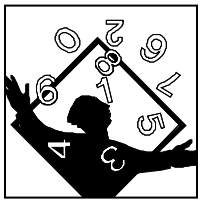
MWR MANAGERS' OPERATIONS GUIDE

Determine Break-even Point (BEP)



DO THIS TASK WHEN

- You want to estimate the sales volume needed to cover total expenses plus any profit.
- You want to estimate the point where financial objectives for the FFR Program activity, event, products, or services have been met.
- You need to develop pricing or product alternatives.
- You want to determine which products provide the greatest contribution to the break-even point.
- You want to evaluate the feasibility of a new FFR Program or program activities, events, products, or services.
- You want to review standards for Program activities, events, products, and/or services.

REFERENCES

- CNICINST 1710.3 (series), Operation of Morale, Welfare, and Recreation MWR Programs.

SUPPLIES/ RESOURCES

- Break-even Point Analysis Worksheet.
- Information/data regarding customer/patron usage.
- Calculator.
- Break-even point software. (Optional).
- The current monthly financial statements.
- Your current schedule of fees, prices and charges.

THIS TASK IS DONE CORRECTLY WHEN

- The break-even point is determined correctly.
- All data has been entered correctly on the Break-even Point Analysis Worksheet.
- The selling price and/or volume required is calculated properly.
- Management decisions were made based on the BEP analysis.
- The initiative is re-evaluated when the BEP is unsatisfactory or questionable.

NOTES

Break-even or **break-even point** -- noun.

Neither profit nor loss: the point or level of financial activity at which expenditure equals income or the value of an investment equals its cost, and the result is neither a profit nor loss

As a manager, one of the most important things you need to know is how much income your operation requires to break-even and/or stay at a predetermined profit or subsidy level.

NOTES (cont.)

Break-even analysis is a useful management tool to gauge the effects of pricing decisions, demand, and costs on potential revenue. Using it, you can estimate the total sales volume in dollars and/or units needed to cover total expenses plus any profit.

The Navy FFR definition of break-even point is, "the volume of business at which total fixed and variable direct and indirect costs and profit subsidy objectives equal total revenue."

The BEP formula is:

- Resale/Program Revenue (Income), plus Other Revenue (amusements, commissions, sponsorships, etc.), equals Fixed Direct Expenses plus Variable Direct and Indirect Expenses, plus Profit, minus Subsidy.

BEP analysis is NOT a substitute for in-depth costing studies of products and services or for marketing research (e.g., surveys, focus groups, etc.), but can be used with other approaches to develop or revise pricing or product alternatives and for budgeting purposes. BEP helps you calculate the amount of income needed to balance cost.

Once you determine the BEP (the **science** of pricing), you can make decisions on pricing, staffing, and other key areas that impact your activities, events, products, and services (the **art** of pricing).

For example BEP can be used to:

- Evaluate existing Program activities, events, products, or services, or to project or estimate total revenues and/or units for a new endeavor being planned.

- Calculate how many customers/sales are needed to reach equality (BEP) between all relevant costs and projected income.

NOTES (cont.)

- Calculate the actual dollar figure to charge for an activity, event, product, or service needed to reach equality (BEP) between all relevant costs to the projected/known sales or patronage.

- Determine how much you need to adjust your fees, prices, and/or charges to accomplish a specific/changed financial goal, whether for a specific activity, event, product, service, or overall for your Program.

- Calculate the effects of adjusting (up or down) costs or revenue for specific activities, events, products, services, or overall for your Program.

- Calculate the effects of adjusting financial goals/standards for any fixed/variable expense to overall break-even point.

For new undertakings, you will have to use assumptions based on past usage patterns, prices, and costs for like or similar activities or events. With pertinent data and correct assumptions you can set prices or evaluate many facets of your organization's pricing structure.

The BEP is a useful tool to use in conjunction with the Cost/Revenue per User worksheet found in the online learning event, Establish Fees and Prices. That tool will indicate the cost (subsidy), or the revenue (profit) per each user of your Program. This is also good information to know as you seek your desired financial goals.

PROCEDURE

Step 1 Determine the activity, event, product, or service (unit of sales) on which you want to conduct a break-even point analysis.

Step 2 Gather the resources, supplies and other materials necessary to conduct a BEP Analysis.

- ☐ Financial Report showing G&A Revenue and Expenses.
- ☐ Profit and Loss Statement.
- ☐ Current schedule of fees, prices, and charges for your Program's activities, events, products, and services.
- ☐ Customer usage data.
- ☐ Break-even Point Analysis Worksheets. (See examples at the end of this task.)
- ☐ Calculator.

Step 3 Complete the Break-even Point Analysis Worksheet for the selected activity, event, product, or service.

- ☐ Follow Steps 4 through 10 to fill out the worksheet.

Step 4 Worksheet Section Number 1 - List all NAF Fixed Expenses and record the total as **TOTAL A.**

- Fixed expenses are those that are not directly affected by increases or decreases in volume or that cannot be quickly adjusted to changes in volume.
- These fixed expenses are sometimes referred to as direct or overhead costs.
- Display these fixed expenses as a dollar amount.

Some of the costs/expenses associated with this item include:

☐ Salaries and Wages. (True costs include all known related costs such as meals, medical, uniforms, etc.)

☐ Utilities.

☐ Minor property and supplies.

☐ Depreciation.

☐ Annual and Sick leave.

☐ G&A overhead expenses.

☐ Other direct expenses.

☐ Subsidy Amount. **(Must be entered as a minus figure.)**

☐ Profit Amount desired.

☐ Transportation.

NOTE:	If the total of Fixed Expenses **(TOTAL A)** is a minus figure (because of a subsidy), change one or more of the variable expenses in Step 7 to a fixed expense and show as a dollar amount ($) instead of a percentage amount (%). The BEP calculations will **NOT** work with a negative Fixed Expenses total in **TOTAL A**. Many expense items can be expressed as either variable or fixed. Whether the expense is variable or fixed depends on how you interpret the information, how the information is available to you from records, and how you do the math in the worksheet.

Step 5 Worksheet Section Number 2 - List all sources of other income and add these up. (e.g., commissions, amusement machines, etc.).

Record this total as **TOTAL B.**

NOTE:	Do **NOT** include Resale or Program revenue/income here in this item. The Resale and Program income figures are the break-even results that you will calculate in Step 9.

For example, some of the other income/revenue sources associated with this item include:

- ☐ Commissions.
- ☐ Commercial Sponsorship.
- ☐ Amusement machines.
- ☐ Cover charges, dues, service charges, etc.
- ☐ Other additional funding.

Step 6 Worksheet Section Number 3 - Subtract **TOTAL B** from **TOTAL A** and enter the adjusted Fixed Expense Total here.

Record the total as **TOTAL C**.

NOTE:	If the adjusted Fixed Expenses total **(Total C)** is a minus figure (because of a subsidy), change one or more of the variable expenses in Step 7 to a fixed expense and show as a dollar amount ($) in Section 1 on the worksheet. The BEP calculations will **NOT** work with a negative Fixed Expenses total in **Total C**.

Step 7 Worksheet Section Number 4 - List all variable expenses (shown on the next page) as a **percentage** of resale/program income and record these as **TOTAL D.**

NOTE:	If **TOTAL D** = 100% or more, your expenses will always be higher than your income and you will never achieve break-even. In order to complete the calculations on the worksheet, change one or more of your variable expenses to a fixed expense and show it as a dollar amount in Step 4 instead of a percentage here.

- Variable expenses listed here are expressed as a percent (%) of resale/program income.
- Variable expenses are those that can be expected to increase directly with each additional unit sold.

Step 7 (cont.) Examples of costs/expenses that should be recorded in this category include:

- ☐ Cost of Goods Sold (COGS).
  - It is important not to rely on arbitrary COGS percentages. FFR Program Managers must develop COGS percentages and pricing policies that attain identified break-even points.
  - This percentage must at least meet the published standards for the Program.
- ☐ Fees paid to sports officials.
- ☐ Awards.
- ☐ Salaries and wages. (True costs include all known related costs such as meals, medical, uniforms, etc.)
- ☐ Supplies.
- ☐ Laundry.
- ☐ Utilities.
- ☐ Profit.
- ☐ Program or Activity G&A expenses.
- ☐ FFR Fund G&A expenses.
- ☐ Subsidy level (**must be entered as a minus figure).**
- ☐ Other variable expenses.
- ☐ Entertainment.

Step 8 Worksheet Section Number 5 - Enter **TOTAL D** below to calculate Fixed Expense Percentage **(TOTAL E)**:

100 - _____ = _____ X (times) .01 =
TOTAL D **TOTAL E**

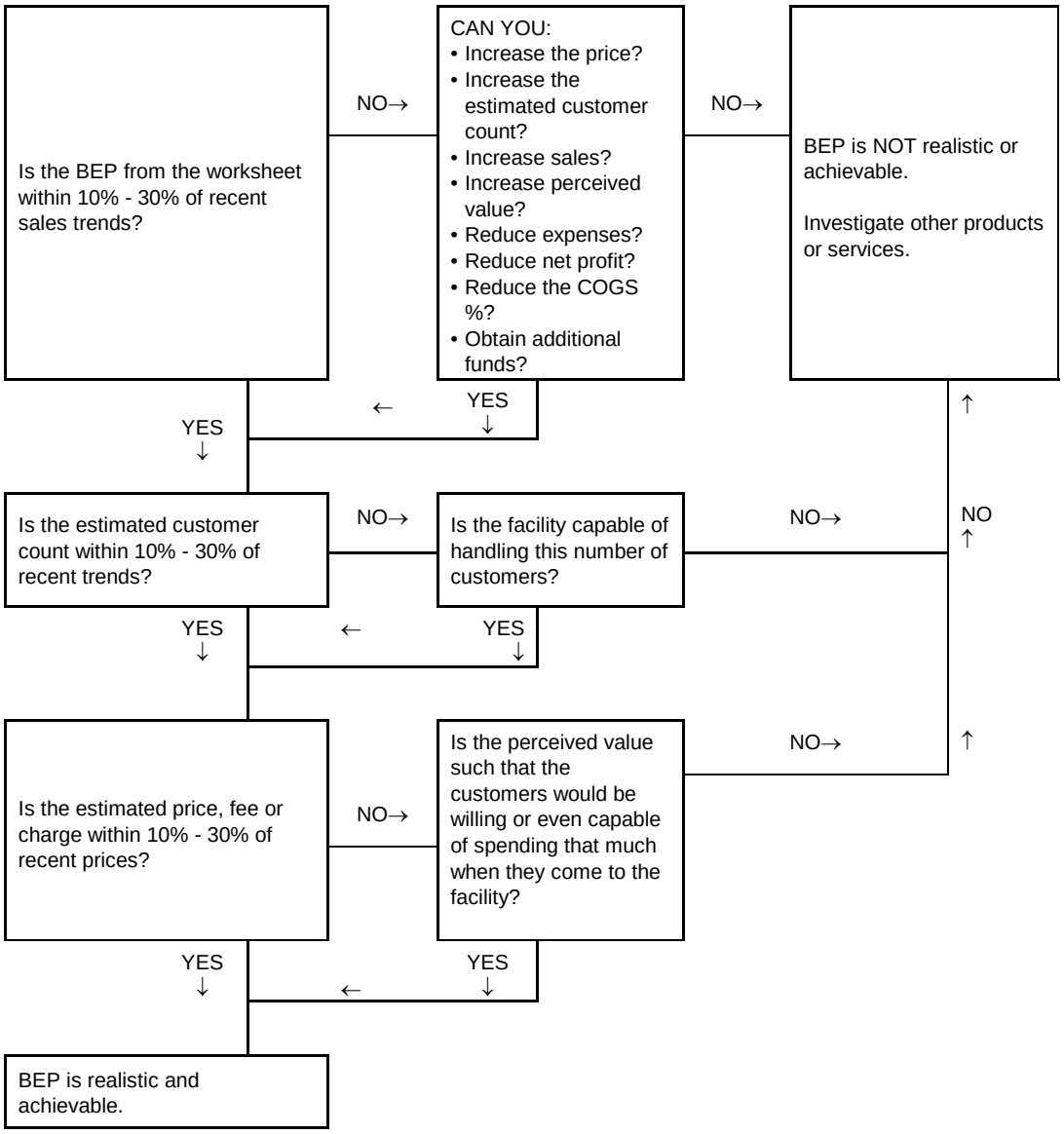
Step 9 Worksheet Section Number 6 - Enter **TOTAL C** and divide by **TOTAL E** in the formula to calculate the resale/program revenue (Income) required to achieve Total break-even.

$ _____ ÷ _____ = $_____ (Total break-even)
TOTAL C **TOTAL E** **TOTAL F**

Step 10 Worksheet Section Number 7 - Decide whether you want to determine the selling price or the number of customers/patrons required to achieve a break-even point.

IF YOU KNOW:	THEN DIVIDE THE:	BY:	TO DETERMINE:
The Projected Customer Count	Total Break-even Dollars **(TOTAL F)**	The Projected Customer Count	The Necessary Selling Price
The Projected Selling Price		The Projected Selling Price	The Necessary Number of Customers/Patrons

Step 11 Evaluate whether or not the BEP is realistic and achievable.



Congratulations! You've completed this task.

EXAMPLE

A simple example of how to compute the break-even point for one event is shown on the next two pages.

SITUATION

You are planning to start a Sunday Brunch service at your club. Before you are allowed to implement this new program, the FFR Director wants you to determine the break-even point and what you will charge for the brunch.

The chef has established the staff requirements and budgeted $380.00 for labor and has estimated a 40% COGS. The average customer/patron count is estimated to be 105. The administration has identified a 10% cost for other expenses. You need to generate a 15% profit.

What is the BEP, and what will you charge for the brunch? Look at our calculations on the worksheet on the next page.

BREAK-EVEN POINT ANALYSIS WORKSHEET

Event or Service: *Sunday Brunch*

1. List all fixed expenses and total (e.g., labor, general and administrative [G&A], depreciation.)

Fixed Expenses	Amount
Labor	*$380.00*
TOTAL A	**$** *380.00*

2. List all sources of other income and total (e.g., commissions, amusements machines.

   NOTE: Do NOT include resale/program revenue (income).

Other Income	Amount
TOTAL B	**$**

3. Subtract **TOTAL B** from **TOTAL A** and enter the Adjusted Fixed Expense Total here: $ *380.00* **TOTAL C**

4. List all variable expenses below (as percent of income) and total (e.g., Cost Of Goods Sold, net profit, G&A):

   NOTE: If TOTAL D = 100% or more, expenses exceed resale/program

Variable Expenses	%
COGS	*40*
Other Expenses	*10*
Net Profit	*15*
Total D	*65%*

5. Enter **TOTAL D** below to calculate Fixed Expense Percentage **(TOTAL E)**:

   100 - *65* (TOTAL D) = *35* × *.01* = *.35* (TOTAL E)

6. Enter **TOTAL C** and divide by **TOTAL E** below to calculate Income:

   $ *380* (TOTAL C) ÷ *.35* (TOTAL E) = $ *1086* (TOTAL F) ***(TOTAL break-even)***

7. Compute Selling Price or Sales Volume required to break-even.

   a. Selling Price:

   $ *1086* (TOTAL F) ÷ *105* (Projected Customer Count) = $ *10.34* (SELLING PRICE)

   b. Sales Volume Required:

   $ _____ (TOTAL F) ÷ _____ (Planned Selling Price) = _____ (SALES VOLUME)

If this adjusted fixed expense total is a minus (-) figure (because of subsidy), CHANGE one or more of the variable expenses to a fixed expense and enter as a dollar amount in Item 1 above.

If this variable expense % exceeds 100%, then CHANGE one or more of the variable expenses to a fixed expense and enter as a dollar amount in Item 1 above.

Situation, cont.

As you see on the preceding page, the BEP in our Brunch scenario called for a cost per customer/patron of $10.34.

Our customers/patrons will feel that this seems like a high price for a Sunday Brunch in our locality. You have to ask yourself "is that realistic and achievable?" If not, what are some things you can do to lower the cost for the customers/patrons.

- ☐ Reduce the net profit requirement?
- ☐ Reduce the staff requirements?
- ☐ Reduce other expenses?
- ☐ Reduce COGS percentage?
- ☐ Increase the estimated customer/patron count?

Following the guidelines outlined in Step 11, you need to consider the sales history, customer/patron counts and average prices for existing products/services. That will give you some options on what you might do to make it more realistic and achievable. (See next page.)

We chose to reduce the net profit requirement to 5%. The total variable expense is now 55%. If you do that, the new resale/program revenue (Income) required to achieve Total break-even is $845.00. (Section 6 of the Break-even Point Analysis Worksheet).

Worksheet Section 5	100 - 55 = 45 x .01 = .45
Worksheet Section 6	$380.00 ÷ .45 = $845.00

The new cost per customer/patron for the brunch will be $8.05.

Worksheet Section 7a	$845.00 ÷ 105 = $8.05

If $8.05 still seems unrealistic, then you may have to try another of the options outlined in Step 11 of the Task.

BREAK-EVEN POINT ANALYSIS WORKSHEET

Event or Service: *Sunday Brunch*

1. List all fixed expenses and total (e.g., labor, general and administrative [G&A], depreciation.)

Fixed Expenses	Amount
Labor	*$380.00*
TOTAL A	**$** *380.00*

2. List all sources of other income and total (e.g., commissions, amusements machines.

   NOTE: Do NOT include resale/program revenue (income).

Other Income	Amount
TOTAL B	**$** *0*

3. Subtract **TOTAL B** from **TOTAL A** and enter the Adjusted Fixed Expense Total here: $ *380.00* **TOTAL C**

4. List all variable expenses below (as percent of income) and total (e.g., Cost Of Goods Sold, net profit, G&A):

   NOTE: If TOTAL D = 100% or more, expenses exceed resale/program

Variable Expenses	%
COGS	*40*
Other Expenses	*10*
Net Profit	*5*
Total D	*55%*

5. Enter **TOTAL D** below to calculate Fixed Expense Percentage **(TOTAL E)**:

   100 - *55* (TOTAL D) = *45* × *.01* = *.45* (TOTAL E)

6. Enter **TOTAL C** and divide by **TOTAL E** below to calculate Income:

   $ *380* (TOTAL C) ÷ *.45* (TOTAL E) = $ *845* (TOTAL F) ***(TOTAL break-even)***

7. Compute Selling Price or Sales Volume required to break-even.

   a. Selling Price:

   $ *845* (TOTAL F) ÷ *105* (Projected Customer Count) = $ *8.05* (SELLING PRICE)

   b. Sales Volume Required:

   $ _____ (TOTAL F) ÷ _____ (Planned Selling Price) = _____ (SALES VOLUME)

If this adjusted fixed expense total is a minus (-) figure (because of subsidy), CHANGE one or more of the variable expenses to a fixed expense and enter as a dollar amount in Item 1 above.

If this variable expense % exceeds 100%, then CHANGE one or more of the variable expenses to a fixed expense and enter as a dollar amount in Item 1 above.

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BREAK-EVEN POINT ANALYSIS WORKSHEET

Event or Service:

1. List all fixed expenses and total (e.g., labor, general and administrative [G&A], depreciation.)

Fixed Expenses	Amount
TOTAL A	**$**

2. List all sources of other income and total (e.g., commissions, amusements machines.

   NOTE: Do NOT include resale/program revenue (income).

Other Income	Amount
TOTAL B	**$**

3. Subtract TOTAL B from TOTAL A and enter the Adjusted Fixed Expense Total here: $ _____ **TOTAL C**

If this adjusted fixed expense total is a minus (-) figure (because of subsidy), CHANGE one or more of the variable expenses to a fixed expense and enter as a dollar amount in Item 1 above.

4. List all variable expenses below (as percent of income) and total (e.g., Cost Of Goods Sold, net profit, G&A):

   NOTE: If TOTAL D = 100% or more, expenses exceed resale/program

Total D	%

If this variable expense % exceeds 100%, then CHANGE one or more of the variable expenses to a fixed expense and enter as a dollar amount in Item 1 above.

5. Enter **TOTAL D** below to calculate Fixed Expense Percentage **(TOTAL E)**:

   100 - _____ (**TOTAL D**) = _____ × *.01* = _____ (**TOTAL E**)

6. Enter TOTAL C and divide by TOTAL E below to calculate Income:

   $ _____ (**TOTAL C**) ÷ _____ (**TOTAL E**) = $ _____ (**TOTAL F**) ***(TOTAL break-even)***

7. Compute Selling Price or Sales Volume required to break-even.

   a. Selling Price:

   $ _____ (**TOTAL F**) ÷ _____ (Projected Customer Count) = $ (SELLING PRICE)

   b. Sales Volume Required:

   $ _____ (**TOTAL F**) ÷ _____ (Planned Selling Price) = _____ (SALES VOLUME)

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