

3. A direct materials budget, including a schedule of expected cash disbursements for purchases of materials.
4. A direct labor budget.
5. A manufacturing overhead budget.
6. An ending finished goods inventory budget.
7. A selling and administrative expense budget.
8. A cash budget.
9. A budgeted income statement.
10. A budgeted balance sheet.

Larry felt it was important to have everyone's cooperation in the budgeting process, so he asked Tom to call a companywide meeting to explain the budgeting process. At the meeting there was initially some grumbling, but Tom was able to convince nearly everyone of the necessity for planning and getting better control over spending. It helped that the cash crisis earlier in the year was still fresh in everyone's minds. As much as some people disliked the idea of budgets, they liked their jobs more.

In the months that followed, Larry worked closely with all of the managers involved in the master budget, gathering data from them and making sure that they understood and fully supported the parts of the master budget that would affect them. In subsequent years, Larry hoped to turn the whole budgeting process over to the managers and to take a more advisory role.

The interdependent documents that Larry Giano prepared for Hampton Freeze are Schedules 1 through 10 of the company's master budget. In this section, we will study these schedules.

The Sales Budget

The sales budget is the starting point in preparing the master budget. As shown earlier in Exhibit 9-2, all other items in the master budget, including production, purchases, inventories, and expenses, depend on it.

The sales budget is constructed by multiplying budgeted unit sales by the selling price. Schedule 1 contains the quarterly sales budget for Hampton Freeze for the year 2008. Notice from the schedule that the company plans to sell 100,000 cases of popsicles during the year, with sales peaking in the third quarter.

A schedule of expected cash collections, such as the one that appears in the bottom portion of Schedule 1, is prepared after the sales budget. This schedule will be needed later to prepare the cash budget. Cash collections consist of collections on credit sales made to customers in prior periods plus collections on sales made in the current budget period. At Hampton Freeze all sales are on credit; furthermore, experience has shown that 70% of sales are collected in the quarter in which the sale is made and the remaining 30% are collected in the following quarter. For example, 70% of the first quarter sales of \$200,000 (or \$140,000) is collected during the first quarter and 30% (or \$60,000) is collected during the second quarter.

LEARNING OBJECTIVE 2
Prepare a sales budget, including a schedule of expected cash collections.

THE IMPORTANCE OF SALES RISK MANAGEMENT

David Flynn founded Amistad Media Group in 1994 to help companies market themselves to growing Hispanic communities in places such as Nebraska, Kansas, and North Carolina. While Amistad's sales steadily grew to a peak of \$49 million in 2003, its customer base had not grown much in nine years. In fact, just two companies generated the bulk of Amistad's sales—Novamex and the U.S. Army. When the U.S. Army dropped Amistad as a supplier in 2005, the company's sales plummeted and it was bankrupt by 2006.

Amistad's demise highlights the importance of evaluating a company's sales forecast not only in terms of dollars, but also in terms of the number of customers served. Small companies in particular should seek to diversify their customer base, thereby reducing the risk that losing one or two customers will put them out of business.

Source: Patrick Cliff, "Adios to a Pioneering Hispanic Marketing Firm," *Inc. Magazine*, May, 2006, p. 34.

IN BUSINESS



SCHEDULE 1

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Hampton Freeze, Inc.					
Sales Budget					
For the Year Ended December 31, 2008					
	Quarter				Year
	1	2	3	4	
Budgeted sales in cases	10,000	30,000	40,000	20,000	100,000
Selling price per case	\$ 20.00	\$ 20.00	\$ 20.00	\$ 20.00	\$ 20.00
Total sales	\$200,000	\$600,000	\$800,000	\$400,000	\$2,000,000
Percentage of sales collected in the period of the sale			70%		
Percentage of sales collected in the period after the sale			30%		
	70%	30%			
Schedule of Expected Cash Collections					
Accounts receivable, beginning balance ¹	\$ 90,000				\$ 90,000
First-quarter sales ²	140,000	\$ 60,000			200,000
Second-quarter sales ³		420,000	\$ 180,000		600,000
Third-quarter sales ⁴			560,000	\$ 240,000	800,000
Fourth-quarter sales ⁵				280,000	280,000
Total cash collections ⁶	\$230,000	\$480,000	\$740,000	\$520,000	\$1,970,000

Schedule 1 / Schedule 2 / Schedule 3 / Schedule 4 / Schedule 5

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¹Cash collections from last year's fourth-quarter sales. See the beginning-of-year balance sheet on page 391.

²\$200,000 × 70%; \$200,000 × 30%.

³\$600,000 × 70%; \$600,000 × 30%.

⁴\$800,000 × 70%; \$800,000 × 30%.

⁵\$400,000 × 70%.

⁶Uncollected fourth-quarter sales appear as accounts receivable on the company's end-of-year budgeted balance sheet (see Schedule 10 on page 392).

The Production Budget

LEARNING OBJECTIVE 3

Prepare a production budget.

The production budget is prepared after the sales budget. The **production budget** lists the number of units that must be produced to satisfy sales needs and to provide for the desired ending inventory. Production needs can be determined as follows:

Budgeted unit sales	XXXX
Add desired ending inventory	XXXX
Total needs	XXXX
Less beginning inventory	XXXX
Required production	XXXX

Note that production requirements are influenced by the desired level of the ending inventory. Inventories should be carefully planned. Excessive inventories tie up funds and create storage problems. Insufficient inventories can lead to lost sales or last-minute, high-cost production efforts. At Hamptor Freeze, management believes that an ending inventory equal to 20% of the next quarter's sales strikes the appropriate balance.

Schedule 2 contains the production budget for Hamptor Freeze. The first row in the production budget contains the budgeted sales, which have been taken directly from the sales budget (Schedule 1). The total needs for the first quarter are determined by adding together the budgeted sales of 10,000 cases for the quarter and the desired ending inventory of 6,000 cases. As discussed above, the ending inventory is intended to provide some cushion in the event that problems develop in production or sales increase unexpectedly. Because the budgeted sales for the second quarter are 30,000 cases and management would like the ending inventory in each quarter to equal 20% of the following quarter's sales, the desired ending inventory for the first quarter is 6,000 cases (20% of 30,000 cases). Consequently, the total needs for the first quarter are 16,000 cases. However, because the company already has 2,000 cases in beginning inventory, only 14,000 cases need to be produced in the first quarter.

Pay particular attention to the Year column to the right of the production budget in Schedule 2. In some cases (e.g., budgeted sales, total needs, and required production), the amount listed for the year is the sum of the quarterly amounts for the item. In other cases (e.g., desired ending inventory of finished goods and beginning inventory of finished goods),

SCHEDULE 2

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Hamptor Freeze, Inc. Production Budget For the Year Ended December 31, 2008 (in cases)					
	Quarter				Assumed
	1	2	3	4	Year
Budgeted sales (Schedule 1)	10,000	30,000	40,000	20,000	100,000
Add desired ending inventory of finished goods*	6,000	8,000	4,000	3,000	3,000
Total needs	16,000	38,000	44,000	23,000	103,000
Less beginning inventory of finished goods†	2,000	6,000	8,000	4,000	2,000
Required production	14,000	32,000	36,000	19,000	101,000

Ready NUM

*Twenty percent of the next quarter's sales. The ending inventory of 3,000 cases is assumed.

†The beginning inventory in each quarter is the same as the prior quarter's ending inventory.

the amount listed for the year is not simply the sum of the quarterly amounts. From the standpoint of the entire year, the beginning finished goods inventory is the same as the beginning finished goods inventory for the first quarter—it is *not* the sum of the beginning finished goods inventories for all quarters. Similarly, from the standpoint of the entire year, the ending finished goods inventory is the same as the ending finished goods inventory for the fourth quarter—it is *not* the sum of the ending finished goods inventories for all four quarters. It is important to pay attention to such distinctions in all of the schedules that follow.

Inventory Purchases—Merchandising Company

Hampton Freeze prepares a production budget because it is a *manufacturing* company. If it were a *merchandising* company, instead it would prepare a **merchandise purchase budget** showing the amount of goods to be purchased from suppliers during the period. The merchandise purchases budget has the same basic format as the production budget as shown below:

Budgeted sales	XXXXX
Add desired ending merchandise inventory	XXXXX
Total needs	XXXXX
Less beginning merchandise inventory	XXXXX
Required purchases	XXXXX

A merchandising company would prepare a merchandise purchases budget such as the one above for each item carried in stock. The merchandise purchases budget can be expressed in terms of either units or the purchase cost of those units.

The Direct Materials Budget

LEARNING OBJECTIVE 4
Prepare a direct materials budget, including a schedule of expected cash disbursements for purchases of materials.

A *direct materials budget* is prepared after the production requirements have been computed. The **direct materials budget** details the raw materials that must be purchased to fulfill the production budget and to provide for adequate inventories. The required purchases of raw materials are computed as follows:

Raw materials needed to meet the production schedule	XXXXX
Add desired ending inventory of raw materials	XXXXX
Total raw materials needs	XXXXX
Less beginning inventory of raw materials	XXXXX
Raw materials to be purchased	XXXXX

Schedule 3 contains the direct materials budget for Hampton Freeze. The only raw material included in that budget is high fructose sugar, which is the major ingredient in popsicles other than water. The remaining raw materials are relatively insignificant and are included in variable manufacturing overhead. As with finished goods, management would like to maintain some inventories of raw materials to act as a cushion. In this case management would like to maintain ending inventories of sugar equal to 10% of the following quarter's production needs.

The first line in the direct materials budget contains the required production for each quarter, which is taken directly from the production budget (Schedule 2). Looking at the first quarter, because the production schedule calls for production of 14,000 cases of popsicle and each case requires 15 pounds of sugar, the total production needs are 210,000 pounds of sugar (14,000 cases \times 15 pounds per case). In addition, management wants to have ending inventories of 48,000 pounds of sugar, which is 10% of the following quarter's needs of

SCHEDULE 3

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	A	B	C	D	E	F
3	Hampton Freeze, Inc.					
4	Direct Materials Budget					
5	For the Year Ended December 31, 2008					
6						Assumed
7		Quarter				
8		1	2	3	4	Year
9	Required production in cases (Schedule 2)	14,000	32,000	36,000	19,000	101,000
10	Raw materials needed per case (pounds)	15	15	15	15	15
11	Production needs (pounds)	210,000	480,000	540,000	285,000	1,515,000
12	Add desired ending inventory of raw materials ¹	48,000	54,000	28,500	22,500	22,500
13	Total needs	258,000	534,000	568,500	307,500	1,537,500
14	Less beginning inventory of raw materials	21,000	48,000	54,000	28,500	21,000
15	Raw materials to be purchased	237,000	486,000	514,500	279,000	1,516,500
16	Cost of raw materials per pound	\$ 0.20	\$ 0.20	\$ 0.20	\$ 0.20	\$ 0.20
17	Cost of raw materials to be purchased	\$ 47,400	\$ 97,200	\$ 102,900	\$ 55,800	\$ 303,300
18						
19	Percentage of purchases paid for in the period of the purchase			50%		
20	Percentage of purchases paid for in the period after purchase			50%		
21		50%	50%			
22	Schedule of Expected Cash Disbursements for Materials					
23						
24	Accounts payable, beginning balance ²	\$ 25,800				\$ 25,800
25	First-quarter purchases ³	23,700	\$ 23,700			47,400
26	Second-quarter purchases ⁴		48,600	\$ 48,600		97,200
27	Third-quarter purchases ⁵			51,450	\$ 51,450	102,900
28	Fourth-quarter purchases ⁶				27,900	27,900
29	Total cash disbursements for materials	\$ 49,500	\$ 72,300	\$ 100,050	\$ 79,350	\$ 301,200
30						

¹Ten percent of the next quarter's production needs. For example, the second-quarter production needs are 480,000 pounds. Therefore, the desired ending inventory for the first quarter would be $10\% \times 480,000$ pounds = 48,000 pounds. The ending inventory of 22,500 pounds for the fourth quarter is assumed.

²Cash payments for last year's fourth-quarter material purchases. See the beginning-of-year balance sheet on page 391.

³ $\$47,400 \times 50\%$; $\$47,400 \times 50\%$.

⁴ $\$97,200 \times 50\%$; $\$97,200 \times 50\%$.

⁵ $\$102,900 \times 50\%$; $\$102,900 \times 50\%$.

⁶ $\$55,800 \times 50\%$. Unpaid fourth-quarter purchases appear as accounts payable on the company's end-of-year balance sheet.

480,000 pounds. Consequently, the total needs are 258,000 pounds (210,000 pounds for the current quarter's production plus 48,000 pounds for the desired ending inventory). However, because the company already has 21,000 pounds in beginning inventory, only 237,000 pounds of sugar (258,000 pounds - 21,000 pounds) will need to be purchased. Finally, the cost of the raw materials purchases is determined by multiplying the amount of

⑥

raw material to be purchased by its unit cost. In this case, because 237,000 pounds of sugar will need to be purchased during the first quarter and sugar costs \$0.20 per pound, the total cost will be \$47,400 (237,000 pounds \times \$0.20 per pound).

As with the production budget, the amounts listed under the Year column are not always the sum of the quarterly amounts. The desired ending raw materials inventory for the year is the same as the desired ending raw materials inventory for the fourth quarter. Likewise, the beginning raw materials inventory for the year is the same as the beginning raw materials inventory for the first quarter.

The direct materials budget (or the merchandise purchases budget for a merchandising company) is usually accompanied by a schedule of expected cash disbursements for raw materials (or merchandise purchases). This schedule is needed to prepare the overall cash budget. Disbursements for raw materials (or merchandise purchases) consist of payments for purchases on account in prior periods plus any payments for purchases in the current budget period. Schedule 3 contains such a schedule of cash disbursements for Hampton Freeze.

Ordinarily, companies do not immediately pay their suppliers. At Hampton Freeze, the policy is to pay for 50% of purchases in the quarter in which the purchase is made and 50% in the following quarter, so while the company intends to purchase \$47,400 worth of sugar in the first quarter, the company will only pay for half, \$23,700, in the first quarter and the other half will be paid in the second quarter. The company will also pay \$25,800 in the first quarter for sugar that was purchased on account in the previous quarter, but not yet paid for. This is the beginning balance in the accounts payable. Therefore, the total cash disbursements for sugar in the first quarter are \$49,500—the \$25,800 payment for sugar acquired in the previous quarter plus the \$23,700 payment for sugar acquired during the first quarter.

The Direct Labor Budget

LEARNING OBJECTIVE 5 Prepare a direct labor budget.

The **direct labor budget** shows the direct labor-hours required to satisfy the production budget. By knowing in advance how much labor time will be needed throughout the budget year, the company can develop plans to adjust the labor force as the situation requires. Companies that neglect to budget run the risk of facing labor shortages or having to hire and lay off workers at awkward times. Erratic labor policies lead to insecurity, low morale, and inefficiency.

The direct labor budget for Hampton Freeze is shown in Schedule 4. The first line in the direct labor budget consists of the required production for each quarter, which is taken directly from the production budget (Schedule 2). The direct labor requirement for each quarter is computed by multiplying the number of units to be produced in that quarter by the number of direct labor-hours required to make a unit. For example, 14,000 cases are to be produced in the first quarter and each case requires 0.40 direct labor-hour, so a total of 5,600 direct labor-hours (14,000 cases \times 0.40 direct labor-hour per case) will be required in the first quarter. The direct labor requirements can then be translated into budgeted direct labor costs. How this is done will depend on the company's labor policy. In Schedule 4, Hampton Freeze has assumed that the direct labor force will be adjusted as the work requirements change from quarter to quarter. In that case, the direct labor cost is computed by simply multiplying the direct labor-hour requirements by the direct labor rate per hour. For example, the direct labor cost in the first quarter is \$84,000 (5,600 direct labor-hours \times \$15 per direct labor-hour).

However, many companies have employment policies or contracts that prevent them from laying off and rehiring workers as needed. Suppose, for example, that Hampton Freeze has 25 workers who are classified as direct labor, but each of them is guaranteed at least 480 hours of pay each quarter at a rate of \$15 per hour. In that case, the minimum direct labor cost for a quarter would be as follows:

$$25 \text{ workers} \times 480 \text{ hours per worker} \times \$15 \text{ per hour} = \$180,000$$

Note that in this case the direct labor costs for the first and fourth quarters would have to be increased to \$180,000.

SCHEDULE 4

Hampton Freeze, Inc. Direct Labor Budget For the Year Ended December 31, 2008					
	Quarter				Year
	1	2	3	4	
Required production in cases (Schedule 2)	14,000	32,000	36,000	19,000	101,000
Direct labor-hours per case	0.40	0.40	0.40	0.40	0.40
Total direct labor-hours needed	5,600	12,800	14,400	7,600	40,400
Direct labor cost per hour	\$ 15.00	\$ 15.00	\$ 15.00	\$ 15.00	\$ 15.00
Total direct labor cost*	\$ 84,000	\$ 192,000	\$ 216,000	\$ 114,000	\$ 606,000

*This schedule assumes that the direct labor workforce will be fully adjusted to the total direct labor-hours needed each quarter.

The Manufacturing Overhead Budget

The **manufacturing overhead budget** lists all costs of production other than direct materials and direct labor. Schedule 5 shows the manufacturing overhead budget for Hampton Freeze. At Hampton Freeze, manufacturing overhead is separated into variable and fixed components. The variable component is \$4 per direct labor-hour and the fixed component is \$60,600 per quarter. Because the variable component of manufacturing overhead depends on direct labor, the first line in the manufacturing overhead budget consists of the budgeted direct labor-hours from the direct labor budget (Schedule 4). The budgeted direct labor-hours in each quarter are multiplied by the variable rate to determine the variable component of manufacturing overhead. For example, the variable manufacturing overhead for the first quarter is \$22,400 (5,600 direct labor-hours \times \$4.00 per direct labor-hour). This is added to the fixed manufacturing overhead for the quarter to determine the total manufacturing overhead for the quarter of \$83,000 (\$22,400 + \$60,600).

A few words about fixed costs and the budgeting process are in order. In most cases, fixed costs are the costs of supplying capacity to make products, process purchase orders, handle customer calls, and so on. The amount of capacity that will be required depends on the expected level of activity for the period. If the expected level of activity is greater than the company's current capacity, then fixed costs may have to be increased. Or, if the expected level is appreciably below the company's current capacity, then it may be desirable to decrease fixed costs if possible. However, once the level of the fixed costs has been determined in the budget, the costs really are fixed. The time to adjust fixed costs is during the budgeting process. An activity-based costing system can help to determine the appropriate level of fixed costs at budget time by answering questions like, "How many clerks will we need to process the anticipated number of purchase orders next year?" For simplicity, in all of the budgeting examples in this book assume that the appropriate levels of fixed costs have already been determined.

LEARNING OBJECTIVE 6
Prepare a manufacturing overhead budget.



SCHEDULE 5

Hampton Freeze, Inc.
Manufacturing Overhead Budget
For the Year Ended December 31, 2008

	Quarter				Year
	1	2	3	4	
Budgeted direct labor-hours (Schedule 4)	5,600	12,800	14,400	7,600	40,400
Variable manufacturing overhead rate	\$ 4.00	\$ 4.00	\$ 4.00	\$ 4.00	\$ 4.00
Variable manufacturing overhead	\$ 22,400	\$ 51,200	\$ 57,600	\$ 30,400	\$ 161,600
Fixed manufacturing overhead	60,600	60,600	60,600	60,600	242,400
Total manufacturing overhead	83,000	111,800	118,200	91,000	404,000
Less depreciation	15,000	15,000	15,000	15,000	60,000
Cash disbursements for manufacturing overhead	\$ 68,000	\$ 96,800	\$ 103,200	\$ 76,000	\$ 344,000
Total manufacturing overhead (a)					\$ 404,000
Budgeted direct labor-hours (b)					40,400
Predetermined overhead rate for the year (a)÷(b)					\$ 10.00

The last line of Schedule 5 for Hampton Freeze shows the budgeted cash disbursements for manufacturing overhead. Because some of the overhead costs are not cash outflows, the total budgeted manufacturing overhead costs must be adjusted to determine the cash disbursements for manufacturing overhead. At Hampton Freeze, the only significant noncash manufacturing overhead cost is depreciation, which is \$15,000 per quarter. These noncash depreciation charges are deducted from the total budgeted manufacturing overhead to determine the expected cash disbursements. Hampton Freeze pays all overhead costs involving cash disbursements in the quarter incurred. Note that the company's predetermined overhead rate for the year is \$10 per direct labor-hour, which is determined by dividing the total budgeted manufacturing overhead for the year by the total budgeted direct labor-hours for the year.

The Ending Finished Goods Inventory Budget

After completing Schedules 1–5, Larry Giano had all of the data he needed to compute unit product costs. This computation was needed for two reasons: first, to determine cost of goods sold on the budgeted income statement; and second, to value ending inventories. The cost of unsold units is computed on the **ending finished goods inventory budget**.

Larry Giano considered using variable costing to prepare Hampton Freeze's budget statements, but he decided to use absorption costing instead because the bank would very likely require absorption costing. He also knew that it would be easy to convert the absorption costing financial statements to a variable costing basis later. At this point, the primary concern was to determine what financing, if any, would be required in 2008 and then to arrange for that financing from the bank.

SCHEDULE 6

Hampton Freeze, Inc.				
Ending Finished Goods Inventory Budget				
(absorption costing basis)				
For the Year Ended December 31, 2008				
Item	Quantity	Cost		Total
Production cost per case:				
Direct materials	15.00 pounds	\$ 0.20 per pound		\$ 3.00
Direct labor	0.40 hours	\$15.00 per hour		6.00
Manufacturing overhead	0.40 hours	\$10.00 per hour		4.00
Unit product cost				<u>\$ 13.00</u>
Budgeted finished goods inventory:				
Ending finished goods inventory in cases (Schedule 2)				3,000
Unit product cost (see above)				<u>\$ 13.00</u>
Ending finished goods inventory in dollars				<u>\$ 39,000</u>

The unit product cost computations are shown in Schedule 6. For Hampton Freeze, the absorption costing unit product cost is \$13 per case of popsicles—consisting of \$3 of direct materials, \$6 of direct labor, and \$4 of manufacturing overhead. The manufacturing overhead is applied to units of product at the rate of \$10 per direct labor-hour. The budgeted carrying cost of the ending inventory is \$39,000.

The Selling and Administrative Expense Budget

The **selling and administrative expense budget** lists the budgeted expenses for areas other than manufacturing. In large organizations, this budget would be a compilation of many smaller, individual budgets submitted by department heads and other persons responsible for selling and administrative expenses. For example, the marketing manager would submit a budget detailing the advertising expenses for each budget period.

Schedule 7 contains the selling and administrative expense budget for Hampton Freeze. Like the manufacturing overhead budget, the selling and administrative expense budget is divided into variable and fixed cost components. In the case of Hampton Freeze, the variable selling and administrative expense is \$1.80 per case. Consequently, budgeted sales in cases for each quarter are entered at the top of the schedule. These data are taken from the sales budget (Schedule 1). The budgeted variable selling and administrative expenses are determined by multiplying the budgeted cases sold by the variable selling and administrative expense per case. For example, the budgeted variable selling and administrative expense for the first quarter is \$18,000 (10,000 cases × \$1.80 per case). The fixed selling and administrative expenses (all given data) are then added to the variable selling and administrative expenses to arrive at the total budgeted selling and administrative

LEARNING OBJECTIVE 7

Prepare a selling and administrative expense budget.

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expenses. Finally, to determine the cash disbursements for selling and administrative items, the total budgeted selling and administrative expense is adjusted by subtracting any noncash selling and administrative expenses (in this case, just depreciation).¹

When Canon Inc., the world's leading digital camera manufacturer, prepares the research and development (R&D) portion of its selling and administrative expense budget, the focus is on making long-run investments to grow sales rather than cutting costs to maximize short-run profits. In 2005, Canon spent 8% of its sales on R&D while many of its competitors spent 6% to 7.5% of their sales on R&D. Canon's CEO Fujio Mitarai described his company's R&D philosophy by saying "we have to plant the seeds for the next decade and beyond." Indeed, Canon's seeds have blossomed as the company has secured more than 17,000 patents since 1995—second only to IBM. Canon's commitment to R&D helps explain why its digital cameras are delivering healthy earnings at a time when many of its competitors are losing money.

¹ Other adjustments might need to be made for differences between cash flows on the one hand and revenues and expenses on the other hand. For example, if property taxes are paid twice a year in installments of \$8,000 each, the expense for property tax would have to be "backed out" of the total budgeted selling and administrative expenses and the cash installment payments added to the appropriate quarters to determine the cash disbursements. Similar adjustments might also need to be made in the manufacturing overhead budget. We generally ignore these complications in this chapter.



The Cash Budget

As illustrated in Exhibit 9-2, the cash budget combines much of the data developed in the preceding steps. It is a good idea to review Exhibit 9-2 to get the big picture firmly in your mind before moving on.

LEARNING OBJECTIVE 8
Prepare a cash budget.

CONCENTRATING ON THE CASH FLOW

Burlington Northern Santa Fe (BNSF) operates the second largest railroad in the United States. The company's senior vice president, CFO, and treasurer is Tom Hunt, who reports that "As a general theme, we've become very cash-flow-oriented." After the merger of the Burlington Northern and Santa Fe railroads, the company went through a number of years of heavy investments and negative cash flows. To keep on top of the company's cash position, Hunt has a cash forecast prepared every month. "Everything falls like dominoes from free cash flow," Hunt says. "It provides us with alternatives. Right now, the alternative of choice is buying back our own stock . . . [b]ut it could be increasing dividends or making acquisitions. All those things are not even on the radar screen if you don't have free cash flow."

Source: Randy Myers, "Cash Crop: The 2000 Working Capital Survey," *CFO*, August 2000, pp. 59-82.

IN BUSINESS



The cash budget is composed of four major sections:

1. The receipts section.
2. The disbursements section
3. The cash excess or deficiency section.
4. The financing section.

The receipts section lists all of the cash inflows, except from financing, expected during the budget period. Generally, the major source of receipts is from sales.

The disbursements section summarizes all cash payments that are planned for the budget period. These payments include raw materials purchases, direct labor payments, manufacturing overhead costs, and so on, as contained in their respective budgets. In addition, other cash disbursements such as equipment purchases and dividends are listed.

The cash excess or deficiency section is computed as follows:

Cash balance, beginning	XXXX
Add receipts	XXXX
Total cash available	XXXX
Less disbursements	XXXX
Excess (deficiency) of cash available over disbursements	XXXX

If a cash deficiency exists during any budget period, the company will need to borrow funds. If there is a cash excess during any budget period, funds borrowed in previous periods can be repaid or the excess funds can be invested.

The financing section details the borrowings and repayments projected to take place during the budget period. It also lists interest payments that will be due on money borrowed.²

The cash balances at both the beginning and end of the year may be adequate even though a serious cash deficit occurs at some point during the year. Consequently, the cash budget should be broken down into time periods that are short enough to capture major fluctuations in cash balances. While a monthly cash budget is most common, some organizations budget cash on a weekly or even daily basis. Larry Giano has

² The format for the statement of cash flows, which is discussed in a later chapter, may also be used for the cash budget.

SCHEDULE 8

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	A	B	C	D	E	F	G
1	Hampton Freeze, Inc.						
2	Cash Budget						
3	For the Year Ended December 31, 2008						
4							
5							
6							
7		Schedule	1	2	3	4	Year
8	Cash balance, beginning		\$42,500	\$36,000	\$33,900	\$165,650	\$42,500
9	Add receipts:						
10	Collections from customers	1	230,000	480,000	740,000	520,000	1,970,000
11	Total cash available		272,500	516,000	773,900	685,650	2,012,500
12	Less disbursements:						
13	Direct materials	3	49,500	72,300	100,050	79,350	301,200
14	Direct labor	4	84,000	192,000	216,000	114,000	606,000
15	Manufacturing overhead	5	68,000	96,800	103,200	76,000	344,000
16	Selling and administrative	7	107,000	143,000	161,000	125,000	536,000
17	Equipment purchases		50,000	40,000	20,000	20,000	130,000
18	Dividends		8,000	8,000	8,000	8,000	32,000
19	Total disbursements		368,500	552,100	608,250	422,350	1,949,200
20	Excess (deficiency) of cash available over disbursements		(94,000)	(36,100)	165,650	263,300	63,300
21	Financing:						
22	Borrowings (at the beginnings of quarters)		130,000	70,000	-	-	200,000
23	Repayments (at end of the year)		-	-	-	(200,000)	(200,000)
24	Interest		-	-	-	(21,900)	(21,900)
25	Total financing		130,000	70,000	-	(221,900)	(21,900)
26	Cash balance, ending		\$36,000	\$33,900	\$165,650	\$41,400	\$41,400
27							

Schedule 5 / Schedule 6 / Schedule 7 / Schedule 8 / Schedule 9 / Schedule 10

prepared a quarterly cash budget for Hampton Freeze that can be further refined as necessary. This budget appears in Schedule 8. The cash budget builds on the earlier schedules and on additional data that are provided below:

- The beginning cash balance is \$42,500.
- Management plans to spend \$130,000 during the year on equipment purchases: \$50,000 in the first quarter; \$40,000 in the second quarter; \$20,000 in the third quarter; and \$20,000 in the fourth quarter.
- The board of directors has approved cash dividends of \$8,000 per quarter.
- Management would like to have a cash balance of at least \$30,000 at the beginning of each quarter for contingencies.
- Hampton Freeze has an agreement with a local bank that allows the company to borrow in increments of \$10,000 at the beginning of each quarter, up to a total loan balance of \$250,000. The interest rate on these loans is 1% per month and for simplicity we will assume that interest is not compounded. The company would, as far as it is able, repay the loan plus accumulated interest at the end of the year.

The cash budget is prepared one quarter at a time, starting with the first quarter. Larry began the cash budget by entering the beginning balance of cash for the first quarter of \$42,500—a number that is given above. Receipts—in this case, just the \$230,000 in cash

collections from customers—are added to the beginning balance to arrive at the total cash available of \$272,500. Because the total disbursements are \$366,500 and the total cash available is only \$272,500, there is a shortfall of \$94,000. Because management would like to have a beginning cash balance of at least \$30,000 for the second quarter, the company will need to borrow at least \$124,000.

Required Borrowings at the Beginning of the First Quarter

Desired ending cash balance	\$ 30,000
Plus deficiency of cash available over disbursements	94,000
Minimum required borrowings	<u>\$124,000</u>

Recall that the bank requires that loans be made in increments of \$10,000. Because Hampton Freeze needs to borrow at least \$124,000, it will have to borrow \$130,000.

The second quarter of the cash budget is handled similarly. Note that the ending cash balance for the first quarter is brought forward as the beginning cash balance for the second quarter. Also note that additional borrowing is required in the second quarter because of the continued cash shortfall.

Required Borrowings at the Beginning of the Second Quarter

Desired ending cash balance	\$30,000
Plus deficiency of cash available over disbursements	36,100
Minimum required borrowings	<u>\$66,100</u>

Again, recall that the bank requires that loans be made in increments of \$10,000. Because Hampton Freeze needs to borrow at least \$66,100 at the beginning of the second quarter, the company will have to borrow \$70,000 from the bank.

In the third quarter, the cash flow situation improves dramatically and the excess of cash available over disbursements is \$ 65,650. Therefore, the company will end the quarter with ample cash and no further borrowing is necessary.

At the end of the fourth quarter, the loan and accumulated interest must be repaid. The accumulated interest can be computed as follows:

Interest on \$130,000 borrowed at the beginning of the first quarter:	
\$130,000 × 0.01 per month × 12 months*	\$15,600
Interest on \$70,000 borrowed at the beginning of the second quarter:	
\$70,000 × 0.01 per month × 9 months*	6,300
Total interest accrued to the end of the fourth quarter	<u>\$21,900</u>

*Simple, rather than compounded, interest is assumed for simplicity.

Note that the loan repayment of \$200,000 (\$130,000 + \$70,000) appears in the financing section for the fourth quarter along with the interest payment of \$21,900 computed above.

As with the production and raw materials budgets, the amounts under the Year column in the cash budget are not always the sum of the amounts for the four quarters. In particular, the beginning cash balance for the year is the same as the beginning cash balance for the first quarter and the ending cash balance for the year is the same as the ending cash balance for the fourth quarter. Also note the beginning cash balance in any quarter is the same as the ending cash balance for the previous quarter.

IN BUSINESS

CASH CRISIS AT A START-UP COMPANY

Good Home Co., headquartered in New York City, sells home cleaning and laundry products through merchandisers such as Restoration Hardware and Nordstrom. In 2001, the company's sales were \$2.1 million. Then in September 2002, the company's founder Christine Dimmick appeared on the cable shopping network QVC and in a few hours she sold more than \$300,000 worth of merchandise. However, euphoria turned to panic when Christine realized that she needed \$200,000 in short-term financing to fill those orders. When attempts to renegotiate payment terms with suppliers failed, Christine realized that she needed to hire a finance professional. Jeri Charlup, who was hired as Good Home's part-time CFO, spent \$6,000 to create a cash flow forecasting system using Excel. As Good Home's annual sales have grown to \$4 million, Charlup says the new forecasting system is giving the company "a far clearer fix on how much operating capital it needs at any given time."

Source: Susan Hansen, "The Rent-To-Own CFO Program," *Inc.* magazine, February 2004, pp. 28–29.

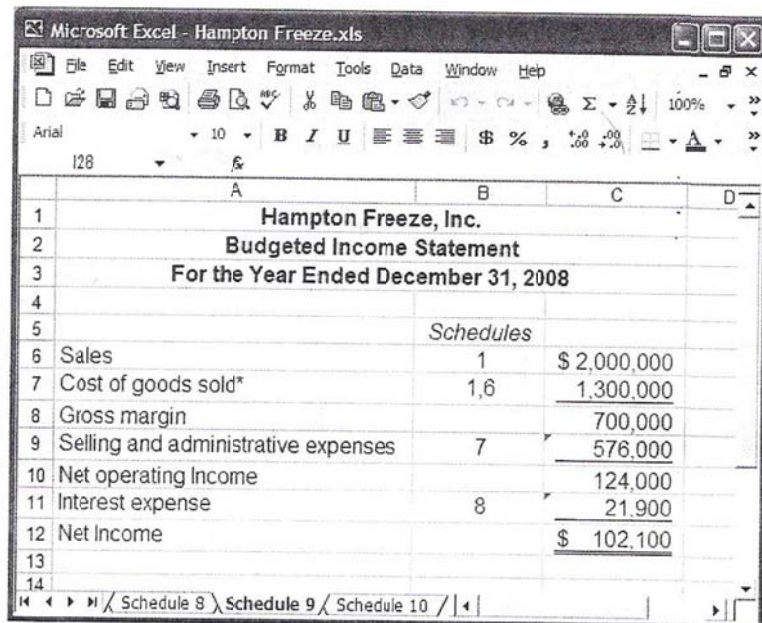
The Budgeted Income Statement

LEARNING OBJECTIVE 9
Prepare a budgeted income statement.

A budgeted income statement can be prepared from the data developed in Schedules 1–14. *The budgeted income statement is one of the key schedules in the budget process.* It shows the company's planned profit and serves as a benchmark against which subsequent company performance can be measured.

Schedule 9 contains the budgeted income statement for Hampton Freeze.

SCHEDULE 9



	A	B	C	D
1	Hampton Freeze, Inc.			
2	Budgeted Income Statement			
3	For the Year Ended December 31, 2008			
4				
5		<i>Schedules</i>		
6	Sales	1	\$ 2,000,000	
7	Cost of goods sold*	16	1,300,000	
8	Gross margin		700,000	
9	Selling and administrative expenses	7	576,000	
10	Net operating income		124,000	
11	Interest expense	8	21,900	
12	Net income		\$ 102,100	
13				
14				

*100,000 cases sold × \$13 per case = \$1,300,000.

15

The Budgeted Balance Sheet

The budgeted balance sheet is developed using data from the balance sheet from the beginning of the budget period and data contained in the various schedules. Hampton Freeze's budgeted balance sheet is presented in Schedule 10. Some of the data on the budgeted balance sheet have been taken from the company's previous end-of-year balance sheet for 2007 which appears below:

LEARNING OBJECTIVE 10
Prepare a budgeted balance sheet.



Hampton Freeze, Inc. Balance Sheet December 31, 2007	
Assets	
Current assets:	
Cash	\$ 42,500
Accounts receivable	90,000
Raw materials inventory (21,000 pounds)	4,200
Finished goods inventory (2,000 cases)	26,000
Total current assets	\$162,700
Plant and equipment:	
Land	80,000
Buildings and equipment	700,000
Accumulated depreciation	(292,000)
Plant and equipment, net	488,000
Total assets	<u>\$650,700</u>
Liabilities and Stockholders' Equity	
Current liabilities:	
Accounts payable (raw materials)	\$ 25,800
Stockholders' equity:	
Common stock, no par	\$175,000
Retained earnings	449,900
Total stockholders' equity	624,900
Total liabilities and stockholders' equity	<u>\$650,700</u>

After completing the master budget, Larry Giano took the documents to Tom Wills, chief executive officer of Hampton Freeze, for his review.

Larry: Here's the budget. Overall, the net income is excellent, and the net cash flow for the entire year is positive.

Tom: Yes, but I see on this cash budget that we have the same problem with negative cash flows in the first and second quarters that we had last year.

Larry: That's true. I don't see any way around that problem. However, there is no doubt in my mind that if you take this budget to the bank today, they'll approve an open line of credit that will allow you to borrow enough to make it through the first two quarters without any problem.

Tom: Are you sure? They didn't seem very happy to see me last year when I came in for an emergency loan.

Larry: Did you repay the loan on time?

Tom: Sure.

Larry: I don't see any problem. You won't be asking for an emergency loan this time. The bank will have plenty of warning. And with this budget, you have a solid plan that shows when and how you are going to pay off the loan. Trust me, they'll go for it.

**MANAGERIAL
ACCOUNTING IN
ACTION**
The Wrap-up



SCHEDULE 10

Microsoft Excel - Hampton Freeze.xls				
File Edit View Insert Format Tools Data Window Help				
Arial 12 B I U D \$ % , .00 .00				
H33	A	B	C	D
1	Hampton Freeze, Inc.			
2	Budgeted Balance Sheet			
3	December 31, 2008			
4				
5	Assets			
6	Current assets:			
7	Cash	\$ 41,400	(a)	
8	Accounts receivable	120,000	(b)	
9	Raw materials inventory	4,500	(c)	
10	Finished goods inventory	39,000	(d)	
11	Total current assets			\$ 204,900
12	Plant and equipment:			
13	Land	80,000	(e)	
14	Buildings and equipment	830,000	(f)	
15	Accumulated depreciation	(392,000)	(g)	
16	Plant and equipment, net			518,000
17	Total assets			\$ 722,900
18				
19	Liabilities and Stockholders' Equity			
20	Current liabilities:			
21	Accounts payable (raw materials)			\$ 27,900 (h)
22	Stockholders' equity:			
23	Common stock, no par	\$ 175,000	(i)	
24	Retained earnings	520,000	(j)	
25	Total stockholders' equity			695,000
26	Total liabilities and stockholders' equity			\$ 722,900
27				
28				
29	Schedule 8 / Schedule 9 / Schedule 10 /			

Explanation of December 31, 2008, balance sheet figures:

- (a) The ending cash balance, as projected by the cash budget in Schedule 8.
- (b) Thirty percent of fourth-quarter sales, from Schedule 1 ($\$400,000 \times 30\% = \$120,000$).
- (c) From Schedule 3, the ending raw materials inventory will be 22,500 pounds. This material costs \$0.20 per pound. Therefore, the ending inventory in dollars will be $22,500 \text{ pounds} \times \$0.20 \text{ per pound} = \$4,500$.
- (d) From Schedule 6.
- (e) From the December 31, 2007, balance sheet (no change).
- (f) The December 31, 2007, balance sheet indicated a balance of \$700,000. During 2008, \$130,000 of additional equipment will be purchased (see Schedule 8), bringing the December 31, 2008, balance to \$830,000.
- (g) The December 31, 2007, balance sheet indicated a balance of \$292,000. During 2008, \$100,000 of depreciation will be taken (\$60,000 on Schedule 5 and \$40,000 on Schedule 7), bringing the December 31, 2008, balance to \$392,000.
- (h) One-half of the fourth-quarter raw materials purchases, from Schedule 3.
- (i) From the December 31, 2007, balance sheet (no change).
- (j)
- | | |
|--|-----------|
| December 31, 2007, balance | \$449,900 |
| Add net income, from Schedule 9 | 102,100 |
| | 552,000 |
| Deduct dividends paid, from Schedule 8 | 32,000 |
| December 31, 2008, balance | \$520,000 |