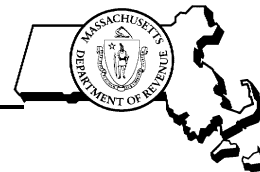


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Costing Municipal Services

Workbook and Case Study

March 2005

HOW TO USE THIS WORKBOOK

PART ONE A Guide to Costing Municipal Services presents the basic concepts and techniques of costing. It is intended both as an introduction for officials new to costing and as a refresher for officials who have used costing before.

PART TWO Masstown Ambulance Service, illustrates the concepts and techniques discussed in Part One. As you work through the case study, you may wish to refer to specific aspects of costing presented in Part One.

In previous editions, there was a Part Three, a set of blank worksheets for local officials to use when collecting cost information. Because of computerization, we recommend that local officials design their own worksheets, using the formats, or similar ones, displayed in the Case Study.

If you have any questions or would like assistance in costing your municipal services, we urge you to contact us:

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A GUIDE TO COSTING MUNICIPAL SERVICES

What is the full cost of collecting and disposing of trash in your community? How much does it cost to provide fire protection?

What would it cost to increase service levels? How much could be saved by reducing services?

If you charge fees for municipal services, what percentage of the cost of service do they cover? Under what circumstances should fees be increased?

Could some municipal services be provided more efficiently by private firms?

As a local official – whether you are a mayor or selectman, manager or executive secretary, auditor or accountant, department head, member of the finance committee or any other member of municipal government – you may have asked these or other questions related to the cost of municipal services. Costing is a management and policymaking tool that helps to answer these questions. It differs from traditional municipal budgeting and accounting in three ways:

1. Costing looks at the **cost of all resources** used to provide services rather than expenditures made to operate municipal departments;
2. Costing includes **all** costs of providing a service, not just those found in the budget or financial reports of the department responsible for the service;
3. Costing focuses on the **cost** of the resources used to provide a service **during a given period of time**, regardless of when cash disbursements are made to purchase these resources.

The purpose of costing is not simply to collect cost data, but to provide municipal managers and officials with information they can use to make better management decisions in several areas:

- Analyzing the efficiency of municipal services
- Making budget decisions
- Setting fees for services and determining intergovernmental charges
- Choosing among alternative methods of providing services, such as contracting or regionalization

Costing is as much an art as a science. There are relatively few established rules to follow, and there is considerable leeway for judgment. In this **Guide**, we introduce the basic concepts and techniques of costing, which we feel meet the needs of most local officials. More complex approaches to costing, which provide greater accuracy but also require greater effort, are discussed in the books listed in the Bibliography at the end of this **Workbook**.

The costing process presented in this **Guide** has four major steps, each of which is explained by a series of questions and answers. The four steps and the questions addressed under each are listed below.

STEPS IN THE COSTING PROCESS

Step 1	Deciding What to Study	Pages 3-5
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Step 2	Getting Organized	Pages 6-9
Questions:	How do I organize a cost study? What time period should a cost study cover? Where will I find cost figures? Do I need to distinguish between expenses and expenditures? How should I treat pension costs? When is productive time important in costing?	
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STEP 1: DECIDING WHAT TO STUDY

Q. What services do I want to cost?

The first step in costing is to specify which service or services are to be costed.

Example: All services performed by the highway department.

Example: A service provided internally to various town departments, such as centralized purchasing.

Q. What is the purpose of costing this service? What information do I need to collect?

It is important at the beginning of a cost study to specify the purposes of the study, the information to be collected, and how the information will be used. How the information is to be used will determine the cost data to be collected; different uses require analyzing different types of costs.

Table I lists types of cost analyses, the questions they answer, and an example of each.

Example: The recreation department wants to know at what level program fees would have to be set in order to recover one-half of the cost of providing a particular program to 1000 users. In order to calculate the program's cost per participant (average unit cost), the department needs to calculate the full cost of the program and divide this amount by the number of participants.

TABLE I: TYPES OF COST ANALYSES, THEIR USES, AND EXAMPLES

	Questions to be Answered	Example
Full Costs	What is the cost of all resources used to provide the service?	Landfill -- the cost of all resources, from all departments, needed to provide landfill service.
Average Unit Costs	What cost should be the basis for setting fees?	Town Clerk -- the cost processing one marriage license.
Job Costs	What is the cost of performing one job?	Vehicle Repair -- the cost of repairing a vehicle.
Incremental Costs	What would it cost to expand the service?	Libraries -- the additional costs of opening a branch library two evenings per week?
Avoidable Costs	What costs would be avoided if some or all of the service were dropped, or if a different service delivery method (e.g., contracting) were used?	Fire -- costs that would be saved if an existing fire station were closed. Ambulance -- costs that would be saved by contracting for the service.

Q. How can the service be measured?

Once the service being costed and purpose of the study have been identified, it is important to consider how the **output** and cost of the service can be measured. We use the term **output** to describe the amount of a service provided by a local government. Measures of output and cost vary with the nature of the service being costed.

For services whose output is reasonably standard from case to case, output can be measured as the total of all units of service provided. A **unit of output** is simply one instance of the service, and **unit cost** is the average cost of providing one unit of service.

Cost of Services	÷	Number of units of output	=	Unit Cost
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Example:

\$1,900	÷	250	=	\$7.60
(total cost of voter registration)		(number of voters registered)		(cost of registering one voter)

For municipal services which are one-time jobs or for which the effort required varies greatly from job to job, units of output are not standard and average unit cost is not a useful measure; a more meaningful calculation is the cost of each job or a range of costs per job.

Example: Installation of a new data processing system.

Example: The time required for criminal investigation by the police department varies from 4 hours to 30 hours per case. The Department estimates that one hour of investigation costs \$17.50. Therefore, the cost per case ranges from \$70 (4 x \$17.50) to \$525 (30 x \$17.50).

The key to defining output and unit costs is to choose measures, which provide useful information for the particular study being conducted. **Table II** on the following page lists possible measures of output and unit cost for different types of services.

Example: In analyzing the cost of road plowing, we are likely to be more interested in the cost per lane-mile than the cost per road paved. The cost per road paved varies greatly with the length and width of the road. In contrast, calculating the cost per lane-mile allows us to estimate average plowing costs for the town as a whole.

TABLE II: EXAMPLES OF SERVICES, MEASURES OF OUTPUT, AND UNIT COSTS

Service	Output	Unit Cost
Road Paving	Lane-miles paved	\$ per lane-mile
Street Repair	Square yards of street repaired	\$ per square yard
Water	Gallons of water delivered	\$ per gallon
Fire Protection	Protection of property & lives	\$ per hour of protection provided
Police Protection	Police patrols	\$ per hour of patrol
Accident Reports to Insurance Companies	Number of reports completed	\$ per report
Recreation Programs	Number of people served or programs offered	\$ per participant or \$ per program
Immunization	Number of immunizations	\$ per immunization
Payroll Processing	Number checks	\$ per check
Tax Billing	Number of bills	\$ per bill

STEP 2: GETTING ORGANIZED

Q. How do I organize a cost study?

Successful costing requires a team effort by department heads, employees, and town officials. Before any data is gathered, all people involved in the study need to understand the purpose of the study and their role in it.

Study guidelines should be put in writing. These guidelines specify what information is to be collected, who is to collect it, sources of information to be used, and the assumptions underlying the study. Standard forms for collecting cost data also need to be prepared.

Q. What time period should a cost study cover?

The answer to this question depends on the purpose of the study. If its goal is to determine the annual cost of providing a service, cost information will be needed for an entire fiscal year. However, the study need not be carried out over the whole year. Data from the most recent fiscal year can be collected and estimates made of subsequent changes in costs, or figures on current service levels and costs can be collected over a short time period and an estimate of yearly costs derived from them.

Example: A community wants to determine the full cost of its library services. Costs are found in the expenditure reports for the fiscal year just completed, and likely changes in current year costs are estimated.

To find the cost of its road repair program, the public works department sets up a special cost study. Department employees keep track of the labor, material, and equipment used for road repairs over a two-week period. Since the level of activity during these two weeks is typical of activity for the year as a whole, the annual cost of the program can be derived from the costs incurred during the time of the special study.

If the purpose of the study is to look at cost trends over a number of years, past and current costs need to be collected, and estimates made of future costs. When the purpose of the study is to find the cost of a single project, information is collected for the time period over which the project is carried out.

Example: The public works department wants to know the cost of plowing and cleanup after a recent snowstorm. Records for the two weeks in which the work was done are examined to find costs related to this project.

Q. Where will I find cost figures?

The primary source of cost data is expenditure records: general and subsidiary ledgers, warrants for payments, debt service records, and expenditure reports. Information is also contained in budgets and non-financial records such as equipment purchase and maintenance records, building records, mileage reports, and payroll and personnel records.

The ease with which cost information can be collected will depend on the level of detail in municipal expenditure records and budgets.

Example: The police department wants to know the cost of its routine patrols. If department records report separately the costs that go into providing this service (personnel, equipment usage, and vehicle mileage), then calculating its cost is relatively easy. However, it is likely that patrol costs are not reported separately; in this case, officials will need to estimate costs based on existing records or conduct a study of current costs over a short period of time.

Q. Do I need to distinguish between expenses and expenditures?

Expenses: The costs of resources used to provide a service over given period of time.

Expenditures: The cash transactions made when purchasing these resources.

Costing requires that the **expenses** incurred to provide a service be calculated for the time period in which the service is provided, regardless of when the **expenditures** necessary to purchase these resources take place. Thus, the financial analysis used in costing differs from the cash accounting system used by most municipalities, in which expenses are recognized only when expenditures are made.

For costing purposes, the relationship between expenses and expenditures is one of the three types:

1. Expenditures made in the same time period in which expenses are incurred.

Example: Municipal employees are usually paid on a weekly or biweekly basis for hours worked in the previous one or two weeks. Over the course of a fiscal year, there is no significant difference between the amount paid to employees (expenditure) and the cost of personnel resources used (expense).

2. Expenses incurred before expenditures are made.

Example: A sidewalk repair bill submitted by a contractor in August 1998 for work done in June of that year should be considered an **expense** for the 1998 fiscal year, even though the **expenditure** is made in the 1999 fiscal year.

3. Expenses incurred after expenditures are made.

This situation occurs when an asset is used after its purchase has been completed. The general principle to be followed in costing the asset is to distribute its cost over its expected useful life.

Example: A police car is purchased for \$15,000 at the beginning of fiscal year 1999, and is expected to be used for three years. The annual cost of the vehicle is \$5,000 ($\$15,000 \div 3$).

Long-term assets financed through debt service, typically buildings, roads, and very expensive pieces of equipment, are also costs for which the expense occurs after the expenditure. According to the principle of distributing costs over the life of an asset, the construction or purchase cost of this type of asset should be considered an expense over its expected useful life. However, it is often difficult to predict accurately a long-term asset's expected useful life.

We recommend that municipalities spread the construction or purchase cost of a long-term asset over its useful life. The useful life of the asset may be determined by using the Internal Revenue Service regulations for depreciation. Otherwise, the cost can be spread over the life of the debt service, by using principal payments as the yearly cost.

Interest payments are also a cost of funding the purchase of long-term assets. Generally, they are recorded as an expense in the year in which they are paid, although for debt service with larger interest payments in initial years than in later years (as occurs in Massachusetts), this method results in an uneven distribution of costs over the useful life of the asset.

Example: A fire station built at a cost of \$5,000,000 (excluding interest) has a useful life of 30 years. \$5,000,000 divided by 30 is \$166,666, which for costing purposes is the yearly expense of the building. Interest payments, which are declining over the debt payment period, are recorded as an expense in the year they are paid.

Q. How should I treat pension costs?

The full cost of services provided in any year ought to include employees' pension costs. Each community annually contributes to its retirement system. The community's annual contribution is based on an actuarial study approved by the Public Employees Retirement Administration (PERA). Generally, the annual contribution provides for the current retirees' pension costs and the active employees' accumulated pension benefits. As conditions change (e.g., layoffs, new hires, changes in the salaries of the community's current employees), a community revises its actuarial study, adjusting the contributions to its retirement system. Once the community's annual contribution is established, the pension costs of any one department can be allocated based on the ratio of active employees' salaries in that department as a percent of total salaries of all employees contributing to the retirement system.

Example: To determine the full cost of providing ambulance service, a community needs to include an estimate of pension costs for ambulance service. The pension cost for ambulance service is apportioned based on the proportion of ambulance-related salaries to the salaries of all community employees participating in the retirement system. Current salaries of ambulance personnel total \$45,400 while the salaries of all employees participating in the retirement system total \$1,680,047; therefore the ratio is calculated to be 2.7 percent ($\$45,400 \div \$1,680,047$). This ratio is then applied to the current pension assessment of \$210,000, yielding an estimate of \$5,675 (2.7% of \$210,000).

Q. When is productive time important in costing?

Productive time is the number of hours actually worked by a municipal employee, rather than the number of hours for which the employee is paid. The cost of productive time is calculated by dividing the employee's annual cost by the number of productive hours. What figure should be used for productive hours? Although a full year's work might be considered 2080 hours (8 hours/day x 5 days/week x 52 weeks/year), employees do not work many of these hours. Vacation days, paid holidays, lunch and coffee breaks, and sick leave used all reduce the number of productive hours worked during a year.

Example: A municipality wants to determine the hourly cost of the town engineer's productive time. His annual cost is \$45,000 (salary, benefits, and pension cost), or \$21.63/hour, based on a year with 2080 hours. However, with two weeks of paid vacation, ten paid holidays, five days of sick leave used, and 30 minutes/day of paid breaks, productive hours worked are 1,762.5/year. The hourly cost of the employee's productive time is \$25.53 ($\$45,000 / 1,762.5$ hours), which is 18 percent higher than the full yearly rate.

Precise calculation of the cost of productive time can be difficult, particularly when accounting for accrued sick leave and vacation time. For costing studies in which average unit costs or job costs must be determined, officials need only be aware that there is a difference between paid and productive time and account for the major factors which affect productive time.

STEP 3: COLLECTING COST INFORMATION

After the cost study has been defined and organized, the third step in the costing process is to collect the costs of the resources used to provide the service.

Q. What resources are used in providing a service?

Before the costs of a service can be collected, the resources needed to provide the service must be identified. These resources are labor, supplies, equipment, facilities, and purchased services. Most resources are provided by the department responsible for the service.

Example: The police department is responsible for the personnel, equipment, and supplies needed to provide police services.

Some resources, however, may be provided by other departments.

Example: Purchasing by a centralized purchasing department, or building maintenance by a central building department.

Example: Townwide administration by the mayor or board of selectmen.

To identify all resources used to provide a service, all areas of local government activity must be examined to determine which are used in some way to provide the service. Once these resources have been identified, their costs can be collected.

Q. What are direct and indirect costs?

The total cost of resources used to provide a service is made up of two elements -- direct costs and indirect costs. **Table III** on the next page illustrates the types of direct and indirect costs, and the following pages describe each type of cost.

DIRECT COSTS: Costs clearly identifiable and readily attributable to the service being costed.

Most direct costs are found in the relevant department's operating budgets as salaries and wages, capital outlay, purchase of services, and other expenses. Sometimes, however, direct costs of one department are found in the budgets of other operating departments.

Example: The Public Works Department cleans and mows parks used by the Recreation Department for its outdoor programs. Part of this cleaning and mowing cost is a direct cost attributable to the services provided by the Recreation Department.

INDIRECT COSTS: Costs **not** readily attributable to a service or department, because they are shared with other services or departments.

TABLE III: TYPES OF DIRECT AND INDIRECT COSTS¹

Direct Cost: Clearly identifiable and attributable to specific service or department.	Own Department E.g., salaries of personnel running the youth program; supplies used in the program. Other Departments E.g., mowing of recreation department fields by the public works department.
Indirect Cost: Not readily attributable to a specific service or budget.	Indirect Operating Costs E.g., cost of recreation department offices in town hall. Because the town hall is used by many departments, the share of its cost attributable to the recreation department is not found separately in any budget or accounting data. Therefore, it is calculated as an indirect cost. Indirect Administrative Costs Government-wide -- E.g., costs of townwide administration by town manager, which benefits all town departments. Departmental -- E.g., administrative costs of the recreation department which cannot be readily attributed to individual recreation department programs.

There are two types of indirect costs:

Indirect Operating Costs: Costs of services which are not provided to the public, but which support other municipal departments. These are centrally budgeted costs of operating municipal government.

Example: Buildings shared by more than one department
Central motor pool
Townwide liability insurance

Indirect Administrative Costs: Shared costs of management and policymaking that cannot be assigned to individual services of departments.

Government-wide administrative costs are those shared by all municipal departments.

Example: board of selectmen or city council
town manager or mayor
town accountant or city auditor
town counsel or legal department
treasurer/collector
assessors

¹ The examples used here refer to a youth program run by a municipal recreation department.

Individual departments may also have indirect administrative costs that they cannot trace clearly to the services they provide. An example is the cost of a police chief's time spent in general management of the police department. Because departmental indirect costs are not large in most cases, and because they increase the complexity of the costing process, we do not discuss them further in this **Guide**.

The reason for distinguishing between direct and indirect costs is to help identify all costs of providing services. Each local government that does costing will categorize its direct and indirect costs differently, depending on how services are organized and how easily costs can be traced to them.

Example: If the police department is located in its own building, the building cost is direct. It is readily attributable to the services provided by the police department. On the other hand, if the police department shares space in the town hall with other departments and it is not possible to measure directly each department's share of the cost of the facility, building costs are an indirect cost of police services. Although the cost of office space cannot be traced directly to the police department, it is still a necessary cost of providing police services.

REMEMBER: There is no single correct way to categorize a cost as direct or indirect. What is important is to:

- Set reasonable guidelines to decide if a cost is direct or indirect
- Be consistent in categorizing costs as direct or indirect
- Count every cost, but only count it once

Q. How are indirect costs allocated to services?

Although indirect costs are not easily attributable to individual services they are still an essential part of the cost of municipal government, and it is important to include them in the full cost of providing municipal services. For this reason, indirect costs are allocated to departments and services according to the amount of the indirect costs for which they are responsible.

Indirect costs are distinguished from direct costs by the fact that they cannot be assigned precisely to various municipal activities. As a result, the indirect costs allocated to a particular department or service are approximate rather than exact costs. Sometimes, this fact bothers officials who like to have precise cost figures. It is important to remember that even though indirect costs are approximations, including them in the full cost of municipal services results in more accurate cost information than if they are not included at all.

This **Guide** discusses allocation methods which are relatively easy to use and which meet the costing needs of most municipalities. Local officials who feel that more precise allocation of indirect costs will result in significantly better cost information should consider using the more complex allocation methods discussed in the books cited in our **Bibliography**.

Allocating indirect costs is a two-step process:

First, indirect costs are calculated and combined into one or more **cost pools**. We use the term “cost pool” to describe a collection of indirect costs to be allocated.

Second, the **basis for allocating cost pools** is determined, and dollar amounts are calculated and assigned to individual services.

These steps are explained in more detail below.

First Step: Forming Cost Pools

Officials doing a cost study must decide which of the indirect operating and administrative costs are to be pooled. A useful guideline for this decision is to pool all costs which are relevant to the costing issues being considered. Remember to specify in the study which costs are included, and why.

Example: If a cost study is being done to find out the additional cost of keeping recreational facilities open for several extra hours per week, indirect **administrative costs** are not likely to be affected, and need not be included. On the other hand, indirect **operating costs** (e.g., facility maintenance and fee collection) might well increase, and therefore should be considered.

Second Step: Allocating Cost Pools

Once direct costs are pooled, they are allocated to individual departments or services according to the department's or service's percentage of the following.

- The municipality's direct personnel costs; or
- The municipality's number of employees; or
- The municipality's total direct costs.

The allocation base used should be the one which most accurately allocates indirect costs to the services or departments. Since personnel represent the largest single portion of municipal costs, personnel costs or numbers are logical choices for an allocation base. If equipment and building cost are a substantial percentage of costs, it is also reasonable to use total direct costs as the basis for allocating indirect costs.

Example: The landfill is responsible for 8 percent of the town's direct personnel costs; therefore, it is allocated 8 percent of townwide indirect costs.

A somewhat more accurate, but also more complex, method of allocation uses several different indirect cost pools, depending on the type of cost.

Example: Indirect building construction and maintenance costs, indirect personnel administration costs, and indirect costs of vehicles are collected into separate cost pools. Costs in each pool are then allocated according to a different base:

building costs according to the percentage of space occupied; personnel costs according to the percentage of personnel numbers or costs; and vehicle costs according to the number of vehicles used by each department or service.

Sometimes, an indirect cost pool must be formed for an indirect cost shared by only a few departments.

Example: The fire and police departments occupy one building; costs of operating this building, which are indirect costs to the fire and police departments, are allocated only to these two departments.

Q. When should I make a distinction between variable and fixed costs?

So far, we have looked at costs as either direct or indirect, depending on our ability to link them to the service being costed. It is useful also to remember that different costs change differently with increases or decreases in service levels. Using this distinction, we can classify costs as follows.

- Variable Costs
- Fixed Costs
- Stepped Costs

Variable Costs: Change directly and proportionally with the amount of service being provided.

Example: The cost of asphalt used by the Highway Department, which changes with the miles of road being paved.

Fixed Costs: Do not vary with a change in service levels.

Example: The cost of operating and maintaining the Highway Department building generally does not change with increases or decreases in miles of road paved.

Stepped Costs: Within a given level of service, they do not change, but with large increases or decreases in service, they change in relatively large amounts.

Example: The cost of equipment used in road paving does not change with small increases in miles of road paved. However, if a large number of additional miles of road are to be paved, additional equipment will have to be purchased; equipment costs will thus increase in a large single step and be fixed at a new, higher level.

Many direct costs are variable costs, primarily materials, supplies, and hourly labor costs. They are attributable to the service being provided and they vary directly with the level of service.

Example: Fuel, oil, and maintenance costs of police department vehicles are direct, variable costs. The purchase cost of the vehicles is also a direct cost, but it is fixed, because it does not change with changes in the level of service provided.

Indirect costs are often fixed or stepped. They do not change when services are expanded or contracted, unless large expansions or contractions take place.

Example: The cost of centralized payroll accounting for a library is the same whether the library is open five or seven days per week. However, if library hours are extended enough that new personnel must be hired, payroll accounting costs will rise and be fixed at a higher level.

The differences between variable, fixed, and stepped costs are important when we look at incremental and avoidable costs -- costs which change with increases or decreases in service levels.

Example: The highway department plans to pave 10 more miles of road this year than last. Variable costs will be the additional cost of hourly labor, paving materials, fuel, and equipment maintenance. If no new equipment is needed, equipment costs will be fixed; if new equipment must be purchased, this cost will be a stepped cost.

Similarly, if the highway department reduces its road paving by a small amount, only the variable costs will be avoidable. Unless the equipment used for road paving can be sold or used on other projects, its cost is fixed; that is, it will not change regardless of decreases in road paving activity.

STEP 4: USING COST INFORMATION

As stated earlier in this **Guide**, the purpose of costing is not simply to collect cost information, but to use this information to make better management and policy decisions in several areas.

- Analyzing the efficiency of municipal services
- Making budget decisions
- Setting fees for services and determining intergovernmental charges
- Choosing among alternative methods of providing services

In the following pages, we discuss how different types of costs can be used for these purposes. Remember that each costing situation is unique, and must be analyzed individually to determine which types of costs are relevant to it. The guidelines presented here are general ones designed to help local officials use their own judgment in determining which costs are applicable to their costing needs.

Analyzing the efficiency of municipal services

Service efficiency means providing a service for the lowest possible cost. Cost information is used to answer a variety of questions about service efficiency.

What factors make the cost of a service unusually high?

Example: The head of the recreation department feels that the cost of materials used in recreation programs is high relative to other program costs. Costing helps to identify and explain these costs, so that the program manager can take corrective steps, if necessary.

Why has a cost changed?

Example: The board of selectmen notices a large increase in the public works department's labor costs, and is concerned that labor productivity has dropped. A costing study reveals that the department is now doing maintenance work at schools which used to be done by school department employees. As a result, labor costs in the public works department have risen and those in the school department have dropped. The amount of work being performed has not changed.

Have unit costs changed?

Example: A town's treasurer/collector feels that the cost of issuing tax bills has risen. After collecting information on the number of bills issued and the costs of issuing them, he finds that unit cost (the cost of issuing one bill) has actually dropped, because of streamlined procedures adopted recently. Total costs have risen because of a large increase in the number of taxpayers, due to new commercial and residential development.

In analyzing service efficiency, it is important to distinguish between the efficiency and effectiveness of services. Efficiency means providing a service at the lowest possible cost, while effectiveness refers to the quality of the service and how well it is meeting its objectives.

Example: The cost of municipal water service rises dramatically in one year, raising questions about its efficiency. However, further investigation reveals that a new purification system was installed during the year which provides cleaner water. Thus, the water department is delivering a more expensive service, but one which better meets the need of citizens for pure water.

Making budget decisions

In making budget decisions, officials are interested in many of the issues of efficiency discussed above. In particular, year-to-year cost comparisons reveal changes in costs, while the breakdown between direct and indirect costs indicates which costs and departments relate directly to the service, and which are needed to support it indirectly. When changes in service levels are being considered, incremental and avoidable costs are important.

Officials may be asking a variety of costing questions when making budget decisions.

- Why has the cost of service changed from last year?
- How can I justify to voters an increase in next year's budget for a particular service?
- How much money can be saved if a particular service is reduced? How much will it cost to increase a service?

Setting fees for services and determining intergovernmental charges

In order to determine fees for municipal services, officials need to know the amount of service provided and the cost of one instance of service.

Example: The charge for one immunization by the health department is based on average unit cost, since the output and cost of this service is relatively uniform from case to case.

In contrast, the cost of building inspections varies greatly with the size and complexity of the building project. As a result, inspection fees are based on the actual cost of inspecting each project or on the dollar value of the project.

Pricing municipal services is a complex task, and we urge officials who use costing for this purpose to consult one of the books on pricing and user fees listed in the **Bibliography**. Some of the issues to be considered in setting prices are the following.

1. Statutory restrictions

State laws or local ordinances may specify the fee to be charged, place a ceiling on it, or establish a range within which the fee must be set.

Example: State law prohibits libraries from setting general user charges for library services, although fees may be set for specific services.

2. Costs to be recovered

Example: Should fees for recreation programs be set to recover all direct and indirect costs associated with them, or only the direct costs of operating the programs? Officials should keep in mind the guideline "just and equitable" when setting fees.

3. Equity

Example: Will an increase in health department fees mean that low-income and elderly citizens, who most need the department's services, will not be able to afford them? If so, a reduced fee to these citizens may be worth consideration.

4. Collection costs

Example: A decision is made to charge a landfill fee each time citizens use it. As a result, another employee must be hired to collect fees and issue receipts. The additional cost of collecting the fees may be more than the fee revenue collected.

5. Negative effects of charging for municipal services

Example: When user fees at the landfill are increased sharply, officials may notice an increase in illegal dumping.

When two or more units of governments share costs, costing helps to determine full costs and identify formulas by which costs can be divided.

Example: Four towns share a swimming pool. A cost study is conducted to determine both the direct costs of the pool and the cost of resources provided indirectly by each town. Data collected on use of the facility by residents of the four towns is used to determine the portion of costs to be paid by each local government.

Choosing among alternative methods of providing services

Avoidable and new costs are important factors in choosing among alternative methods of providing services.

Example: In considering a change from trash collection by municipal employees to collection by a private contractor, officials need to determine which costs the town will avoid and what new costs will be incurred if the contract is accepted. If avoidable costs are greater than new costs, then the contract offers financial savings to the town. If, on the other hand, avoidable costs are less than new costs, the change in service delivery does not offer financial savings.

When comparing avoidable and new costs, make sure that the costs being compared are for comparable services.

Example: A contract for trash collection may not include collection of furniture and other large items, as the existing municipal service does. If not, the contract contains a hidden cost, since the town or private citizens will have to pay separately for collection of these items.

Conclusion -- The limits to costing

Although costing is a very useful tool for municipal managers and policymakers, it is important to remember that it represents only one aspect of decision-making. Other factors also must be considered in any decision.

- Local traditions: How have services been provided in the past?
- Political acceptability: Will a change be acceptable to both providers and users of the service?
- Legal constraints: Is the change permissible under the laws of the Commonwealth?
- Employee relations: Does the municipal labor contract allow the change?

Example: A costing study shows that trash collection services could be more efficiently provided by a private contractor. However, the service has always been provided by municipal employees, and workers, taxpayers, and the head of the public works department prefer the current system of collection. Furthermore, the townwide labor contract makes layoffs very difficult. In this situation, cost information is one of several considerations to be weighed in choosing the most effective method of trash collection. The value of the cost information is that it sheds the light of objective financial analysis on a situation complicated by many political and subjective factors.

PART TWO: MASSTOWN AMBULANCE SERVICE, A CASE STUDY

STEP 1: DECIDING WHAT TO STUDY²

Assume that you are a town official in Masstown, a community of 30,000 people. The board of selectmen has asked you for answers to three questions about the town's ambulance service.

1. What is the full cost of providing ambulance service in Masstown?
2. How much of the full cost of the service is covered by revenue from fees being charged?
3. A private ambulance service has offered to take over Masstown's emergency ambulance service for \$150,000 per year. Would Masstown save money if it accepted this offer?

STEP 2: GETTING ORGANIZED

The board of selectmen has organized a group of local officials to conduct the study, including the town manager, Accountant, treasurer/collector, and fire chief. This group has decided to look at cost figures for FY1, the latest year for which complete data are available; where necessary, FY1 figures will be adjusted for estimated changes in current or future costs.

The following facts about the current ambulance service have been collected:

- Service Provided: 24-hour emergency ambulance service; 655 runs made in FY1
- Organization: part of the fire department.
- Location: Masstown's fire Station; service provided to local hospital only.
- Personnel: eight EMTs who are also trained as firefighters.
- Fee: \$120 per run (fee was set to match the base rate determined by Medicare and Blue Cross). The policy of the board of selectmen has been that ambulance fees should cover 25 percent of total costs of the service.

STEP 3: COLLECTING COST INFORMATION

Most resources used to provide this service are provided by the fire department, where the service is located. A few other town departments also provide resources:

- Treasurer/collector: bills and collects fees. On average, 70 percent of fees billed are collected.
- Town accountant: handles payroll, benefits, and insurance.
- Building Department: cleans and maintains fire station.

A number of different **Worksheets** have been used to collect cost information on the ambulance service. They show each cost, the account where the cost is found, and how it is calculated.

² For the sake of brevity, a number of simplifying assumptions about ambulance service in Masstown have been made. The importance of the Case Study is not the facts presented about Masstown and its ambulance service, but the concepts and techniques of costing, which it illustrates.

Worksheet I	<i>Direct and Indirect Service Inputs</i>	22
Worksheet IIA	<i>FY1 Personnel Costs</i>	23
Worksheet IIB	<i>FY1 Equipment and Supply Costs</i>	24
Worksheet IIC	<i>FY1 Facility Costs</i>	25
Worksheet IID	<i>FY1 Other Costs</i>	26
Worksheet III	<i>Summary of Total Costs</i>	27

Masstown Ambulance Service

WORKSHEET I: DIRECT AND INDIRECT SERVICE INPUTS

	Direct Inputs	Indirect Inputs
Personnel	Salaries and Wages Holiday, Overtime Pay Fringe Benefits Supervision by fire chief	Pensions
Equipment & supplies	Ambulance Maintenance Vehicle Supplies Ambulance Insurance Communication Equipment Service-Related Supplies	
Facilities		Capital Plant & Outlay Utilities Building Insurance Maintenance
Other	Training	Treasurer/collector: Billing & Fee Collection, Salaries & Wages Town accountant: Administration of Payroll, Benefits, & Insurance

Masstown Ambulance Service

WORKSHEET IIA: FY1 PERSONNEL COSTS

Type of Cost Name of account where cost is found	Direct Cost		Indirect Cost	
	Calculation	FY1 Cost	Calculation	FY1 Cost
1. Salaries & Wages • Permanent positions • Temporary positions	Each EMT has a different salary; total is \$162,752	\$162,752 (1a)		\$ 0 (1b)
2. Additional pay • Overtime • Other	Sum of payments is \$3,820	3,820 (2a)		0 (2b)
3. Fringe Benefits	Benefits for 8 EMTs total \$29,295	29,295 (3a)		0 (3b)
4. Supervision • Salaries & Wages • Fringe benefits	Fire chief estimates 15% of his time is spent supervising ambulance personnel. Chief's yearly salary and fringe benefits total \$42,900. 15% of \$42,900 = \$6,435.	6,435 (4a)		0 (4b)
5. Pensions		0 (5a)	Pension costs for ambulance service are apportioned based on the proportion of ambulance-related salaries (\$162,752, Line a) to the salaries of all town employees participating in the retirement system (\$4,285,800). This ratio, 3.8%, is then applied to the FY1 pension appropriation of \$600,000. 3.8% of \$600,000	22,785 (5b)
6. Other Personnel Costs		0 (6a)		0 (6b)
7. Total Personnel		\$ 202,302 (7a)		\$ 22,785 (7b)
8. Grand Total, Personnel Costs (Line 7a + Line 7b)				\$ 225,087 (8)

*Masstown Ambulance Service***WORKSHEET IIB: FY1 EQUIPMENT & SUPPLY COSTS**

Type of Cost Name of account where cost is found	Direct Cost		Indirect Cost	
	Calculation	FY1 Cost	Calculation	FY1 Cost
1. Equipment capital cost • Capital Items • Principal & interest payments	Ambulance was bought 2 years ago for \$40,000, and is expected to last 5 years. $\$40,000 \div 5 = \$8,000$	\$ 8,000 (1a)		\$ 0 (1b)
2. Equipment & Maintenance • Repairs & maintenance	4 repairs in FY1: \$252, \$635, \$228, and \$430. Total of 4 bills = \$1,545	1,545 (2a)		0 (2b)
3. Equipment Supplies	1,883 gallons of gasoline used at average price of \$1.08/gallon. 26 quarts of oil used at \$1.00/quart. $1,883 \times \$1.08 = \$2,034$ and $26 \times \$1.00 = \26 . Sum is \$2,060	2,060 (3a)		0 (3b)
4. Equipment Insurance • Insurance premiums	Town accountant maintains policy; \$1,100 premium.	1,100 (4a)		0 (4b)
5. Service-related Supplies	Blankets \$95, oxygen \$900, medical supplies \$250. Total of 3 items is 1,245	1,245 (5a)		0 (5b)
6. Other equipment & supply costs	Fire department has \$750 yearly contract to maintain communication equipment for ambulance service.	750 (6a)		0 (6b)
Total Equipment & Supplies		\$ 14,700 (7a)		\$ 0 (7b)
7. Grand Total, Equipment & Supply Costs (Line 7a + Line 7b)				\$ 14,700 (8)

Masstown Ambulance Service

WORKSHEET IIC: FY1 FACILITY COSTS

Type of Cost Name of account where cost is found	Direct Cost Calculation FY1 Cost	Indirect Cost Calculation FY1 Cost
1. Capital Plant & Outlay ³ • Land • Buildings • Improvements	\$0 (1a)	Masstown makes \$100,000 principal payments on the fire station; FY1 interest costs are \$20,000. Building has 90,000 square feet, of which ambulance service uses 25%. $\$100,000 + \$20,000 = \$120,000 \times 25\% = \$30,000$
2. Utilities • Energy (heat & electricity) • Non-energy (telephone and water)	0 (2a)	Utility charges for fire Station total \$1,740: \$502 electricity, \$926 heat, \$312 telephone, no water costs are charged to ambulance service because fire department is responsible for essentially all water usage in the fire Station. Ambulance service is allocated 25% of the utility charges. $\$1,740 \times 25\% = 435$.
3. Building Insurance • Insurance premiums	0 (3a)	Cost of 2-year policy is \$11,290; 25% of annual cost is allocated to ambulance service. $\$11,290 \div 2 = \$5,645 \times 25\% = 1,411$
4. Building Maintenance • Building repairs and maintenance • Custodial & housekeeping • Groundskeeping	0 (4a)	Central building Department estimates 210 hours spent on fire station, at hourly cost of \$6.90. \$235 spent on cleaning supplies. 25% of costs are allocated to ambulance service. $210 \times \$6.90 = \$1,449$; $\$1,449 + \$235 = \$1,684$ (total maintenance cost) $\times 25\% = \$421$
5. Other Facility Costs	0 (5a)	0 (5b)
6. Total Facility	\$ 0 (6a)	\$ 32,267 (6b)
7. Grand Total, Facility Costs (Line 6a + Line 6b)		\$ 32,267 (7)

³ Capital plant includes assets (building, streets, and major equipment) used and paid for over a number of years. Capital outlay includes assets used longer than one year, but purchased in one year.

Masstown Ambulance Service

WORKSHEET IID: FY1 OTHER COSTS

Type of Cost Name of account where cost is found	Direct Cost		Indirect Cost	
	Calculation	FY1 Cost	Calculation	FY1 Cost
1. Assessments • County • State • Other		\$0 (1a)		\$ 0 (1b)
2. Education • Training • Tuition reimbursement • Dues & subscriptions	EMT refresher course; trainer was paid \$1,150	1,150 (2a)		0 (2b)
3. Travel • Instate • Out of state		0 (3a)		0 (3b)
4. Indirect Operating Costs		0 (4a)	Pool of indirect operating costs includes billing and collection of fees by treasurer/collector and administration of payroll, benefits, and insurance by town accountant. Pooled costs of these departments include all direct costs plus their share of indirect costs. Pooled costs are \$112,530 treasurer/collector + \$98,760 town accountant = \$211,290. Cost pool is allocated to services according to each service's share of the town's total direct personnel cost. Ambulance service's total direct personnel cost of \$202,302 (Line 7a, Worksheet IIA) is 2.5% of town's total direct personnel costs. Therefore, ambulance service is allocated 2.5% of indirect operating cost pool. $2.5\% \text{ of } \$211,290 = 5,282$	5,282 (4b)
5. Indirect Administrative Costs		0 (5a)	Masstown has chosen not to allocate indirect administrative costs	0 (5b)
6. Other Costs		0 (6a)		0 (6b)
7. Total Other		\$ 1,150 (7a)		\$ 5,282 (7b)
8. Grand Total, Other Costs (Line 7a + Line 7b)				\$ 6,432 (8)

Masstown Ambulance Service

WORKSHEET III: SUMMARY OF TOTAL COSTS

	Direct Costs	Indirect Costs	Sum of Direct & Indirect Costs
1. Total Personnel Costs (Line 7a, 7b, 8 Worksheet IIA)	\$ 202,302 (1a)	\$22,785 (1b)	\$ 225,087 (1c)
2. Total Equipment & Supply Costs (Lines 7a, 7b, 8, Worksheet IIB)	14,700 (2a)	0 (2b)	14,700 (2c)
3. Total Facility Costs (Lines 6a, 6b, 7, Worksheet IIC)	0 (3a)	32,267 (3b)	32,267 (3c)
4. Total Other Costs (Lines 7a, 7b, 8, Worksheet IID)	1,150 (4a)	5,282 (4b)	6,432 (4c)
5. Total Costs	\$ 218,152 (5a)	\$ 60,334 (5b)	\$ 278,486 (5c)
6. Less Revenues from fees 655 runs x \$120 fee/run = \$78,600 \$78,600 x 70% (average collection rate) = \$55,020			\$ 55,060 (6)
7. Net Cost Full Cost (Line 5c) – Revenue from fees (Line 6)			\$ 223,466 (7)

STEP 4: USING COST INFORMATION

Based on the cost information collected above, we can answer the questions raised by the board of selectmen.

1. What is the full cost of providing ambulance service to Masstown?

For FY1, all direct costs plus a reasonable portion of indirect costs total \$278,486 (**Line 5c, Worksheet III**). When fee revenue of \$55,020 (**Line 6, Worksheet III**) is deducted, the net cost of service is \$223,466 (**Line 7, Worksheet III**).

2. How much of the cost of the service is covered by the fee being charged?

There are a number of ways to analyze this relationship between costs and fees. Here, we want to look at the percentage of total costs covered by fees:

- Fee Revenue: \$55,020 (**Line 6, Worksheet III**)
- Full Cost: \$278,486 (**Line 5C, Worksheet III**)
- Percentage of Total Costs Covered by Fees: **19.8%** ($\$55,020 \div \$278,486$)

The policy set by Masstown's board of selectmen has been that ambulance fees should cover 25 percent of total costs of the service. Whether the fee should be raised or the policy changed is a choice the board of selectmen can make based on the information provided by our costing exercise.

3. Would Masstown save money by contracting out its ambulance service for \$150,000 per year, beginning in FY3? (Masstown would continue to set the fee at \$120/run. The private contractor would bill and keep all revenues from fees.)

To answer this question, we need to determine Masstown's avoidable costs, that is, cost savings if Masstown halts provision of ambulance service by town employees. These avoidable costs are then compared with the new costs to Masstown if it accepts the private contract. Three steps are necessary to make this comparison:

First Step: Estimate the FY3 cost of ambulance service if provided by town employees, using the following information about cost and service trends in Masstown:

- Personnel costs are estimated to rise 5.5 percent per year from FY1 to FY3.
- Some costs are not expected to change over the FY1-3 period; these include building debt service, equipment capital costs, the guaranteed maintenance contract on ambulance communication equipment, and training.
- All other costs are estimated to rise by 4 percent per year from FY1 to FY3.
- The number of ambulance runs is rising by about 30 each year. In FY3, 715 runs are projected, a 9 percent increase over the 655 runs made in FY1. Costs which will rise

proportionally with this increase in service are equipment maintenance, equipment supplies, and service-related supplies.

The **Exhibits** on pages 30-34 calculate projected FY3 costs.

Exhibit IA	<i>Projected FY3 Personnel Costs</i>	30
Exhibit IB	<i>Projected FY3 Equipment and Supply Costs</i>	31
Exhibit IC	<i>Projected FY3 Facility Costs</i>	32
Exhibit ID	<i>Projected FY3 Other Costs</i>	33
Exhibit II	<i>Projected FY3 Total Costs</i>	34

Second Step: Determine FY3 costs which are avoidable. These avoidable costs represent the savings Masstown would achieve if it halted provision of ambulance service by town employees.

Exhibit IIIA	<i>FY3 Avoidable Personnel Costs</i>	35
Exhibit IIIB	<i>FY3 Avoidable Equipment and Supply Costs</i>	36
Exhibit IIIC	<i>FY3 Avoidable Facility Costs</i>	37
Exhibit IIID	<i>FY3 Avoidable Other Costs</i>	38
Exhibit IV	<i>Total FY3 Avoidable Costs</i>	39

Third Step: Compare avoidable costs with the new cost to Masstown of accepting the private contract. The new cost of accepting the contract includes both the amount of the contract and the foregone revenues from ambulance fees which Masstown would no longer receive. If the savings to Masstown (its avoidable costs) are **less** than the new cost of accepting the private contract, then the contract **does not** offer net savings to Masstown. On the other hand, if savings (avoidable costs) are **greater** than the cost of accepting the private contract, then the contract **does** save money for Masstown.

This comparison is calculated in **Exhibit V**:

Exhibit V	<i>Net Additional Cost to Masstown if Private Contract is Accepted</i>	39
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Masstown Ambulance Service**EXHIBIT IA: PROJECTED FY3 PERSONNEL COSTS**

FY1	Direct Cost		Indirect Cost	
	Adjusted for FY3	Projected FY3 Cost	Adjusted for FY3	Projected FY3 Cost
1. Salaries & Wages \$162,752 (Line 1a, Worksheet IIA)	Up 5.5%/year	\$188,147 (1a)		\$ 0 (1b)
	\$162,752 x 1.055 x 1.055			
2. Additional pay \$3,820 (Line 2a, Worksheet IIA)	Up 5.5%/year	4,252(2a)		0 (2b)
	\$3,820 x 1.055 x 1.055			
3. Fringe Benefits \$29,295 (Line 3a, Worksheet IIA)	Up 5.5%/year	32,606 (3a)		0 (3b)
	\$29,295 x 1.055 x 1.055			
4. Supervision \$6,435 (Line 4a, Worksheet IIA)	Up 5.5%/year	7,162 (4a)		0 (4b)
	\$6,435 x 1.055 x 1.055			
5. Pensions \$22,785 (Line 5b, Worksheet IIA)		0 (5a)	Up 5.5%/year	25,360 (5b)
			\$22,785 x 1.055 x 1.055	
6. Other Personnel Costs		0 (6a)		0 (6b)
7. Total Personnel		\$ 225,167 (7a)		\$ 25,360 (7b)
8. Grand Total, Personnel Costs (Line 7a + Line 7b)				\$ 250,527 (8)

Masstown Ambulance Service**EXHIBIT IB: PROJECTED FY3 EQUIPMENT & SUPPLY COSTS**

FY1	Direct Cost		Indirect Cost	
	Adjusted for FY3	Projected FY3 Cost	Adjusted for FY3	Projected FY3 Cost
1. Equipment capital costs \$8,000 (Line 1a, Worksheet IIB)	Unchanged	\$8,000 (1a)		\$ 0 (1b)
2. Equipment & Maintenance \$1,545 (Line 2a, Worksheet IIB)	Up 9% due to increase in service; up 4%/year due to inflation. $\$1,545 \times 1.09 \times 1.04 \times 1.04$	1,821 (2a)		0 (2b)
3. Equipment Supplies \$2,060 (Line 3a, Worksheet IIB)	Up 9% due to increase in service; up 4%/year due to inflation. $\$2,060 \times 1.09 \times 1.04 \times 1.04$	2,429 (3a)		0 (3b)
4. Equipment Insurance \$1,100 (Line 4a, Worksheet IIB)	Up 4%/year $\$1,100 \times 1.04 \times 1.04$	1,190 (4a)		0 (4b)
5. Service-related Supplies \$1,245 (Line 5a, Worksheet IIB)	Up 9% due to increase in service; up 4%/year due to inflation. $\$1,245 \times 1.09 \times 1.04 \times 1.04$	1,468 (5a)		0 (5b)
6. Other Equipment & Supply Costs \$750 (Line 6a, Worksheet IIB)	Unchanged because costs of maintenance contract is guaranteed	750 (6a)		0 (6b)
7. Total Equipment & Supplies		\$ 15,658 (7a)		\$ 0 (7b)
8. Grand Total, Equipment & Supplies (Line 7a + Line 7b)				\$ 15,658 (8)

Masstown Ambulance Service**EXHIBIT IC: PROJECTED FY3 FACILITY COSTS**

FY1	Direct Cost		Indirect Cost	
	Adjusted for FY3	Projected FY3 Cost	Adjusted for FY3	Projected FY3 Cost
1.Capital Plant & Outlay \$30,000 (Line 1b, Worksheet IIC)		\$0 (1a)	Unchanged	\$ 30,000 (1b)
2.Utilities \$435 (Line 2b, Worksheet IIC)		0 (2a)	Up 4%/year \$435 x 1.04 x 1.04	470 (2b)
3.Building Insurance \$1,411 (Line 3b, Worksheet IIC)		0 (3a)	Up 4%/year \$1,411 x 1.04 x 1.04	1,526 (3b)
4.Building Maintenance \$421 (Line 4b, Worksheet IIC)		0 (4a)	Since most of this cost is for personnel, 5.5% yearly increase is estimated \$421 x 1.055 x 1.055	469 (4b)
5.Other Facility Costs		0 (5a)		0 (5b)
6.Total Facility Costs		\$ 0 (6a)		\$ 32,465 (6b)
7.Grand Total, Facility Costs (Line 6a + Line 6b)				\$ 32,465 (7)

Masstown Ambulance Service**EXHIBIT ID: PROJECTED FY3 OTHER COSTS**

FY1	Direct Cost		Indirect Cost	
	Adjusted for FY3	Projected FY3 Cost	Adjusted for FY3	Projected FY3 Cost
1. Assessments		\$0 (1a)		\$ 0 (1b)
2. Education \$1,150 (Line 2a, Worksheet IID)		1,150 (2a)		0 (2b)
3. Travel		0 (3a)		0 (3b)
4. Indirect Operating Costs \$5,282 (Line 4b, Worksheet IID)		0 (4a)	Since most of this cost is for personnel, 5.5% yearly increase is estimated \$5,282 x 1.055 x 1.055	5,879 (4b)
5. Indirect Administrative Costs		0 (5a)		0 (5b)
6. Other Costs		0 (6a)		0 (6b)
7. Total Other Costs		\$ 1,150 (7a)		\$ 5,879 (7b)
8. Grand Total, Other Costs (Line 7a + Line 7b)				\$ 7,029 (8)

Masstown Ambulance Service**EXHIBIT II: PROJECTED FY3 TOTAL COSTS**

	Direct Costs	Indirect Costs	Sum of Direct & Indirect Costs
1. Total Personnel Costs (Line 7a, 7b, 8 Exhibit IA)	\$ 225,167 (1a)	\$25,360 (1b)	\$ 250,527 (1c)
2. Total Equipment & Supply Costs (Lines 7a, 7b, 8, Exhibit IB)	15,658 (2a)	0 (2b)	15,658 (2c)
3. Total Facility Costs (Lines 6a, 6b, 7, Exhibit IC)	0 (3a)	32,465 (3b)	32,465 (3c)
4. Total Other Costs (Lines 7a, 7b, 8, Exhibit ID)	1,150 (4a)	5,879 (4b)	7,029 (4c)
5. Total Costs	\$ 241,975 (5a)	\$ 63,704 (5b)	\$ 305,679 (5c)
6. Less Revenues from fees 715 runs estimated for FY3 x \$120 fee/run = \$85,800 \$85,800 x 70% (average collection rate) = \$60,060			\$ 60,060 (6)
7. Net Cost Full Cost (Line 5c) – Revenue from fees (Line 6)			\$ 245,619 (7)

Masstown Ambulance Service**EXHIBIT IIIA: FY3 AVOIDABLE PERSONNEL COSTS⁴**

Projected FY3 Cost	Calculation of Avoidable Cost	Avoidable FY3 Cost
1.Salaries & Wages \$181,147 (Line 1a, Exhibit IA)	Termination of 6 EMTs will save \$136,900	\$ 136,900 (1)
2.Additional pay \$4,252 (Line 2a, Exhibit IA)	Termination of 6 EMTs will save \$3,196	3,196 (2)
3.Fringe Benefits \$32,606 (Line 3a, Exhibit IA)	Termination of 6 EMTs will save \$24,470	24,470 (3)
4.Supervision \$7,162 (Line 4a, Exhibit IA)	None is avoidable	0 (4)
5.Pensions \$25,360 (Line 5b, Exhibit IA)	Termination of personnel will reduce pension costs by \$19,166	19,166 (5)
6.Other Personnel Costs	Terminated personnel will be eligible for unemployment compensation; accountant estimates likely payments to be \$7,800. Avoidable costs are reduced by this amount.	- 7,800 (6)
7.Total Avoidable Personnel Costs		\$ 175,932 (7)

⁴ Accepting the contract will result in termination of 6 (or 75 percent) of the 8 EMTs. Because the EMTs are at different levels of the pay scale, savings resulting from the termination will not be precisely 75 percent of the total FY3 personnel costs. Avoidable personnel costs in this Exhibit are estimates by the accountant.

Masstown Ambulance Service**EXHIBIT IIIB: FY3 AVOIDABLE EQUIPMENT & SUPPLY COSTS**

Projected FY3 Cost	Calculation of Avoidable Cost	Avoidable FY3 Cost
1. Equipment capital costs \$8,000 (Line 1a, Exhibit IB)	Vehicle can be sold for \$6,000; this amount is an average cost.	\$ 6,000 (1)
2. Equipment & Maintenance \$1,821 (Line 2a, Exhibit IB)	100 percent avoidable	1,821 (2)
3. Equipment Supplies \$2,429 (Line 3a, Exhibit IB)	100 percent avoidable	2,429 (3)
4. Equipment Insurance \$1,190 (Line 4a, Exhibit IB)	100 percent avoidable	1,190 (4)
5. Service-related Supplies \$1,468 (Line 5a, Exhibit IB)	100 percent avoidable	1,468 (5)
6. Other Equipment & Supply Costs \$750 (Line 6a, Exhibit IB)	100 percent avoidable	750 (6)
7. Total Avoidable Equipment & Supply Costs		\$ 13,658 (7)

Masstown Ambulance Service**EXHIBIT IIIC: FY3 AVOIDABLE FACILITY COSTS**

Projected FY3 Cost	Calculation of Avoidable Cost	Avoidable FY3 Cost
1.Capital Plant & Outlay \$30,000 (Line 1b, Exhibit IC)	None is avoidable	\$ 0 (1)
2.Utilities \$470 (Line 2b, Exhibit IC)	Building department estimates that only 50 percent of the ambulance's share of this cost will be avoided. 50% x \$470	235 (2)
3.Building Insurance \$1,526 (Line 3b, Exhibit IC)	None is avoidable	0 (3)
4.Building Maintenance \$469 (Line 4b, Exhibit IC)	Building department estimates that only 50 percent of the ambulance's share of this cost will be avoided. 50% x \$469	235 (4)
5.Other Facility Costs		0 (5)
6.Total Avoidable Facility Costs		\$ 470 (6)

Masstown Ambulance Service**EXHIBIT IIID: FY3 AVOIDABLE OTHER COSTS**

Projected FY3 Cost	Calculation of Avoidable Cost	Avoidable FY3 Cost
1. Assessments		\$ 0 (1)
2. Education \$1,150 (Line 2a, Exhibit ID)	100 percent is avoidable	1,150 (2)
3. Travel		0 (3)
4. Indirect Operating Costs \$5,282 (Line 4b, Exhibit ID)	Because indirect operating costs for ambulance service are a small percentage of the costs in the treasurer/collector's and accountant's offices, their associated costs will not change. Therefore, none of this cost is avoidable.	0 (4)
5. Indirect Administrative Costs		0 (5)
6. Other Costs		0 (6)
7. Total Avoidable Other Costs		\$ 1,150 (7)

Masstown Ambulance Service**EXHIBIT IV: TOTAL FY3 AVOIDABLE COSTS**

1. Total Personnel Costs (Line 7, Exhibit IIIA)	\$ 175,932 (1)
2. Total Equipment & Supply Costs (Lines 7, Exhibit IIIB)	13,658 (2)
3. Total Facility Costs (Lines 6, Exhibit IIIC)	470 (3)
4. Total Other Costs (Lines 7, Exhibit IIID)	1,150 (4)
5. Total Avoidable Costs	\$ 191,210 (5)

EXHIBIT V: NET ADDITIONAL COST TO MASSTOWN IF PRIVATE CONTRACT IS ACCEPTED

1. Cost to Masstown if it halts provision of ambulance service by town employees	
Cost of contract	\$150,000
Revenue foregone by Masstown (Line 6, Exhibit II)	60,060
Total Cost to Masstown	210,060 (1)
2. Less:	191,210 (2)
Savings to Masstown (Avoidable Costs) if it stops provision of ambulance by town employees (Line 5, Exhibit IV)	
3. Net additional cost to Masstown for contracting out it ambulance service (Line 1- Line 2)	\$ 18,850 (3)

Conclusion: It will be approximately \$18,850 more expensive to Masstown if it contracts out its ambulance service at \$150,000 per year.

BIBLIOGRAPHY

Two publications have been partially helpful in developing this Workbook:

Costing and Pricing Municipal Services, by the Commonwealth of Massachusetts. Boston: Massachusetts Executive Office of Communities and Development, 1982.

Costing Governmental Services: A Guide For Decision Making, by Joseph T. Kelley. Washington, D. C.: Governmental Finance Research Center, 1984.

Local officials who wish to explore costing further may wish to consult these documents or ones listed below.

Paul B. Downing. ***User Charges and Service Fees***. Tallahassee: Florida State University, 1980.

Eva C. Galambos and Arthur F. Schreiber. ***Making Sense Out of Dollars: Economic Analysis For Local Government***. Washington, D. C.: National League of Cities, 1978.

Anthony J. Gambino. ***The Make-or-Buy Decision***. New York: National Association of Accountants and Society of Management Accountants of Canada, 1980.

John Tepper Marlin, Editor. ***Contracting Municipal Services: A Guide for Purchase from the Private Sector***. New York: John Wiley & Sons, 1984.

Richard Schramm and Duane Wilcox. ***Cost-Benefit Analysis for Local Governments***. Ithaca: Local Government Program, Cornell University, 1981.

H. Edward Wesemann. ***Contracting City Services***. Pittsburgh: Innovations Press, 1981.