



Identifying Shortfalls

The Importance of Cash Flow Analysis in Times of Fiscal Stress

BY CHRISTOPHER J. SWANSON AND SHAYNE C. KAVANAGH

Local governments face increasing challenges to fiscal sustainability, making an effective methodology for forecasting and monitoring cash flow more important than ever. Cash is critical for short-term operations. It pays the salaries and buys the equipment that produces public services. A balance sheet may carry plenty of assets, but without cash, a government is effectively bankrupt. Converting annual financial budgets into monthly variance analysis reports can provide an early warning system for identifying cash shortfalls.

Cash flow — a measure of the difference between cash sources and uses — is a key indicator of an organization's fiscal health. Cash flow variables are also contained within an organization's budget, which is a good starting point for building a cash flow model.

Typical budgets divide financial sources among operating or general government revenues, cash flow from investment activities, and proceeds from financing. Financial uses include expenditures on salaries and benefits, services, materials and supplies, capital projects, debt service, and related obligations. Depending on the governmental entity, revenues and sources less expenditures and uses yields a surplus or deficit, a net change to fund balance, and/or operating income or loss.

To derive the net cash provided or used by governmental activities (i.e., net cash flow), adjustments should then be made for non-cash items including depreciation and net effects of changes to accounts receivable, prepaid accounts, accounts payable, and obligations such as postemployment benefits other than pensions (OPEB).

ANNUAL VERSUS MONTHLY ANALYSIS

Every local government prepares an annual budget, and some include a multi-year financial forecast. However, far fewer governments prepare detailed monthly budgets. Instead, they track monthly actual revenues, expenditures, and associated cash balances against a rough estimate of a monthly "budget" based on a straight-line proration of the annual budget across 12 fiscal months. This methodology can be inadequate and misleading, as revenues and expenditures seldom materialize on a level monthly basis.

For example, property taxes might appear in two large installments, and numerous smaller amounts throughout the year, based on the payment schedule of the responsible jurisdiction. Sales tax revenues might appear in major quarterly installments, again based on tax collection and disbursement schedules, combined with seasonal factors affecting retail sales. Seasonal factors, consumption patterns, and periodic tax and fee due dates also affect revenue sources such as utility taxes and franchise fees, charges for services, licenses and permits fees, fines and forfeitures, and other common governmental revenue sources. Grants and intergovernmental transfers are another revenue source typically received on a more sporadic timeline.

On the expenditure side, salaries and benefits typically comprise the largest part of the budget, and even though staffing levels are relatively even throughout the year, 26 biweekly payroll periods are not evenly distributed across a 12-month period. In addition, vacation buybacks and other

benefit adjustments that affect cash flow may occur only once or twice a year, as do payments of healthcare premiums and contributions toward employee retirement and other benefit programs.

Some expenditures on recurring contractual services, materials, and supplies used throughout the year may be evenly distributed throughout

the year. On the other hand, capital project expenditures are by definition non-recurring, and debt service follows a prescribed payment schedule, typically requiring semiannual payments.

Given the uneven timing of the sources and uses of cash throughout the year, it is best to monitor financial activity against a monthly budget that reflects the special nature of each revenue and expenditure category. While many accounting systems allow for the input of monthly budget values that can be used to generate monthly variance reports, most systems do not provide an automated methodology for accurately allocating annual budgets into monthly increments. As a result, relatively few organizations use this feature of the accounting system. Instead, they rely on an offline, overly simplified analysis of actual results versus a straight-lined budget.

Every local government prepares an annual budget, and some include a multi-year financial forecast. However, far fewer governments prepare detailed monthly budgets.

However, commonly used off-the-shelf spreadsheet applications provide tools for creating a budget allocation model that can be updated monthly to generate a more accurate budget versus actual variance analysis. And the more accurate the variance analysis, the sooner an organization can identify possible cash flow issues and implement corrective action plans to prevent a larger crisis down the road.

BUILDING THE MONTHLY BUDGET ALLOCATION MODEL

The first step to building the monthly budget allocation model is to collect the following data:

- Current fiscal year annual budget, preferably at the general ledger account (GLA) level of detail, extracted from the accounting system into a spreadsheet-compatible file.
- Actual monthly revenues and expenditures from previous fiscal years, at the GLA level of detail. To establish a meaningful basis for averaging monthly activity as a percentage of total annual amounts, information for a minimum of 24 to 36 months should be extracted from the accounting system into a spreadsheet-compatible file.
- Pay period schedule for current fiscal year (i.e., number of pay periods for each month).

Once this data is collected, it can be loaded into a single spreadsheet file or workbook. Separate worksheets within the

workbook should be dedicated to each dataset. The next step is to establish the monthly allocation techniques to be used in the model.

BUDGET ALLOCATION TECHNIQUES

There are a number of ways to allocate the annual budget across individual months. The method selected will depend on the revenue and expenditure account being allocated.

Averaging Technique. Revenues with a historical track record of receipts, such as property and sales taxes, can be allocated using historical monthly averages as a percentage of the total annual amount. Taking property tax as an example, if 40 percent of the total annual property tax receipts occur in December, on average, then 40 percent of the current annual fiscal budget for property tax can be allocated in that month.

Having multiple years of monthly historical data allows one to create multiple averaging options (e.g., last year's average, 2-year average, 3-year average). These averages can be calculated on a separate worksheet and linked to the selected allocation formula. A 3-year average might be chosen in the case of a well-established revenue source that is expected to perform consistently in the current fiscal period, while a one year average might be selected if last year's experience, for example, is more accurate than an average of multiple periods.

Exhibit I: Allocation Technique Dropdown Menu

REVENUE GROUP	REVENUE TYPE	ALLOCATION METHOD	#	JUL	AUG	SEP	OCT	NOV	DEC
		ALLOCATION METHODS							
		[OPEN]	0						
		STRAIGHTLINE	1						
		AVERAGE - 1 YR	2						
		AVERAGE - 2 YR	3						
		AVERAGE - 3 YR	4						
		QTRLY - 3RD MONTH	5						
		QTRLY - 1ST MONTH	6						
		MANUAL	7						
PROPERTY TAX	SECURED	AVERAGE - 3 YR	4	-	14,938	70,941	25,435	551,838	1,825,439
PROPERTY TAX	UNSECURED	AVERAGE - 3 YR	4	-	-	120,401	-	-	58,418
SALES TAX	SALES TAX	AVERAGE - 1 YR	4	-	-	1,576,638	1,313,034	1,750,713	1,897,416
SALES TAX	SALESTAX IN-LIEU	[OPEN]		-	-	-	-	-	-
DOCUMENTARY TRANSFER	DOCUMENT TSF TAX	STRAIGHTLINE		-	-	283,481	106,134	85,539	133,927
HOTEL TAX	HOTEL TAX (TOT)	AVERAGE - 1 YR		-	760,122	909,841	761,764	1,155,818	984,048
UTILITY USERS TAX	UUT-ELECTRIC	AVERAGE - 2 YR		960	123,324	329,195	398,101	390,213	332,345
UTILITY USERS TAX	UUT-GAS	AVERAGE - 3 YR		-	5,927	6,235	9,078	8,359	8,149
UTILITY USERS TAX	UUT-PHONE	QTRLY - 3RD MONTH		-	15,796	63,146	62,956	67,786	63,566
UTILITY USERS TAX	UUT-ALT MAX PAY	QTRLY - 1ST MONTH		-	-	1,687	-	-	-
UTILITY USERS TAX	UUT-ALT MAX PAY	MANUAL		3,373	-	-	-	-	1,687
UTILITY USERS TAX	UUT-ALT MAX PAY	AVERAGE - 3 YR	4	3,373	-	1,687	-	-	1,687

Exhibit 2: Monthly Revenue Variance Table

CITY OF SPRINGFIELD									
MONTHLY VARIANCE TABLES									
GENERAL FUND ONLY									
SELECT YEAR-TO-DATE PERIOD > NOV 2008									
FISCAL YEAR 2008 - 2009									
ALL REVENUES SOURCES	ANNUAL BUDGET		YTD BUDGET	YTD ACTUAL	FAVORABLE	PERCENT	FY 2007 - 08		
	ADOPTED	ADJUSTED	NOV 2008	NOV 2008	(UNFAVORABLE)		YTD PRIOR YEAR	CHANGE FROM PRIOR YR	PERCENT
SALES TAX	\$ 25,147,125	\$ 25,147,125	\$ 4,515,335	\$ 4,176,051	\$ (339,284)	-8%	\$ 4,575,122	\$ (399,071)	-9%
PROPERTY TAX	19,537,650	19,537,650	1,429,709	1,346,644	(83,065)	-6%	1,465,235	(118,591)	-8%
HOTEL TAX	4,783,500	4,783,500	1,636,855	1,387,174	(249,681)	-15%	1,383,248	3,926	0%
FRANCHISE TAX	3,345,750	3,345,750	341,554	364,613	23,060	7%	334,818	29,796	9%
COMMUNITY SERVICES FEES	3,175,105	3,175,105	1,454,141	1,659,932	205,791	14%	1,455,860	204,072	14%
UTILITY USERS TAX	1,996,650	1,996,650	671,105	632,571	(38,534)	-6%	747,797	(115,225)	-15%
FINES & FORFEITURES	959,400	959,400	313,348	294,537	(18,811)	-6%	388,837	(94,300)	-24%
DOCUMENTARY TRANSFER TAX	720,000	720,000	213,819	213,822	2	0%	158,807	55,015	35%
MOTOR VEHICLE IN-LIEU REVENUES	446,850	446,850	162,150	118,551	(43,599)	-27%	186,171	(67,620)	-36%
LICENSES & PERMITS	731,700	731,700	274,493	263,062	(11,431)	-4%	325,374	(62,312)	-19%
MISCELLANEOUS REVENUES	317,316	317,316	133,420	69,108	(64,312)	-48%	121,299	(52,191)	-43%
REVENUE FROM OTHER AGENCIES	788,392	816,629	358,294	226,011	(132,283)	-37%	187,999	38,011	20%
FEES FOR SERVICES	537,571	537,571	239,182	202,449	(36,733)	-15%	208,520	(6,070)	-3%
COMMUNITY DEVELOPMENT DEV FEES	101,250	101,250	42,057	35,072	(6,985)	-17%	44,599	(9,527)	-21%
PUBLIC WORKS DEVELOPMENT FEES	31,194	31,194	10,924	1,311	(9,613)	-88%	14,076	(12,765)	-91%
TOTAL OPERATING REVENUE	62,619,453	62,647,690	11,796,387	10,990,908	(805,479)	-7%	11,597,762	(606,854)	-5%
TRANSFERS IN	2,663,897	2,663,897	1,109,957	950,000	(159,957)	-100%	-	-	-
TOTAL REVENUES & SOURCES	\$ 65,283,350	\$ 65,311,587	\$ 12,906,344	\$ 10,990,908	\$ (1,915,437)	-15%	\$ 11,597,762	\$ (606,854)	-5%

Quarterly Technique. The quarterly technique is not typically applied to revenues but to expenditures that are scheduled to be paid four times per year. This technique can be expanded to include the first, second, or third month of each quarter.

Straight-line Technique. The straight-line technique applies a value of 1/12th to the annual budget to derive the monthly budget. This technique is applicable to any account with a consistent monthly value such as recurring fixed costs, rents, equipment leases, monthly dues and subscriptions, etc.

Pay Period Technique. The pay period technique is based on the number of pay periods in each month. If there are 26 annual pay periods, for example, then for each of 10 months out of the year containing two pay periods, the monthly allocation value would be 7.69 percent ($2 \div 26$), and for the two remaining months containing three pay periods, the monthly allocation value would be 11.54 percent ($3 \div 26$). This technique can be applied to virtually all accounts relating to salaries and benefits. Special exceptions might be made for less periodic events such as vacation buy-back.

Manual Input Technique. In the relatively rare case of revenue and expenditure accounts that do not lend themselves to the above allocation techniques, manual data input for each month is required. This technique would be used with a new revenue source or in a rapidly changing economic cli-

mate that is expected to affect the timing of revenue receipts. A manual input table can be created and linked to the allocation technique menu.

ALLOCATION TECHNIQUE MENU

Using the spreadsheet's drop down menu function, menus can be created that include all of these techniques (see Exhibit 1). Each of these menus represents a unique formula that, when selected, is applied to the annual budget value to generate the respective monthly budget value. A menu can be inserted alongside each revenue and expenditure account to expedite selection and application of the preferred allocation formula to each account.

ADDING ACTUAL REVENUE AND EXPENDITURE DATA

Columns can be added to the spreadsheet to accommodate monthly actual data, which can be updated after the close of each month's accounting cycle by downloading the data into a dedicated worksheet within the same workbook. This data worksheet can be formatted in a way that allows the user to cut and paste the data in one operation from the accounting system download file. Using database and lookup functions within the spreadsheet, actual data can be summarized in other worksheets, tables, and charts within the same workbook.

Exhibit 3: Monthly Expenditure Variance Charts



TABLES, CHARTS, AND GRAPHS

Once all the budget and actual data is formatted, analytical tables, charts, and graphs can be added to the model and linked to intermediate “chart data,” which in turn is linked to the current year budget and actual data, as well as historical monthly data (already contained in the model for purposes of deriving monthly averages) that can be used in current month and year-to-date comparisons to prior years (see Exhibits 2 and 3). In addition, a menu can be added that allows the user to select the desired monthly fiscal period, adding another dynamic feature to charts and tables.

CONCLUSION

Because of advances in spreadsheet applications, users can now create more dependable and flexible analytical models for projecting and monitoring budgets and associated cash

flows. While many proprietary, enterprise-wide accounting and budgeting systems feature powerful analytical and reporting capabilities, the spreadsheet still provides the greatest degree of flexibility in designing a financial model that meets the idiosyncratic analytical needs of every public agency. |

CHRISTOPHER J. SWANSON is the founder of Government Finance Research Group (GFRG), a financial management consulting firm specializing in financial planning, cost analysis, econometric modeling, benchmarking and optimization modeling for local governments throughout the United States. GFRG designed and developed the MuniCast interactive financial forecasting model. Swanson can be contacted at 949-412-6078 or Chris@MuniCast.com. **SHAYNE C. KAVANAGH** is a senior manager in the GFOA's Research and Consulting Center in Chicago, Illinois. He can be reached at skavanagh@gfoa.org.