90 year life expectancy even though your average life span for

water pipes remains at 70 years. On the other hand, if your engineers tell you 90 years is a better assumed life span for water pipes than 70 years you could consider altering the life span for all water pipes to 90. The life span for asset management purposes does not necessarily have to match the life span you used for financial reporting purposes.

If the user chooses to make adjustments in accordance with the conditions described in the previous paragraph and assuming the Model Year is 2012, a number is required representing the extended reasonable life of the asset must be entered in Column 6. That number is calculated as follows. First, add the In Service Year in Column 4 to the Life Expectancy in Column 5. For illustration purposes, we will use 1937 as the In Service Year and 70 as the Life Expectancy. The addition of those brings us to 2007 and suggests that asset should have been replaced or rehabilitated in 2007 and the replacement value appears in Column 12 as net book value equals zero prior to the 2012 model year and is a "now need". By entering 20 in column 6, the asset will now show as a required replacement in 2027, the model will not extend the expected replacement 20 years from the model year.

Detailed Asset Information Tab - Column 7 – Historic Cost - Mandatory User Input Column

It is assumed that each municipality in satisfying the requirements of PSAB 3150 as well as the ongoing calculation of annual amortization expenses, has the historical cost of each asset in their asset inventory list (which is required for FIR reporting). This value is used in the model to calculate annual amortization in Column 8 as well as replacement costs in all years from the model year forward. Current year replacement values are calculated using the historic cost and indexed in accordance with values on the Construction Index tab.

Detailed Asset Information Tab - Column 8 – Model Year minus 1 Amortization - Calculated Column

The model simply divides the Historic Cost (Column 7) by the Life Expectancy (Column 5) in calculating the Annual Amortization. The model assumes the straight line method of depreciation. You will note that for any line items that are fully depreciated before the model year amortization for that item is zero. By way of example, if the model year is 2012 an item with an in service year of 2002 with a ten year life expectancy is fully amortized in 2011. Similarly, if the model year is 2012 an item with an in service year of 2011 will have one full year of amortization appearing in the 2011 amortization column. For this example assuming all the data is complete and loaded correctly the 2011 total amortization in the pink "Control Totals" line 15 at the top of the spreadsheet should match the total of the 2011 FIR Schedule 40 column 16. In the data cleaning process if you have excluded any assets that are not already fully amortized but are not expected to be replaced the 2011 amortization for those items must be added to the amortization "Control Totals" line 15 to get to the FIR amortization total.

Detailed Asset Information Tab - Column 9 – Model Year minus 1 Net Book Value – Calculated Column

The Net Book Value is calculated to be A – (B x C), where

A) Is the Historic Cost in Column 7
B) is Amortization in Column 8
C) is Remaining Life Expectancy equal to Model Year less In Service Year(Column 4) to a maximum of Life Expectancy (Column 5)

The Net Book Value can have a calculated value of zero. This can occur when part C, above yields a value equal to or less than zero. Those items are either fully amortized in the model year or any year prior to the model year. They are also "Now Costs", calculated and populating Columns 12 through 14 of the model. All columns to the right of Column 14 represent each year of the 50 years of future asset replacement totaled for each asset item replaced in that year across the "Control Totals" line 15.

Summary Pages

Functional Summary Tab

In the chart at the top of this tab the data for each detailed Functional Descriptor as outlined in the FIR Schedule 40 is summarized by historic cost, amortization, net book value and land cost as well as projected annual replacement costs for each of the 50 years of future asset replacement. At the bottom, the data is further summarized by major functional descriptions also found in the FIR Schedule 40.

Segmented Summary Tab

On this tab the detailed information is summarized in accordance with the capital asset classes as defined by the FIR Schedule 51 showing historic cost, net book value, replacement cost as at the model year and the percentage of remaining useful life for the sum of the items in the asset class. The data is further split into General Capital Assets and Infrastructure Assets also as depicted in FIR Schedule 51.

Aging Tab

Again in accordance with the asset classes defined in FIR Schedule 51, future replacement values are summarized as those items with a current life expectancy of zero and for each of the future five decades as calculated by the model. To the right additional aging illustrations are found.

Revenue and Gap

On this tab the user is responsible for populating the revenues that are earmarked for capital replacement. All yellow areas on the tab are free form with Column A used for describing the source of the funding and all columns to the right for future model year revenues for each source. Some sample revenue sources descriptions examples are in both the blank and populated versions of the models provided.

Schedule 1

FIR Schedule 40 – Functional Descriptors

LTFP Model – Detailed Asset Information Tab – Column 2

	General Government
240	Governance
250	Corporate Support
260	Program Support
	Protection Services
410	Fire
420	Police
421	Court security
422	Prisoner transportation
430	Conservation authority
440	Protective inspection and control
450	Emergency measures
460	Provincial Offences Act (POA)
498	Other
	Transportation Services
611	Roads - paved
612	Roads - unpaved
613	Roads - bridges and culverts
614	Roads - Traffic operations and roadside
621	Winter Control - except sidewalks, parking lots
622	Winter Control - sidewalks, parking lots only
631	Transit - conventional
632	Transit - disabled and special needs
640	Parking
650	Street Lighting
660	Air Transportation
698	Other
	Environmental services
811	Wastewater collection/conveyance
812	Wastewater treatment and disposal
821	Urban storm sewer system
822	Rural storm sewer system
831	Water treatment
832	Water distribution/transmission
840	Solid waste collection
850	Solid waste disposal

860	Waste diversion
898	Other
	Health Services
1010	Public health services
1020	Hospitals
1030	Ambulance services
1035	Ambulance dispatch
1040	Cemeteries
1098	Other
	Social and family services
1210	General assistance
1220	Assistance to aged persons
1230	Child care
1298	Other
1299	
	Social Housing
1410	Public Housing
1420	Non-profit/cooperative housing
1430	Rent supplement programs
1497	Other
1498	Other
	Recreation and cultural services
1610	Parks
1620	Recreation programs
1631	Rec. Fac. - golf courses, marina, ski hills
1634	Rec. Fac. - all others
1640	Libraries
1645	Museums
1650	Cultural services
1698	Other
	Planning and development
1810	Planning and zoning
1820	Commercial and Industrial
1830	Residential development
1840	Agriculture and reforestation
1850	Tile drainage/shoreline assistance
1898	Other
	Other
1910	Other

FIR Schedule 51 – Segmented Asset Classifications

LTFP Model – Detailed Asset Information Tab – Column 3

General Capital Assets

2005 Land

2010 Land Improvements

2020 Buildings

2030 Machinery & Equipment

2040 Vehicles

2097 Other

2098 Other

Infrastructure Assets

2205 Land

2210 Land Improvements

2220 Buildings

2230 Machinery & Equipment

2240 Vehicles

2250 Linear Assets

2297 Other

2298 Other