TOOL 5. HOW TO IMPLEMENT SOLID WASTE MANAGEMENT PROGRAMS

INTRODUCTION

Once alternatives to meet waste management objectives have been evaluated and selected, the SWM planner is ready to develop the SWM plan and implement the SWM system in the planning area. If the selected SWM alternatives include new waste management facilities/operations, choices must be made in several areas necessary for system implementation, as noted in Tool 1. This tool provides a detailed discussion of options for implementing waste management systems. The following issues are addressed:

- Implementing entity(s)
- Ownership
- Procurement and operation
- Financing
- Public risk
- Method of payment for services
- Implementation scheduling
- Public education and participation.

•After selection of alternatives the SW planner is ready to develop and implement the SW plan.

IMPLEMENTATION OPTIONS

Implementing Entity Selection

When new SWM services/options are to be provided, some entity must act as the implementing, or responsible, agent. Where several communities or areas are to be part of a regional SWM system, choosing the implementing entity is more difficult. A single community in the region could take the lead and act as the implementing agent and provider of services. However, this would require contractual agreements from the other local governments in the region to use these services. Long-term assurances would be needed from participating cities/areas to support new waste management programs and facilities.

•Some entity must act as the implementing agent when new SWM services are to be provided.

Alternatively, a regional SWM system could be led by a regional SWM agency. Creating an implementing agency in a SWM region would require the signing of an interlocal agreement between the participating governments. The agreement would need to clearly establish the SWM agency's duties, powers, funding management, and staffing. To be effective, the SWM agency would need sufficient authority to implement the recommended SWM system.

•A regional SWM agency would need sufficient authority for implementation.

The necessary powers of the agency might include the following:

- to operate, or cause to be operated, solid waste management services and facilities
- to enter into contracts
- to levy fees for payment of services
- to borrow money and issue evidence of indebtedness for the purpose of financing services and facilities
- to regulate the flow of MSW to services and facilities.

Ownership Arrangements

SWM facilities can be privately owned, through a private corporation, partnership, or sole proprietorship. They can also be publicly owned through a municipal government unit, authority, or agency. The choice between public or private ownership affects financing choices as well as options for procurement and operation. Features of solid waste management projects under public versus private ownership are shown in Table 5-1.

•The choice between public or private ownership affects financing choices and options for procurement and operation.

In years past, private ownership of capital-intensive SWM management facilities was often selected to avoid public agency involvement and risk in an unfamiliar area. In addition, private ownership tax benefits were much larger prior to the Tax Reform Act of 1986. As a result, private ownership was often judged to result in a lower cost project.

Table 5-1

Features of Public Versus Private Ownership of Solid Waste Management Facilities

	Public Ownership	Private Ownership
Procurement Options	Architectural & Engineering (A/E) Turnkey Full service	Full service
Operation	Public, typically with A/E Public/private with turnkey Private with full service	Private
Financing Options	GO bonds GPB bonds PABs Municipal service agreement bonds Taxable municipal bonds Traditional loans Federal/state grants Public funds	Private activity bonds Taxable bonds Traditional loans Private equity
Public Risk	Similar*	
Implementation Time	Less than with private ownership	

* Applies primarily to facilities/systems financed with large bond issues.
Source: Franklin Associates, Ltd.

Currently, public ownership of highly capitalized waste management facilities is frequently recommended as the most practical and cost-effective approach. Publicly owned projects can require less time to finance and implement and may involve little, if any, increased public risk. Comparisons of risk allocation between the public and private sectors in a solid waste project suggest that ownership is largely irrelevant. Tax-exempt debt financing of solid waste projects is often easier to obtain with public ownership and is another reason why public ownership is used more often than in the past.

•Publicly owned projects can require less time to finance and implement.

Procurement and Operating Arrangements

The three basic forms of procurement used for solid waste management projects are:

- Architectural/Engineering (A/E)
- Turnkey
- Full service.

Most public facilities are built using the A/E procurement method. In this approach, a consulting engineer is retained to prepare the facility design and a contractor is hired through a bidding process to build the facility. The facility is publicly owned and in most cases, publicly operated, as well.

•Most public facilities are built using the A/E procurement method.

With a turnkey procurement, a single contractor is responsible for both designing and building the facility. The completed facility usually involves public ownership, but may be either publicly or privately operated. The turnkey contractor, by virtue of being familiar with the facility design and construction, is often hired to operate the facility.

•In full service procurement, one private entity is responsible for design, construction, and operation.

In full service procurement, one private entity accepts project responsibility for design, construction, and operation. This type of procurement is usually considered mandatory for private ownership of a capital intensive waste

management facility, but it may be used with public ownership as well.

Most SWM facility or system procurements follow one of the three options described above or close variations thereof. While any of these options can be used with public ownership, full service is usually the only acceptable procurement method for private ownership.

- **Any of the procurement and operating options can be used with public ownership.**

Financing Methods

Financing the capital expenditures for SWM facilities can be a major issue in implementing SWM systems. Several alternatives for financing are available. This section describes some of the more prominent options and provides information on their potential applicability. Not all of the financing options described are available, or appropriate, for every financing need. Also, it is common for a combination of options to be used in financing a SWM project. Exhibit 5-1 lists some of the financing methods typically used to underwrite SWM facilities.

- **It is common for a combination of options to be used in financing a SWM project.**

- **Tax-exempt bonds are frequently used to obtain lower-interest financing.**

Public Risk

A community will always be in a position of risk when implementing a SWM system. The level of risk varies depending upon the system chosen. The risks associated with SWM include:

- Financial
- Legal
- Health/environmental
- Composition and quantity of the solid waste stream
- Technical performance of equipment and facilities
- Changes in federal and state legislation.

- **The level of public risk depends upon the SWM system.**

Risks can be minimized through financing and contractual agreements. Risk sharing through contractual agreements with other public or

Exhibit 5-1

Methods of Financing Capital Costs

Private Equity:

A privately-owned facility may be financed in part or in total with the owner's cash. The owner may be the vendor who builds and operates the facility, or a third party who provides equity in anticipation of a competitive return on his/her investment. A private owner may be allowed the tax benefit of an accelerated depreciation schedule on the initial value of the facility and will retain the residual value of the facility after any debt is retired.

In the U.S., privately-owned SWM facilities are frequently financed with a combination of owner equity and tax-exempt project revenue bonds. The equity is often used for that portion of a facility that doesn't qualify for tax-exempt debt. In other cases, SWM facilities are financed entirely by owner equity. This is often the choice for less capital-intensive operations such as small RPF's.

Traditional Loans:

SWM facilities may be financed with traditional loans from lending institutions. Short-term loans covering construction of a project are generally available from commercial banks, finance companies, and thrifts. Long-term financing needed after a project becomes operational may require other lenders such as insurance companies and pension funds.

Traditional loans can be used to finance SWM projects where tax-exempt financing is not readily available. Owner equity is usually required to supplement traditional loans as part of the loan collateral. Traditional loan financing is more commonly used with private-ownership projects.

Tax-exempt Bonds:

Tax-exempt bonds can be issued by a governmental agency and represent an alternative to taxable debt on some SWM projects. Since the interest paid on funds raised from these bonds may be exempt from federal taxes (and usually state taxes in the state where issued), the interest rate will be lower than that on taxable bonds. General obligation (GO) bonds, municipal service agreement bonds, and project revenue bonds are types of tax-exempt bonds used in financing solid waste projects.

General Obligation (GO) Bonds:

With public ownership and voter approval, GO bonds may be used by local governments to finance the capital costs of SWM projects. The full faith and credit and taxing power of the local government is pledged as security on the bonds. As a result, GO bonds are considered the most secure form of debt which, coupled with their tax-exempt status, results in the lowest interest rate on a project. However, the availability of other financing mechanisms (offering less public risk) and the need to preserve a community's GO debt capacity have resulted in minimal use of GO bonds for solid waste projects.

Municipal Service Agreement Bonds:

These bonds are similar to GO bonds in that they are ultimately secured by taxes. Still, municipal service agreement bonds are usually not as secure as GO bonds for the following reasons: they are more likely to be tied to the success or failure of the project, and they do not have the local government's unlimited taxing power behind them. The agreement behind the bonds typically includes a pledge of revenues based upon a tip fee formula and a guaranteed minimum tonnage of waste. However, the risk of project nonperformance is often assumed at least in part by the vender/operator. This provides less security to municipal service agreement bondholders than GO bondholders whose bonds are covered by tax revenues regardless of project success or failure.

Methods of Financing Capital Costs

Project Revenue Bonds:

Revenue bonds are also tax-exempt, but not as secure as GO bonds (or even municipal service agreement bonds) and, therefore, carry higher interest rates. Revenue bonds are largely secured by the revenues generated by the project they are used to finance. Other guarantees, including a project mortgage, may be pledged as well, but the credit and taxing power of a local government is not included.

In the U.S., two types of project revenue bonds are available: government purpose bonds (GPBs) and private activity bonds (PABs). The use of GPBs in SWM projects requires public ownership and places strict limits on private-sector involvement. However, GPBs can sometimes be beneficial in financing publicly-owned and operated projects.

PABs are also subject to restrictions, but can be used with either public or private ownership as well as long-term private operation of a SWM project. PABs are the only source of tax-exempt financing for privately-owned projects. However, privately-owned projects using PABs must compete for a portion of a state's annual PAB allotment, which is equal to $50 multiplied by the state's population or $150 million -- whichever is greater.

Publicly-owned projects are exempt from the state allocation cap on PAB use. This results in more public ownership of SWM projects as a means of obtaining tax-exempt financing. PABs cannot be used for certain SWM project costs, such as the energy generating equipment in a WTE facility. This factor and the demand for equity to increase debt security usually results in PABs being used in conjunction with other funds to finance solid waste projects. GPBs usually carry a lower interest rate than PABs because PAB interest is included in calculations of alternative minimum tax for individuals and corporations.

Taxable Municipal Bonds:

Taxable bonds—in particular taxable municipal bonds (TMBs)—can be used for complete or partial financing of a SWM project. TMBs may be used to finance costs not qualifying for PAB financing in both publicly- and privately-owned projects. TMBs are sometimes substituted for PABs in privately owned projects when sufficient tax-exempt bond allocation for private use is not available. Although this results in paying higher interest rates, TMBs allow a private owner more favorable depreciation periods (for tax purposes) on solid waste equipment. This has the effect of, at least, partially offsetting the higher interest costs.

Public Funds:

Public funds are typically available to finance capital expenditures on projects that are less capital-intensive or portions of projects that do not qualify for PABs. MRFs and composting operation are examples of solid waste facilities that might be financed in total with public funds. Both have lower capital costs than WTE facilities. In addition, the uncertainty of markets for recyclables makes debt financing of recycling operations more difficult.

Federal/State Grants and Loans:

Federal or state money has periodically become available for SWM research or demonstration projects. A local funding match at some level may be required.

private agencies/entities is usually decided upon early in the implementation process. Public or private ownership often has little bearing on the allocation of risk. Public perception about risk can influence design, operating, and financial decisions. Public outreach on the actual risks associated with SWM is therefore critical.

- **Public outreach on the actual risks associated with SWM is critical.**

Payment Methods

Paying for SWM services can be accomplished either through taxes or user fees. The options within each of these basic payment methods are described below.

Taxes

Communities have often paid for household SWM services with general tax funds. As competition for tax revenue increases and SWM services become more complex and expensive, other sources of SWM funding are being sought. However, tax revenues are still a major mechanism for funding SWM.

- **Tax revenues are still a major mechanism for funding SWM.**

Property taxes have traditionally been used to cover residential SWM collection and disposal. These taxes are simple to administer and the homeowner is not bothered with a separate SWM billing. A disadvantage of this method is that SWM services must compete with other municipal programs for available dollars. Also, because the citizen does not perceive the cost associated with SWM, there is little incentive for reducing solid waste generation.

- **SWM can be funded through property, utility, or sales taxes or a special tax levy.**

Utilities are commonly subject to a municipal tax. SWM service charges can be added to an existing utility tax. This tax can usually be imposed by ordinance instead of by referendum.

SWM can also be funded through sales taxes; however, the use of new sales taxes may require voter approval. As with the use of property taxes, a household may not recognize any cost for SWM

with this form of payment since no bill for the service is received.

Some states allow communities or counties to levy special taxes for certain services, such as SWM. The amount of a special tax levy is usually limited, though, and the SWM system may have to compete with other projects for special tax levy funds. In Wyoming, the maximum allowable levy is 3 mills per dollar of the assessed valuation of a defined solid waste disposal district. After approval by the electorate, the commissioners set the actual levy (i.e., 1 mill, 1.5 mill, ect.) .

• Special tax levies are usually limited.

User Fees

User fees are another means of paying for the cost of SWM services. These fees can be established on the basis of actual costs to collect, transport, process, and dispose of solid waste. Household user fees can be assessed at a flat (uniform) rate per household or at a variable rate, reflecting the service used.

• With uniform rate user fees, all households are charged the same fee.

Under a uniform rate user fee, each household is charged a flat fee for SWM service. For example, the user fee for curbside collection of household refuse would be the same for each household in a service area regardless of the variability in household quantities collected. The cost of other services, such as curbside collection of recyclables, would also be shared equally by all households in the service area. The simplicity of this system is an advantage for billing purposes, and it is the least costly to administer. However, the flat rate fee is often criticized as unfair because some households generate more SW than others.

Under a variable rate fee system, fees are calculated by charging households according to quantities of waste generated and collected. Collection charges could be calculated by charging for each container or bag of refuse collected, or imposing a minimum charge covering collection of a given number of containers or bags plus an extra charge for each additional container or bag.

• Under a variable rate fee system, households pay according to the quantity generated.

In addition to this volume-based fee system, some areas have used weight-based charges. The volume-based system is more common, but requires a way to collect fees based on the number of bags or containers each household sets out for collection. Specially-marked containers or bags or the use of stickers or tags will be needed with a volume-based fee system. Some communities use volume- or weight-based fees to encourage participation in separate recyclables collection, which is offered at no charge. Households can reduce their costs by participating in the recycling program.

•Variable rate user fees encourage waste reduction and recycling.

While variable rate user fees encourage waste reduction and recycling, they are more difficult to administer. A community may also experience an increase in illegal dumping of refuse in rural areas and commercial dumpsters.

Subscription System

Where SWM collection is not mandatory, communities may offer SWM collection by charging for service that the customer has requested, or subscribed to. For example, households in Lander may contract directly with a private hauler for collection service or find an alternative means of waste disposal. Some communities allow curbside recycling service on a subscription basis. Households willing to participate in the recycling program are offered the service at a specified charge, while households not interested in the service are not charged.

•Some communities allow curbside recycling service on a subscription basis.

In some instances payment methods may be combined (e.g., taxes plus subscription fees) to maximize funding resources.

•In some instances payment methods may be combined.

Schedule for Implementation

Implementation of new services or operations set forth in the plan may involve the following steps:

- Predevelopment
  - negotiations
  - program design
  - site selection, if necessary
- Project development
  - financing
  - contracting
  - engineering
  - permitting
- Construction
- Operation.

If new processing facilities are required by the SWM plan, the time necessary to implement the program will be greater than if existing facilities are used.

•SWM programs requiring new processing facilities require more time to implement than if existing facilities are used.

Figure 5-1 presents the typical steps and associated time requirements to implement curbside recycling and yard trimmings composting programs using new facilities. Assuming one year, initially, for discussions and negotiations, four years could be required to implement a curbside recycling program that includes a new MRF. Nearly as much time would be required to implement yard trimmings composting if a new composting site were needed.

Figure 5-2 also shows typical projected requirements to implement additional curbside recycling and yard trimmings composting with expanded use of existing facilities. As shown, much less time would be required without the steps necessary to secure new facilities.

•Planners could use a phased approach for implementation of new SWM options.

Planners should consider creative scheduling approaches, where appropriate. For example, the proposed curbside program shown in Figure 5-1 could be modified to a phased approach for recycling processing. While the MRF is being constructed, the SWM planners might be able to

contract with a private recycling firm to collect and/or process the recyclables. The advantage here is that, when the MRF is completed, the public will already be recycling, resulting in little or no "down-time" for the MRF.

Public Education and Participation

In addition to the SWM system selection process, the public should be involved in choosing implementation options as well. This can be accomplished through one or more of the public participation techniques listed previously. Public input on the SWM system and implementation options may be made simultaneously.

- **Public input on selecting the SWM system and implementation options may be made simultaneously.**

In addition, public education will be needed to effectively implement new SWM programs. Education efforts may include information on new recycling/composting programs, waste reduction opportunities, or perhaps changes in household waste collection.

Several techniques may be used to educate the public about SWM. Educational material can be targeted toward a specific audience such as elementary students or developed to be used by all levels of the community. Presentation techniques include video tapes, slide presentations, newspapers, television, and radio announcements, and publications. Announcements may be delivered through television and radio public service announcements, paid advertisements, feature stories, or news briefs.

- **Several techniques may be used to educate the public about SWM.**

Publications include newsletters, newspaper inserts, fact sheets, and brochures. Distribution of technical reports or environmental documents to community groups will provide detailed information to those most interested and increase public access to key documents.These can often be placed in public libraries and made available for check out and review.

Figure 5-1
TYPICAL TIME FRAME FOR IMPLEMENTATION OF EXPANDED RECYCLING & COMPOSTING WITH NEW FACILITIES

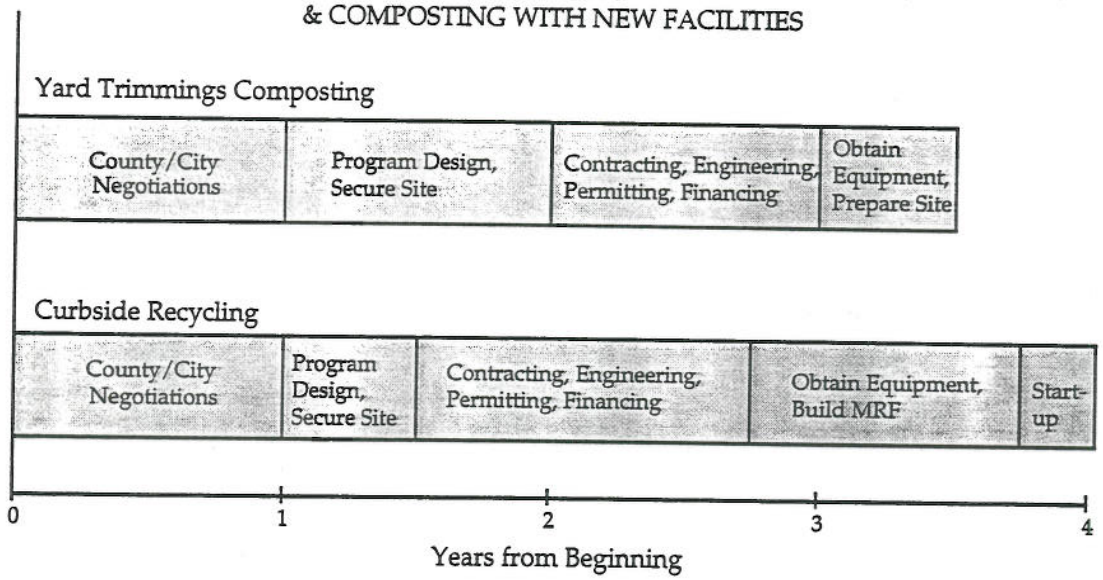
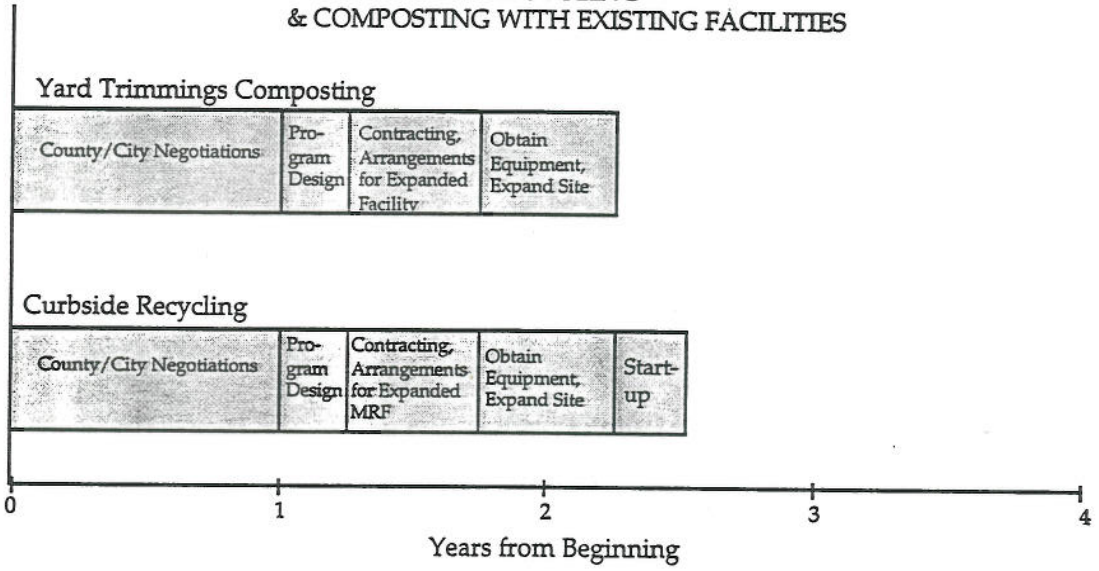


Figure 5-2
TYPICAL TIME FRAME FOR IMPLEMENTATION OF EXPANDED RECYCLING & COMPOSTING WITH EXISTING FACILITIES



Source: Franklin Associates, Ltd.