Full Cost Accounting Excel Tool

INTEGRATED SOLID WASTE MANAGEMENT

The purpose of full cost accounting (FCA)

The purpose of FCA is to holistically account for the costs of integrated solid waste management (ISWM) systems – solid waste, recycling, yard waste/composting, and household hazardous waste.

FCA is intended to inform accurate pricing of local government services for solid waste and recycling collection and to answer questions about the cost of recycling compared to solid waste collection and disposal.

FCA can assist local governments with financial sustainability of ISWM programs over time through capital expenditure depreciation and amortization of future outlays.

Notes

Completing this FCA tool requires a significant investment of staff time to be useful. You may want to consult with your government's finance office as needed. Please contact Carol Abken at carol.abken@ncdenr.gov for additional assistance with this exercise.

The numbers provided in the completed FCA example are rough estimates included to help visualize the usage of this tool. Use the blank with formulas FCA version to input your ISWM program's data.

This FCA tool is necessarily broad – all local government ISWM systems will be different. You can specialize this spreadsheet to your government's needs. For simple line item costs, add rows under "Annual Cost of Operations." For additional ISWM program areas with their own expenses under the sheets for Wages & Benefits, Equipment O&M, Capital Depreciation, Future Outlays, or By-Product Revenues, add additional columns to the FCA form and link the formulas between the main FCA form and the relevant sheets.

How to use the tool

Disaggregate costs by ISWM program category:

- solid waste collection & disposal,
- recycling collection & processing,
- yard waste collection & disposal, and
- household hazardous waste collection & disposal (if applicable)

Users may disregard inapplicable categories or add additional ones.

The tool calculates total residential and commercial net costs, residential and commercial net costs per ton, residential net costs per household, and net costs per commercial customer.

Explanations of each line item are found in the pop-up comment boxes.

Annual cost of operations

See Tab 1 to apportion employee wages and benefits by program area.

See Tab 2 to apportion equipment operations & maintenance by program area.

Apportion by program area the annual costs for:

- Indirect local government administrative costs
- General operations
- Educational materials
- Small capital expenditures
- Lease payments
- Contracted services
- Tipping fees
- Consulting fees
- Insurance

Do not include capital costs – these are covered in the next section.

Cost of large capital expenditures
Depreciation – Tab 3

Capital expenditures are large purchases that are used over several years, such as buildings, vehicles, and equipment. Depreciation represents how much of an asset has been used up or reduced in value over time. *The purpose of this tab is to calculate the funds from depreciation that should be set aside in a capital replacement fund for future purchases.*

The costs of a capital expenditure should be allocated over the years of its useful life through depreciation.

$$\text{Annual deprecation} = \frac{(\text{cost of asset} - \text{anticipated salvage value})}{\text{years of the asset's useful life}}$$

Apportion annualized depreciation costs by relevant program area.

Cost of large capital expenditures

Amortization of future outlays – Tab 4

Amortization converts large future expenditures that are obligated by current activities into annual costs so that needed funds will be available when the time comes.

For example, amortize costs for the future closure and long-term care of a landfill.

$$\text{Annual amortization expense} = \frac{\text{estimated cost of future outlay} - \text{amounts previously amortized}}{\text{Estimated years until purchase}}$$

Apportion costs for future expenditures by relevant program area.

Non-fee based revenues, *Tab 5*

See Tab 5 to apportion revenues from marketable byproducts by program area.

Do not include revenues from service fees, assessed revenues from taxes or fees such as property taxes or flat fees, or transfer revenues from grants. ***FCA net costs are meant to help local governments set such fees and taxes to cover program costs.***

Alternatively, recycling revenues may be excluded entirely from FCA, and any revenues from the sale of recycling could be treated as additional funds that could be passed back to the local government for program enhancements. Excluding recycling revenues may help ensure the financial sustainability of your ISWM program during depressed markets for recyclables.

Also include in non-fee based revenues any equipment salvage and interest income from government investments.

Cost allocation, customers and tonnage

This model depends on the allocation of program costs as a percentage of residential and commercial customers.

You can also designate your ISWM program as 100% residential.

You will then need to enter data for your ISWM program's annual tonnage for both residential and commercial customers, and the number of residential households and commercial customers served.

The unit costs for all ISWM program areas will then populate in the Unit Costs I and II section.

Unit costs I and II

Unit Costs I subdivides each ISWM program area by collection & disposal. Unit Costs II shows the combined costs of collection & disposal for each program area. Both sections provide:

- Total residential costs
- Total commercial costs
- Total residential costs/ton
- Total commercial costs/ton
- Total costs/household
- Total costs/commercial customer

The end!

Congratulations on completing this full cost accounting tool! ☺

We hope it is useful to your ISWM program and local government to understand the costs of your ISWM programs, inform accurate pricing of local government services for these programs, and to answer questions about the cost of recycling and composting compared to solid waste collection and disposal.

This is a new tool and we welcome your comments and suggestions for improvement.

For more resources, see the references used to create this tool on the next slide.

References:

An Introduction to Funding and Accounting for Integrated Solid Waste Management Planning. Resource Recycling Systems. April 2017.

Analysis of the Full Costs of Solid Waste Management for North Carolina Local Governments. NC Department of Environment, Health, and Natural Resources. February 1997.

Full Cost Accounting for Municipal Solid Waste Management: A Handbook. US Environmental Protection Agency. September 1997.