
Solid Waste



Resource Recovery Management Model

Overview



RESOURCE RECOVERY
MANAGEMENT MODEL

Overview

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U.S. ENVIRONMENTAL PROTECTION AGENCY
1980

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EPA selected organizations and people with extensive practical experience in the field to assist in development of the Resource Recovery Management Model and this companion Overview. The Metrek Division of The MITRE Corporation prepared the Management Model and Overview under contract to EPA (Contract No. 68-01-5809) printed as MTR's 79W00320 and 79W00437, coauthored by R. T. Felago and P. J. Stoller. To ensure that the Model will meet the needs of those regional, state, and local officials from whom it is intended, its preparation was guided by an Advisory Board of public sector leaders in the field of resource recovery. EPA expresses its appreciation to these dedicated people for their active involvement in and essential contributions to the preparation of this document. The members of the Advisory Board are listed below:

Dr. James G. Abert
Vice President
National Center for Resource Recovery, Inc.

Mr. Joseph Boren
Former Vice President
Connecticut Resources Recovery Authority

Mr. Russell L. Brenneman
President
Connecticut Resources Recovery Authority

Mr. Franchot Buhler
Executive Director
State of Florida Resource Recovery Council

Mr. Herbert Iwahiro
Chief, Division of Planning and Resource Recovery
State of California Solid Waste Management Board

Mr. Gene L. Neff
Deputy Director of Public Works
Baltimore County, Maryland
(also representing the American Public Works Association)

Mr. Jerold A. Prod
Member and Former Chairman
State of California Solid Waste Management Board



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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PREAMBLE

In this country progress has been painfully slow in expanding the recovery of energy and materials from municipal waste. It is disturbing to realize that the slow progress is not being accelerated significantly by the present energy crisis and mounting land disposal issues. However, there is a clear reason for that slow advancement, and with the publication of this document, the Environmental Protection Agency is addressing what numerous studies and inquiries have identified as the most significant deterrent to implementing resource recovery projects, that is, the incredibly complex planning process.

The many factors which contribute to the complexities are quite elusive and often not thoroughly understood by those attempting a project. As a result, numerous projects have failed to advance very far, have fallen short of their technical objectives, or have had extensive time delays and incurred unreasonable additional costs. Communities contemplating a resource recovery project have not been able to capitalize readily on the experiences of others in attempting to avoid such problems. The Management Model and this

companion Overview were developed to provide that kind of information and assistance.

Before undertaking development of the Model, EPA consulted many people about the need for such an aid and the uses it may serve. They were unanimous in support of developing the Model and believed it should help communities avoid the problems associated with: inadequate analysis of waste streams and disposal issues; inadequate study of available options, economic considerations, and political sensitivities; inadequate market analyses; insufficient public participation; and inadequate timing and budget projections, as well as the problems associated with the turnover of project personnel and elected officials.

The Model was developed with two goals in mind: first, to provide a comprehensive description of all the activities necessary to conduct a resource recovery project; and second, to present this information in a form that is easy to understand, and which lends itself to assisting those responsible for the day-to-day management of a project.

EPA engaged The MITRE Corporation to develop the details of the Model. In addition, to ensure the broadest experience as input, EPA assembled an Advisory Panel of seven men whose unique qualifications of knowledge and experience in this field are widely recognized. Their role in guiding both EPA and MITRE in preparing the Model was significant, and their services are given separate acknowledgement elsewhere in the front of this document.

In addition to the broad input from the Advisory Panel, reviews of the draft Model obtained from some 50 recognized authorities in the field of resource recovery, including EPA headquarters and regional office staff, EPA Technical Assistance Panels contractors, private industry, financial advisors, management and engineering consultants, and professional associations. Many comments were received, virtually all in strong support of the effort. Some concerns were expressed, however, regarding the size (or bulk) of the

Model, its rigidity, usefulness, level of detail, extensive use of abbreviations, estimates of work effort and funding, network logic, time frames, and certain series of activities. All of these concerns were carefully considered by the Advisory Panel, and all but a few comments were accepted as appropriate and resulted in modifications to the final document. In response to the expressed concern about the size of the Model, this abbreviated version was prepared for elected officials and other decision-makers at all levels.

In summary, the Model is designed as a roadmap, charting a course through the entire spectrum of resource recovery activities required for a thorough planning effort, and reflecting the experiences of many professionals who have covered the route. The Model should be the basis for all planning action; experience has shown that the indicated activities must be considered in order to avoid overlooking important steps. Many projects have suffered serious setbacks by attempted "shortcuts". It is axiomatic that no standard procedure will cover every conceivable situation at every possible location. If a strong justification is made by the project manager, the Model can be tailored to suit local requirements, AS LONG AS THE RISKS ARE UNDERSTOOD. The detailed information referenced in each activity will help the manager to understand those risks. In providing the foundation for the planning and forcing such thoughtful analysis, the Model will have served its purpose.

It is the intention of this Agency to update the Model and Overview in future years as experience dictates. For that reason, constructive criticisms are earnestly solicited.



Albert A. Peter, Jr.
Director
Land Disposal Division

(Former Director
Resource Recovery Division)

ABSTRACT

This document provides an overview of the Resource Recovery Management Model which has been developed by the U. S. Environmental Protection Agency to assist regional, state, and local officials in developing plans, reaching decisions, and managing and conducting procurements for resource recovery facilities and services. The Model provides a comprehensive description of the activities necessary to conduct a resource recovery project. A full presentation of the Model is provided in the EPA publication, Resource Recovery Management Model.^{*} That publication of about 600 pages is designed for use by the project manager, the person responsible for planning and managing the project on a day-to-day basis.^{**}

This Overview is designed for use by those responsible for establishing policy and monitoring the project to insure that the project meets the needs of the jurisdictions involved. It briefly describes the Model, why the Model was developed, and how the Model is adapted for use on a project. A copy of the "Master Network" is provided -- a flow chart which illustrates the interrelationships among all "Master Activities", or major tasks. Also included are abbreviated versions of the Master Activity sheets summarizing the activities. The Overview thus provides sufficient information for a general understanding of what must be done to carry out a resource recovery project.

^{*}For information on obtaining the Resource Recovery Management Model, contact: Resource Recovery Branch/Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC 20460 (202/755-9140).

^{**}The Environmental Protection Agency expects to hold Project Management Workshops for those interested in implementing resource recovery. They will use the Management Model as a workshop text.

RESOURCE RECOVERY
MANAGEMENT MODEL
OVERVIEW

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RESOURCE RECOVERY
MANAGEMENT MODEL
OVERVIEW

Resource recovery refers to the collection and use of solid waste, generally residential and commercial waste, for the production of energy and materials. It can be carried out either at a central processing facility or by source separation (setting aside of recyclable materials at their points of concentration), or both. This effort has gained recognition over the last decade as a partial solution to two major problems confronting this country: the need for environmentally sound disposal of solid wastes, including the need to reduce dependence on land disposal; and the need for alternate energy sources and increased energy conservation. The prospect of more communities using resource recovery, one means of addressing these problems, as a method for solid waste management has stimulated rapid growth in both large and small-scale systems technology. The Model is intended to assist communities along the complex path to implementation of a resource recovery project.

Key Questions

In considering resource recovery the following key questions must be addressed and resolved:

- Is sufficient refuse available to support a resource recovery project, and can the refuse be committed in the long term to a project?
- Do realistic long-term markets for energy and materials products exist?
- Are sites and technologies available which are environmentally sound and politically acceptable?
- Do local laws permit procurement options and necessary contractual agreements?

- Is the project financially feasible?
- How does resource recovery compare to the non-recovery disposal alternatives?

Failure to address any one of these key questions may make project implementation impractical. The inability to obtain any critical item, such as a facility site, energy market, or adequate waste supply can spell the termination, or at least the postponement, of a project. The Management Model shows what tasks must be done and where in the planning process they should be accomplished. The Model is presented in considerable detail, which is necessary for those with limited experience in the field and useful as a checklist for those with more experience. This Overview, with considerably less detail, enables quick and easy tracking of the project and oversight review.

The Need for a Management Model and Overview

Review of recent experience in resource recovery projects indicates that some of the difficult decisions were not addressed in a timely and proper manner; thus time, effort and money have been wasted. Use of the Model and Overview should "close the gate" on continuing a project where a needed decision has not been made; once a decision is reached, the "gate" will be opened to allow the project to continue with the next major phase. These gates are political decisions conducted publicly based upon written documentation.

Delays in decision-making are often caused by a change in project manager or key officials, as well as changes in laws and regulations. Because of the considerable time span over which planning and procurement of resource recovery facilities take place such changes are almost inevitable. The Model provides a systematic way of charting progress, thus helping to maintain project continuity and avoid unnecessary retracing of steps.

By identifying all activities and decisions and their proper relationships, the Management Model should bring about better decisions and smoother implementation with less redundancy of effort.

Description of the Model

The Phases. The process consists of six phases. The Model deals with four. Phases, I, II, and III are Feasibility Analysis, Procurement Planning, and System Procurement. These are preceded by a Phase 0, Initial Resource Recovery Feasibility Screening, which include certain steps necessary to decide if there is a strong reason not to study and plan for a resource recovery project. The numeral 0 is used to stress that this phase is less formal than others -- the purpose is to investigate in rough terms whether local conditions preclude consideration of resource recovery.

Phase I, Feasibility Analysis, includes an evaluation of the feasibility of resource recovery and preliminary identification of alternatives among forms of resource recovery, including source separation and codipsosal. This phase should develop the basis for a decision to terminate, postpone, or proceed. It also includes activities necessary to construct a preliminary implementation strategy; activities such as project team organization and securing required resources.

Phase II, Procurement Planning, further develops all elements leading to system procurement, including obtaining options to purchase sites with associated environmental analysis and public meetings, strengthening market and waste supply commitments, risk allocation, and selection of a preferred procurement and financing approach.

Phase III, Procurement, covers the steps required for system procurement, including contracting for waste supply, markets, construction, and operation (if applicable), obtaining necessary pre-construction permits (and associated environmental analysis), and obtaining in the debt or equity capital to finance the project. ,

Additional Phases IV and V, not covered by this Model, are the two major phases of a resource recovery project for which the planning and procurement are conducted. Phase IV -- Construction, Shakedown, and Acceptance -- includes the three major steps which are generally a part of the construction contract. Phase IV is completed when Phase V -- the long term operation of the facility -- commences.

Towards the end of Phases 0, I and II, a formal report (or statement) is prepared documenting the results and presenting a recommended course of action and associated budget for the next phase. Using the report as a basis, a political/public decision is made either to proceed or terminate.

Major Issues

Major ongoing issues which must be considered in all phases include:

- Public participation
- Environmental considerations
- Waste reduction
- Source separation
- Phase-over planning
- Project communications
- Assessment of industry roles and offers.

Public Participation. History has taught us that early and continuing presentation of issues to the public is essential in gaining public confidence in any program. Not only should the public be informed early, but also continuously for the duration of the project. The importance of this cannot be over-emphasized, nor should the lessons be forgotten of the consequences of past failure to do this. Without public dialogue the project may be undermined for no more sufficient reason than a perceived lack of an informed and well-structured process or for the substantial reason that the project does not meet the community's goals and desires.

The public may be involved in the project development in many ways, such as public meetings and hearings, presentations, advisory groups, newsletters, assistance and coordination. The presentation of issues at an early stage promotes an atmosphere of openness and mutual trust.

Environmental Considerations. Depending upon the individual State and local environmental assessment requirements, different environmental analyses may be necessary. The Model contains three types of environmental review. The first is an initial screening in the Feasibility Analysis phase; the second is a refinement of the environmental criteria and analytical work, principally site selection (Procurement Planning phase); the third may be an assessment or a full environmental impact statement which is system-specific and occurs after selection of a system or completion of preliminary design (Procurement phase).

In areas of air quality non-attainment, additional monitoring of ambient air may be required prior to design and construction of the facility. This action may be initiated early and may continue throughout a large part of each phase, depending upon local requirements and local customs. Use of the Model should allow careful and timely consideration of all environmental restrictions which have typically impacted on resource recovery projects.

Waste Reduction. Waste reduction generally refers to reducing the quantity of solid waste generated so that there is simply less waste for disposal in landfills, for resource recovery, or for source separation. The reuse of beverage containers is an example of waste reduction because fewer containers enter the municipal waste stream.

Waste reduction and resource recovery are compatible. The only adjustment needed in the resource recovery planning process is a revision of the estimates of solid waste quantity and composition which will be available to the resource recovery system, based on

predicted effects of all reasonably foreseeable waste reduction systems. The Model does not detail a method for introducing water reduction but allows ample opportunity for a project manager to factor waste reduction into the overall resource recovery management plan.

Source Separation. Source separation is defined as the setting aside of recyclable waste materials at their point of generation for segregated collection, transport, and delivery to specialized waste processing sites or final manufacturing markets.

The Model encourages development of a source separation program, either independently or in conjunction with a larger scale program. In some cases, source separation may be the only viable choice among recovery programs for a particular locality.

A preliminary review of source separation potential is called for in Phase 0, followed by a feasibility study of source separation in Phase I. If the Phase 0 screening indicates source separation as a possibility, and the Phase I feasibility analysis indicates expectation of a sound program, then the implementation process for source separation is carried out in Phase II. If, however, the Phase 0 screening indicates a strong resource recovery program through source separation, the Model provides the mechanism for skipping over Phase I and proceeding directly to the implementation process in Phase II.

Phase-over Planning. Most resource recovery projects represent long-term solutions to solid waste disposal for communities. One must, however, count on substantial time to elapse between the initiation of resource recovery planning and the actual commencement of resource recovery plant operation. The transition from the existing solid waste management system to the initiation of the long-term resource recovery program is the phase-over period.

In many cases interest in resource recovery is initiated by a need to abandon the current system, such as an incinerator with excessive emissions or a landfill reaching capacity. In such cases,

the program manager has two concurrent tasks -- the first is to plan for the shorter term phase-over solid waste management needs, and the second is to plan for the long-term resource recovery program.

Although phase-over planning is required immediately, it should progress and be compatible with the long-term planning represented by the Management Model. While the two planning functions are often concurrent, and while some of their respective activities may be interdependent, the two planning activities may be separate and distinct; where possible, the same project manager or task force should be involved in both activities. The primary problem is to avoid actions of a short term or "phase-over" nature that are inconsistent with the long-range goal.

It is not the purpose of this Model to address phase-over planning. Despite the need for such planning and the points of interdependence with resource recovery planning (e.g., site selection and size, residual disposal), the Management Model is designed to assist the project manager in implementation of only the resource recovery program. Concurrent functions, scheduling constraints and other problems facing the municipality must be resolved by the project manager responsible for these areas.

Project Communications. There is a need in every resource recovery project to maintain contact with members of the participating organizations, especially during periods of low activity. For example, after letters of intent are received from markets, there is little activity within the project while public presentations and political decisions are made. Continuous contact should be maintained during this period with markets and member municipalities so that they are kept up to date and interest in participation is not lost.

Assessment of Industry Roles and Offers. Throughout the course of the project, private industry may occasionally offer to solve the

solid waste problem being addressed by the resource recovery project. The project manager should realize that the key questions page 1 must still be answered. If industry has progressed in answering more of these questions than the community, it may be appropriate to entertain involving that industry in the process at this time using the Model as a guide to monitor their progress.

It should also be realized that the selection of one firm above others may be subject to reexamination (and possibly reversal) at a later date. Such a selection therefore constitutes a risk of wasting both the government's and private industry's time and money, thus the selection should be made only after careful consideration of its legal and political implications.

Master Network and Master Activity Sheets. The first level of information provided in the Model is the Master Network and Flow Chart, which illustrates 60 Master Activities spread throughout the four phases. They show the major work items which must be addressed, their recommended sequence, and the amount of time likely to be needed for each Master Activity (see Time Frame and Task Completion, below). They are accompanied by Master Activity Sheets which summarize each Master Activity; its purpose, requirements, necessary resources, and other pertinent data, as well as references and sample documents. The body of this Overview is comprised of the Master Network, a simplified Master Flow Chart, and extracts from the Master Activities.

Subnetworks and Activity Sheets. Virtually all of the Master Activities are comprised of a number of more detailed activities; thus a second level of networks, designated Subnetworks, is provided in the Model, but not in this Overview. Nearly every Master Activity has an accompanying Subnetwork with associated Activity Sheets.

Adapting The Model

The Management Model naturally cannot be expected to illustrate the implementation needs of every individual project; its purpose is to present the activities common to most projects and their suggested sequence. Some activities will undoubtedly be tailored to individual project requirements. This specific tailoring should be performed at the local level by the project manager in conjunction with the project team responsible for resource recovery implementation.

Many municipalities may begin using this Model while their individual projects are already in one of the four phases. Use of the Model does not require return to the start of Phase 0, but the user is encouraged to continue from the current point to completion via the steps of the Model. If an activity that a municipality has not yet considered appears earlier in the logic sequence in the Model than the point of entry by the municipality, that step should be completed before proceeding further. If, however, all previous steps have been essentially completed, then progressing immediately via the route outlined by the Model is encouraged.

The individual exploring resource recovery on behalf of the municipality should use the document in the following manner:

1. Read the introductory sections and become familiar with the overall structure.
2. Review the Master Flow Chart and the Master Network to understand the entire scope of the project.
3. Review the Master activity sheets in conjunction with the Master Network to understand in greater detail the work level required and the necessary references and sample documents so that acquisition of appropriate documents can begin early.
4. Understand where in the sequence of the Model the individual's particular project stands by reviewing the Master Network and Subnetworks with associated activity sheets to determine which activities have

already been addressed (this may be a complex task, requiring assistance).

5. Proceed according to the work sequence illustrated on the Master Network or tailor the sequence to the local conditions. If changes in sequence are necessary, the reasons for these changes should be noted in a memorandum to the project file.
6. Proceed to the first Master Activity sheet required by that sequence, review the Subnetwork and Activity Sheets, and begin the actions outlined therein.

Small Scale Systems

Much resource recovery planning activity is expected to be directed toward small scale "modular" facilities. Although the general procedure provided by the Model, as well as activity sequence and interrelationships, are the same for both large-scale and small-scale systems, time and cost estimates are comparatively smaller for projects of smaller scope and lesser complexity.

Time Frames

Resource recovery projects are quite complex, requiring a large number of activities, inputs, and decisions to be meshed smoothly in order to succeed. The average times in weeks shown on the Model are illustrative only; they indicate how much time is required to accomplish the activities, given a team of people with some experience in resource recovery, and with average complications. However, setbacks can occur in a project which can take months, or even years, to rectify. Activities such as facility siting, test case litigation, or securing multi-municipal waste supply arrangements can drag on and on.

During development and review of the Model, considerable discussion was given to the "fast-track" method of procurement planning. From a management standpoint, fast-tracking means paralleling some of

the activities now shown as sequential. The Model represents a conservative approach to resource recovery implementation by its sequencing. If, however, the project director and project manager, in conjunction with the consultant and project team examine carefully the options of either waiting for the activity to be completed or accepting the risk and moving on, then this paralleling of activities, or fast-tracking can be used. The model indicates how to reduce risks by sequencing activities, but allows for the possibility of increasing risks in order to reduce the time required. If everything works out time may be saved; if not, time and money may be lost.

Task Completion

Project participants must use their judgement to decide when the tasks are essentially complete. Consider as an extreme example for illustrative purposes, the task of sampling boilers in the project area in the search for energy markets: There are 20 individual boilers in an area, and 18 (including all the largest) have been located, with some believed to offer good potential. Collectively, the boilers have the potential to use 2 or 3 times the energy available in the waste, then the boiler analysis task may be considered complete. On the other hand, consider where only 2 of the 20 boilers have been found, and they happen to be two of the largest. They do not, however, have the potential to use all the energy available. In this case, it is premature to consider the task complete. Judgements as to where in the middle of these extremes the task is complete must continually be made by those responsible for the project.

Summary of Costs and Critical Path Durations*

Table I summarizes the costs and the critical path times that

*Critical path time refers to the elapsed time measured along the critical path of activities. The critical path is comprised of the activities which add up to the longest time to complete the network: this path of longest duration then is the shortest elapsed time in which the entire network can be completed. The time along the critical path is not found simply by adding elapsed time of sequentially number activities. The critical path time, therefore, is the elapsed time indicated on the Master Network and in the estimating data in Table I.

represent averages for a hypothetical area of approximately 500,000 population with more than one community participating. The ranges given for time requirements are indicative of how project activity may be affected by the number of participating communities, total population, local opposition, environmental and other permit requirements, and sometimes the legislative and judicial processes. Cost will vary accordingly. A sliding scale for costs can be applied to both larger and smaller projects, varying roughly according to population. The critical path times will also vary considerably with population; generally, small-scale systems should be implemented sooner, and larger scale systems, involving more communities, will take longer.

Table I, indicates the range of total cost to the community for project management, administration, in-house staff, and consultants in each Phase. In some cases, the cost may be considerably lower than that indicated by simple population proportion, due to the fact that some elected and appointed officials in smaller areas may donate their time. In other cases, costs may be considerably higher, due to unique unforeseen complications. In the case of financial advisors, the prospect of a future bond sale may result in financial consulting being performed without fee, since compensation from the bond issue is anticipated.

It should be noted that the cost and duration data for Phase III are given separately for the three types of contracts: architectural/engineering (A/E), turnkey, and full-service. The duration is longer and costs are higher for A/E because facility design is completed and a construction contractor is selected during Phase III; in the other approaches, design is completed in Phase IV. The overall time needed to arrive at commencement of construction is shorter for A/E, however, because the communities usually require more time to complete procurement and contracts with turnkey and

full-service vendors. The extra time spent for the latter approaches may buy lower risks in terms of satisfactory long-term plant operation.

TABLE I
SUMMARY OF AVERAGE COSTS (1979 DOLLARS)
AND CRITICAL PATH DURATION

Phase 0	Funding (\$K)	Duration (Calendar Weeks)	Duration Range (Calendar Weeks)	
			Low	High
001-007	5	6	3	10
Totals (Funding)	\$5K			
(Critical Path Duration)		6	3	10
 <u>Phase I</u>				
101 Organize Project Team and Public Information Process	7	8	3*	13
102 Secure Required Resources	9	12	7	31
103 Screen Environmental Re- quirements	4	4	2	8
104 Conduct Technology Analysis	5	4	3	11
105 Analyze Waste Stream	9.5	6*	3	14
106 Perform Detailed Energy Market Analysis	10	15*	7*	24
107 Analyze Existing Disposal Options	4	3	2	6
108 Conduct Material Market Analysis	6.5	15*	6*	19
109 Conduct Source Separation Feasibility	6	4	2	7
110 Perform Preliminary Envi- ronmental Analysis	3	4	2	8
111 Establish Transportation Analysis Model	3.5	4	2	8
112 Perform Preliminary Site Analysis	3.5	4	2	8
113 Perform Financial, Legal, and Institutional Anal- ysis	8	6	3	12
114 Develop Project Alterna- tives	9	5	3*	14
115 Establish Political/Public Decision Process	1	1	1*	2
116 Develop Recommendations and Report	10	5	3	20
117 Obtain Political/Public Decision to Proceed	3	8	3	16
Totals (Funding)	\$102K			
(Critical Path Duration)		66*	39	164

*Rounded to the nearest whole week.

TABLE I (Continued)

<u>Phase II</u>		<u>Funding</u> <u>(\$K)</u>	<u>Duration</u> <u>(Calendar</u> <u>Weeks)</u>	<u>Duration Range</u> <u>(Calendar Weeks)</u> <u>Low</u> <u>High</u>	
SS1	Perform Detailed Source Separation Feasibility	25	29	16	61
SS2	Develop Source Separation Program	25	27	17	52
SS3	Execute Program	8	16	8	28
Totals (Funding)		\$58			
(Critical Path Duration)			72	41	141
201	Define Project	5	4	2	6
202	Draft Environmental Assessment and Determine Site Priorities	18	11	7	18
203	Secure Sites	16	18	11	63
204	Update Project Definition and Costs	5	4	2	8
205	Strengthen Waste Supply Commitments	24	20	10	40
206	Structure Risks to Resolve Institutional Problems	30	25	12	52
207	Strengthen Market Commitments	22	18	10	28*
208	Update Project Definition and Costs	6	4	2	7*
209	Select Technology(s), Risk Assignment, Procurement and Financing Approach; Write Report	15	6	3	11
210	Obtain Political/Public Decision to Proceed	10	12	4	20
Totals (Funding)		\$151K			
(Critical Path Duration)			80	41	178
 <u>Phase III</u>					
(TURNKEY)					
301	Establish Administrative Framework	10	10	5	19
302	Produce RFP	25	22	14	37
303	Acquire Contractor	90	55	26	136
304	Perform Environmental Assessment	25	31	15*	76

*Rounded to the nearest whole week.

TABLE I (Concluded)

	Phase III (concluded)	Funding (\$K)	Duration (Calendar Weeks)	Duration Range (Calendar Weeks)	
				Low	High
305	Acquire Waste Supply Con- tracts	65	24	16	168
306	Secure Preconstruction Permits	25	26	13	39
307	Perform Preliminary Design	15	20	13	34
308	Acquire Market Contracts	7	8	6	20
309	Secure Financing	10	14	11	26
Totals (Funding)		\$272K			
(Critical Path Duration)			132	72	386
(A/E)					
311	Establish Administrative Framework	10	10	5	19
312	Acquire Preliminary Design	650	30	22	40
313	Secure Preconstruction Permits	25	26	13*	38
314	Perform Environmental Assessment	25	31	15*	76
315	Acquire Waste Supply Con- tracts	65	24	16	168
316	Acquire Design and Con- tractor	1,590	72	45	102
317	Acquire Market Contracts	7	8	6	20
318	Secure Financing	10	14	11	26
Totals (Funding)		\$2,382K**			
(Critical Path Duration)			157	98	329
(FULL SERVICE)					
321	Establish Administrative Framework	10	10	5	19
322	Produce RFP	25	22	14	37
323	Acquire Contractor	90	55	26	136
324	Perform Environmental Assessment	25	31	15*	76
325	Secure Preconstruction Permits	25	26	13	39
326	Acquire Waste Supply Con- tracts	65	24	16	168
327	Acquire Market Contracts	7	8	6	20
328	Perform Preliminary Design	15	20	13	34
329	Secure Financing	25	38	28	60
Totals (Funding)		\$287K			
(Critical Path Duration)			156	89	420

*Rounded to the nearest whole week.

**Includes total fee for preliminary and detailed design; varies widely with project size.

MASTER ACTIVITY: OVERVIEW OF PHASE O

number

000

PURPOSE: To ascertain if there are any local conditions which obviate the need to investigate RR in detail by conducting a preliminary investigation which considers the critical ingredients of a RR program.

DESCRIPTION: The vital ingredients necessary for a viable RR program are investigated in a preliminary manner to obtain a conclusion of whether or not any of them are missing to such an extent that a RR program would not be viable. If available, data from reasonably recent studies and reports may be used.

MAJOR DECISIONS: To preclude or defer further consideration of RR, or proceed into Phase I subject to the availability of staff and funds; whether or not to proceed to Phase II source separation; appropriated budget to proceed.

MASTER ACTIVITY: EVALUATE NON-RECOVERY DISPOSAL OPTIONS AND
ASSOCIATED ENVIRONMENTAL ISSUES

number

001

PURPOSE: To develop a brief narrative (less than 10 pages) discussing the prospects for disposing of the community's solid waste by non-recovery approaches, e.g., incineration without heat recovery or landfill. This task also determines, on a preliminary basis, whether existing landfill or incineration systems are sufficiently adequate environmentally, economically, and in terms of long-term capacity so as to preclude the need to pursue RR as a potential waste disposal solution.

DESCRIPTION: The narrative should look ahead at least 10 years. If appropriate, the need to procure new landfill sites should be discussed and major obstacles described. A rough cost estimate for future disposal (including transportation to the disposal site) is developed. This estimate is both on a per ton and an aggregate annual basis. The status of existing landfills and incinerators in terms of available current capacities and remaining life, potential for regionalization, environmental soundness and regulatory compliance, and cost is evaluated. (See MA 105 and MA 107 for steps in a more detailed analysis.)

MAJOR DECISIONS: None

MASTER ACTIVITY: SAMPLE CITIZEN AND POLITICAL INTEREST

number

002

PURPOSE: To determine on a preliminary basis whether citizen and political interest in RR is sufficient to warrant exploring RR as a viable option, or sufficiently negative to preclude it as a possibility. This is done by developing a brief narrative documenting the views of various citizen and environmental groups and leaders on the subject of RR. This sampling is also used to determine if there are strong opponents or proponents of RR in elected or appointed positions.

DESCRIPTION: In most cases, the extent of citizen and political interest will be known. Other cases will suggest the need for public hearings, meetings, or perhaps an informal opinion poll conducted by contacting a list of selected local (elected and appointed) officials, citizen and public interest group representatives, and others knowledgeable about the local political scene and solid waste activities and plans. Also the positions taken by the press and other communications media are examined.

MAJOR DECISIONS: None.

MASTER ACTIVITY: CONDUCT PRELIMINARY MARKET SURVEY

number

003

PURPOSE: To determine on a preliminary basis whether the lack of acceptable local markets for recovered energy and materials would preclude RR and to develop preliminary estimates of the revenue that could be expected if various types of RR approaches were implemented locally.

DESCRIPTION: Major industries and utilities are contacted to assess interest in being considered as a market for RR. In some areas of the country it may be helpful for preliminary identification to sight stacks visually from atop a tall building. Demand for steam, RDF, and electric power is estimated, and potential energy revenues are calculated based on the local price of fossil fuel. Material markets are contacted (See A 10801 - A 10805 for steps in a more thorough investigation). On the basis of local fuel costs, develop an estimate of the likely revenue that could be expected for refuse based energy if sold as RDF/dRDF, steam and electricity. Note any major changes in fuel types utilized which are expected to take place locally, such as a conversion of several major boilers from oil to coal. Also estimate likely prices for steel and aluminum scrap, probably based on nearest area sales price figures. The latter should be of sufficient accuracy for the analysis of MA 007.

MAJOR DECISIONS: Whom to contact.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: CONDUCT PRELIMINARY WASTE SUPPLY ASSESSMENT

number

004

PURPOSE: To determine on a preliminary basis whether there are any waste supply problems which are likely to preclude development of a RR system.

DESCRIPTION: Estimate potential waste quantities for municipal/commercial and nonhazardous industrial refuse, separately identifying waste which is under municipal control and which is privately collected. Consider different region sizes up to, for example, a 30-mile radius or 1 million tons per year. Also identify any legal or other restrictions on directing waste or having "put-or-pay" provisions in community contracts. Estimate the percent paper, steel, aluminum, and glass and from the literature choose a value for waste as fuel RDF/dRDF and for mass burning. A fairly rough estimate is sufficient as input to MA 007.

MAJOR DECISIONS: None.

MASTER ACTIVITY: ASSESS SOURCE SEPARATION POTENTIAL

number

005

PURPOSE: To determine in a preliminary way whether source separation is precluded as a possible option.

DESCRIPTION: The potential for a successful source separation program is evaluated by reviewing a) the available markets for newsprint and paper, glass bottles and containers, and cans; b) local attitudes toward voluntary versus mandatory source separation wastes; c) organizations and firms, including municipal waste collectors, that might now be or would become involved in the collection, transportation, and/or marketing of the materials. This includes a preliminary analysis of the economics of source separation. (See Activities under MA 109, MA SS1, MA SS2, MA SS3 for a complete analysis.)

MAJOR DECISIONS: Whether pursuit of a source separation program should be continued or precluded.

MASTER ACTIVITY: ASSESS ECONOMICS, ENVIRONMENTAL IMPACTS, AND PROCUREMENT METHODS OF RECOVERY TECHNOLOGIES

number

006

PURPOSE: To identify possible RR system concepts to determine on a preliminary basis whether the economics of RR are sufficiently competitive in the local environment to warrant further consideration of RR as an option; also to produce a 3-4 page analysis of existing technologies, economics, environmental impacts, and procurement methods.

DESCRIPTION: Review the state-of-the-art in RR technology. Make rough projections of tipping fees for RR based on literature cost data for selected technologies, local energy prices and typical cost factors, O&M and revenue escalation rates. Develop alternatives based on processing stations, communities involved (total tonnage), transportation network and transfer stations, potential markets, possible participant and organizational roles. Consider options in terms of procurement methods and risk allocation among participants. (See Activities under MA 104, MA 105, MA 106, MA 107, MA 108, MA 111, MA 205, MA 209 for more complete analysis.) The result is a 3-4 page report evaluating the extent of technology development, where used, and related success factors. For each proposal and site (where possible) the extent of environmental impact, or its uncertainty.

MAJOR DECISIONS: Validity of data; extent of detail needed; format of narrative descriptions.

MASTER ACTIVITY: TEST APPROPRIATENESS OF PROCEEDING

number

007

PURPOSE: To decide to defer or preclude consideration of RR or to initiate if possible, a feasibility study, i.e., Phase I; to compare the results of MA 006 with traditional disposal such as landfill, and to decide the technical approaches which appear feasible; to calculate landfill upgrading and cost of operation in a given year (e.g., 5 years hence) as well as RR in that year.

DESCRIPTION: If source separation is the only viable recovery system, proceed to Phase II, MA SS1. The narrative developed as part of MA 007 tests initial estimates by describing different procurement methods, relative costs, the need for local appropriations, and their risks. The narrative serves as an educational tool, and basis for future discussion. Evaluate the results of MA 001 through MA 006. Then make a technical and public/political decision on the merits and advisability of continuing to pursue RR. Briefly document the conclusions, with supporting data, following careful review with concerned agencies and individuals. Terminate effort if recovery is precluded. Otherwise, proceed into Phase I.

MAJOR DECISIONS: To preclude or defer further consideration of RR, or proceed into Phase I subject to the availability of staff and funds; whether or not to proceed to Phase II source separation; appropriated budget to proceed.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: ORGANIZE PROJECT TEAM AND PUBLIC INFORMATION PROCESS

number

101

PURPOSE: To involve all involved and affected parties from the beginning in order to develop a project which can be accepted in the community and to develop people who understand the project's evolution and can sell it to their constituents.

DESCRIPTION: The project director and project manager utilize their knowledge of the local area to select and solicit members for the project team. The team's first task is to establish written policy goals and guidelines to be used for guiding the project.

MAJOR DECISIONS: What groups to involve in the project; the project objectives - what to accomplish, by when, what other parameters will affect the project; issues which might be addressed are procurement options, user fees, service area participants, nonmunicipal waste, and related items.

number

MASTER ACTIVITY: SECURE REQUIRED RESOURCES

102

PURPOSE: The project scope is defined, based on the policy goals and guidelines developed in the previous master activity and allocated to in-house staff and consultants are hired.

DESCRIPTION: The project scope is defined and allocated to in-house staff and consultants. In-house staff is committed, or hired and committed, and consultants are hired.

MAJOR DECISIONS: Which tasks in-house staff is capable of performing; which consultants to hire.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: SCREEN ENVIRONMENTAL REQUIREMENTS

number

103

PURPOSE: Many environmental requirements can impact on costs and facility siting. These requirements must be established very early so that they can be incorporated into the planning process.

DESCRIPTION: Detailed information on air quality, air emission requirements, surface and ground water use and restrictions, zoning restrictions, permits and permitting process, and review (governmental and public) requirements is gathered.

MAJOR DECISIONS: A preliminary definition of the RR system aspects to be assumed for purposes of environmental review (e.g., number of transfer stations, tons per day disposed).

MASTER ACTIVITY: CONDUCT TECHNOLOGY ANALYSIS

number

104

PURPOSE: To ascertain the availability, capabilities, advantages, disadvantages, and appropriateness of the various technologies for recovering the resources in solid waste.

DESCRIPTION: From past experience, telephone calls to manufacturers, suppliers, and managers of existing facilities, and a literature review, the required information is obtained and analyzed.

MAJOR DECISIONS: Whether or not all the required data has been obtained; whether or not the obtained data is valid; format for technology presentation.

MASTER ACTIVITY: ANALYZE WASTE STREAM

number

105

PURPOSE: The economics of RR projects are sensitive to changes in throughput, since it affects the revenues derived from both the tipping fee and the sale of recovered energy and materials (via central processing or source separation or both). Therefore, it is extremely important not to overestimate the tonnage available. Seasonal variations in refuse generation must be known to determine peak throughput rates and storage requirements. Compositional analysis is the basis for determining the recoverable quantity of materials and energy, which in turn is used to estimate revenues. Sludge quantities, composition, and disposal needs are used in determining whether co-disposal of sludge and refuse is feasible. All data should be agreed upon by the involved agencies.

DESCRIPTION: Data from multiple sources are obtained and analyzed, and inconsistencies are rectified. Weighing surveys and compositional analyses are conducted where applicable. Sludge quantities, characteristics, and future disposal needs are defined. The effects of existing source separation programs are factored into the estimates.

MAJOR DECISIONS: Credibility and adequacy of collected data; whether data should be supplemented; whether to perform weighing surveys.

MASTER ACTIVITY: PERFORM DETAILED ENERGY MARKET ANALYSIS

number

106

PURPOSE: To obtain a complete picture of the possible energy markets in the area since the energy market is one of the key components of a RR project; the number of alternatives is constrained by the number of markets and therefore they must be identified as completely as possible. This includes establishing general familiarity with the potential markets, their technical constraints, the individuals involved, and the institutional questions which may arise. All these items are necessary to explore because their results will set the tone for conducting many remaining activities in the project.

DESCRIPTION: Utilizing lists of known fossil fuel users, a telephone screening is conducted. The promising users are visited. Utilities in the area are factored from others. The basic technical parameters are solicited and compiled in easily compared form. The availability of energy is determined. Risks specifically related to the technologies available are noted. Facilities are visited, demand and loads are recorded, and the match between demand and supply of energy is made. Plans for the future are noted. A preliminary pricing formula is produced for potential energy markets. Several meetings with the most likely markets are conducted leading to a letter of interest. Letters of interest are solicited.

MAJOR DECISIONS: Identifying potential and viable markets; amount of fuel discount; whether or not to solicit price in letter of interest.

MASTER ACTIVITY: ANALYZE EXISTING DISPOSAL OPTIONS

number

107

PURPOSE: To examine the costs of existing facilities or readily obtainable facilities and their ability to continue in their current mode of operation, consistent with applicable environmental codes. These facilities may be landfills, incinerators, other processing technologies, current sludge disposal lagoons, spreading areas and other disposal facilities.

DESCRIPTION: This activity looks at all existing facilities, assesses their conditions, and analyzes whether or not they could be upgraded and the associated costs. The current system's strengths and shortcomings must be clearly understood, as well as the cost to rectify those facilities. A particular market may lend itself readily to retrofitting an incinerator, for example, or a landfill may be easily and inexpensively expanded. These considerations are analyzed completely.

MAJOR DECISIONS: Credibility of existing data or emissions testing; parameters for calculations; level of detail; role of neighboring areas; validity of findings; whether sludge disposal facilities are sufficient in the long term, and co-disposal is therefore unnecessary.

MASTER ACTIVITY: CONDUCT MATERIAL MARKET ANALYSIS

number

108

PURPOSE: To obtain information on local markets for materials recovered from a central RR facility and/or a source separation program. It is important to obtain market requirements (specifications) for the recovered materials so that a determination can be made on the type of technology and processing necessary to meet those requirements.

DESCRIPTION: A list of possible markets for the various materials is compiled and surveyed, potential markets are identified and letters of interest are solicited. Existing source separation programs are identified and analyzed, existing markets are identified, constraints and plans for the future are noted.

MAJOR DECISIONS: Whether or not the initial list of possible markets is reasonably complete; whether or not the survey questionnaire is complete and requests the necessary information.

MASTER ACTIVITY: CONDUCT SOURCE SEPARATION FEASIBILITY

number

109

PURPOSE: To obtain a solid basis for deciding whether or not to pursue implementation of a source separation RR program.

DESCRIPTION: Collection practices are examined in detail, potential markets and their requirements are identified, system parameters are developed, and a realistic system configuration is developed with associated costs and revenues.

MAJOR DECISIONS: Whether the system is feasible or not; whether system is to be separate curbside collection or self-haul to central collection points.

MASTER ACTIVITY: PERFORM PRELIMINARY ENVIRONMENTAL ANALYSIS

number

110

PURPOSE: To identify potential environmental problems and areas of environmental concern and to provide environmental input into the development of project alternatives.

DESCRIPTION: Since many environmental concerns must be analyzed on a site specific basis, this Master Activity should be performed in conjunction with MA 112.

A preliminary examination is made of air, water, noise and other environmental impact categories. Site-specific requirements for air monitoring are determined, and the projected impacts of different technologies are estimated and compared. The results may form the basis for limiting the number of alternatives or constraining the conceptual design of alternative scenarios.

MAJOR DECISIONS: Whether or not the existing air quality monitoring network is adequate.

MASTER ACTIVITY: ESTABLISH TRANSPORTATION ANALYSIS MODEL

number

111

PURPOSE: To prepare for later analysis of RR system transportation costs and evaluation of alternative solutions. Transportation analysis can provide input to the determination of facility scale, technology, and site.

DESCRIPTION: Transportation modeling can range from a rough cost estimate of a likely solution calculated by hand to complex computer modeling, which can optimize the transportation configuration for a region and also identify the system technology, scale, and site which would best meet system objectives at the lowest cost. The extent of transportation analysis is dependent upon service region size, potential markets for recovered materials and energy, available facility sites, existing waste transportation and disposal arrangements, and the depth of analysis requested by interested citizen committees and representatives.

MAJOR DECISIONS: Extent of analysis desired for project and level of sophistication of the technique of analysis; identification of desired outputs (costs, transportation configurations, sensitivity analysis, economically preferred technology and scale).

MASTER ACTIVITY: PERFORM PRELIMINARY SITE ANALYSIS

number

112

PURPOSE: To establish the most desirable and probable sites for different components of the RR system, including intermediate source separation, processing sites, residue landfill sites, transfer station sites, and RR facility sites.

DESCRIPTION: Since environmental constraints can have an important bearing on site selection and site ranking, this master activity should be performed in conjunction with MA 110.

The site analysis includes preliminary identification of site, estimate of reasonableness based on environmental, socioeconomic, logistical, and public acceptability criteria. The sites are nominated and preliminary analyses are performed for proximity to markets, and site acceptability for all other aspects of the system.

MAJOR DECISIONS: Site ranking.

MASTER ACTIVITY: PERFORM FINANCIAL, LEGAL, AND INSTITUTIONAL ANALYSIS

number

113

PURPOSE: To understand all constraints, issues, and risks facing the RR program so that options can be formulated.

DESCRIPTION: Each RR project will have unique financing, legal, and institutional constraints which must be recognized and addressed. This master activity identifies all those issues, recognizes the constraints and analyzes the options available for structuring the program.

MAJOR DECISIONS: Which constraints should be changed, which should remain and be worked around; what are the options if the constraints are not changed.

MASTER ACTIVITY: DEVELOP PROJECT ALTERNATIVES

number

114

PURPOSE: To specify all the possible projects which are reasonable to consider, and to develop the rationale for the reason other projects are either not possible or are unreasonable. The major potential alternatives are first formulated, then evaluated to set the stage for the recommended plan and alternative.

DESCRIPTION: Taking into account waste quantity and composition, market, site, and technological requirements, the alternatives which are technically feasible are formulated. For each alternative, the issues of regionalization, transportation, risks, financial, legal, and institutional arrangements are analyzed and assessed, and conclusions are reached for each as to: service area, transportation network, preferred financial and institutional arrangements, risk assignments, technology configurations, potential sites, co-disposal potential, the integration or independent operation of a source separation system, waste supply. Often, the advantages and disadvantages of each project configuration are given.

MAJOR DECISIONS: Distillation of a myriad of possibilities into the most appropriate alternatives.

MASTER ACTIVITY: ESTABLISH POLITICAL/PUBLIC DECISION PROCESS

number

115

PURPOSE: To set up the process, which will be compatible with the public information process, by which decisions will be made and adhered to. There is usually an established protocol in municipalities for approaching key individuals and organizations which will be party to the decision (a concurrence list).

DESCRIPTION: This task relies on precedent, protocol, imagination, and interface with the public decision process in order to elicit a binding decision on the part of the municipality. The ongoing public information process is factored into the decision, as well as the decision of the elected officials.

MAJOR DECISIONS: Protocol required; mechanism for proceeding.

MASTER ACTIVITY: DEVELOP RECOMMENDATIONS AND REPORT

number

116

PURPOSE: To select a course of action to be pursued that will achieve the goals and is consistent with the policy and guidelines set down in MA 101.

DESCRIPTION: The method for determining the order of preference of alternatives is developed and used to select the recommended alternative. A draft Feasibility Analysis report is written (including recommendations and an action plan) and distributed to the project team for comment. The project team develops a consensus of revisions to the draft. The revisions are made and the final Feasibility Analysis is adopted by the project team.

MAJOR DECISIONS: Whether or not the recommendations are consistent with the wishes of the community, whether or not to recommend co-disposal, whether or not to recommend source separation, budget proposal for next phase.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: OBTAIN POLITICAL/PUBLIC DECISION TO PROCEED

number

117

PURPOSE: To present information, obtain feedback and elicit a conscious decision from all participants in the decision process, using criteria established in MA 115 to decide when the overriding factor or consensus has been realized.

DESCRIPTION: All decisions to proceed with, postpone or terminate a RR project are made consciously by the public decision process. There are many sublevels of decision which must be factored in before the decision reaches the public and political realm. Then a consensus or majority opinion is reached, based on input of the project team, wherein the future of the project is clearly decided.

MAJOR DECISIONS: To proceed with, postpone or terminate the project; whether or not to proceed with co-disposal; whether or not to proceed with source separation; the amount of money appropriated for the next phase.

MASTER ACTIVITY: PERFORM DETAILED SOURCE SEPARATION FEASIBILITY

number

SS1

PURPOSE: To refine the market requirements, system configuration and the estimates of percent participation, percent recovery, costs, and revenues.

DESCRIPTION: A project team is formed; in-house staff is committed; consultants are hired; if necessary a public opinion poll may be conducted (dependent on size of municipality) to establish the level of participation; separation and collection procedures are defined; quantity estimates of recovered materials are derived, based on the percent participation obtained from the public opinion poll; market requirements and prices are obtained; institutional and legal requirements are defined; and system configuration, costs, and revenues are established.

MAJOR DECISIONS: Political/public decisions to proceed with source separation program.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: DEVELOP SOURCE SEPARATION PROGRAM

number

SS2

PURPOSE: To structure a source separation program which is tailored to the local community and meets its goals, requirements, and needs in accordance with the Political/Public Decision To Proceed (A SS108).

DESCRIPTION: Based on the results of the political/public decisions in MA SS1, the program is defined and tested, the resulting separated materials are brought to the potential markets, and letters of interest are solicited based on the sample recovered material. The institutional and legal framework, as well as the publicity/public education program, is developed.

MAJOR DECISIONS: Political/public decision to proceed including the adoption of institutional and legal framework (e.g., adopt ordinance mandating source separation, change franchise contracts) and adopted budget adjustments (e.g., for publicity/public education, recycling center, purchase of trucks).

MASTER ACTIVITY: EXECUTE PROGRAM

number

SS3

PURPOSE: To commence operation of the source separation program in accordance with the Political/Public Decision To Proceed (A SS207).

DESCRIPTION: Facilities are constructed, equipment is purchased, program is publicized, contracts and ordinances are enforced, contracts on recovered material are signed after bids have been received, all as described and decided on during the Political/Public Decision To Proceed (A SS207).

MAJOR DECISIONS: Contractor selection and contract terms; size, type, and operational parameters of the facilities.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: DEFINE PROJECT

number

201

PURPOSE: To define elements of the RR project based on the Political/Public Decision (MA 117) and all previous data, to develop strategies for removing any institutional barriers and for furthering waste supply and market commitments, and to estimate the costs of the project. This master activity may be unnecessary and can be reduced in scope or omitted if MA 117 has not significantly changed the recommendations made in MA 116.

DESCRIPTION: The project to be pursued is outlined. Transportation, tipping fee, and life cycle costs are estimated. Major elements to be addressed in this phase are identified including roles, responsibilities, timetable and budget. Strategies for removing any institutional barriers and for furthering waste supply and market commitments are outlined.

MAJOR DECISIONS: The major problems to be addressed in the procurement planning phase; responsibilities of the in-house staff, consultants and other participants, scope and cost of Phase II; whether or not additional weighing surveys are necessary.

MASTER ACTIVITY: DRAFT ENVIRONMENTAL ASSESSMENT AND DETERMINE SITE PRIORITIES

number

202

PURPOSE: To identify potential environmental impacts of the proposed project and to estimate costs associated with resolving these impacts; to evaluate and establish the priorities of nominated system sites; and to write a draft environmental assessment report for use during the process of securing sites (MA 203).

DESCRIPTION: The environmental impacts of the project are identified in quantitative and qualitative terms for the areas of air and water quality, zoning and land use, traffic, historical significance, and aesthetics. The associated effect of resolving these impacts on project economics is estimated. Nominated sites are ranked based on the above impact analysis and a draft environmental assessment report is prepared.

MAJOR DECISIONS: Quantification of impacts; procedure to rank sites; the amount of detail required based on project parameters, local conditions, and State (and possibly Federal) requirements.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: SECURE SITES

number

203

PURPOSE: To gain public acceptance of the proposed site(s) and to obtain purchase options on preferred site(s).

DESCRIPTION: The Draft Environmental Assessment is presented to the elected officials and community groups. Elected officials from participating communities and the respective community groups are solicited for project support. System sites and associated environmental impacts of the resource recovery project are presented to the public via public meetings for their comments. Potential site owners are approached and land purchase option agreements are signed for the preferred site(s).

MAJOR DECISIONS: Environmental impacts are perceived to prohibit the resource recovery system; price to be paid for the sites; incentives to be offered to the host communities; should the sites be acquired by eminent domain.

MASTER ACTIVITY: UPDATE PROJECT DEFINITION AND COSTS

number

204

PURPOSE: To estimate project costs more accurately based on secured site(s), to develop strategies for removing any institutional barriers to the envisioned project configuration and to present them to the elected officials if major changes (in the project or in the elected officials) have developed since the previous presentation.

This MA may be reduced in scope if no significant changes have been made to the project during MA 203.

DESCRIPTION: Facility costs are refined based on the amount of waste estimated (taking into account existing, expanding, or new source separation programs) and the preliminary agreements with the energy and materials markets obtained in Phase I. Previously calculated (A 20102) transportation costs are revised if necessary and incorporated to estimate tipping fees and life cycle costs for the different procurement approaches.

Detailed strategies are developed for removing any institutional barriers which block the preferred configuration, and furthering waste supply and market commitments. These strategies have been outlined in Phase I and MA 201. Any changes caused by developments between then and now are made and additional details are added as necessary. These strategies are pursued in MA 206, MA 205 and MA 207, respectively.

MAJOR DECISIONS: Whether or not to perform this master activity if the preferred site(s) has been obtained. If the site(s) actually obtained is significantly different, this master activity may involve major restructuring of the project.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: STRENGTHEN WASTE SUPPLY COMMITMENTS

number

205

PURPOSE: To secure the waste stream and estimate accurately the types and tonnages to be included in the RR project. Legal questions of waste stream control and contracting are addressed in MA 206; MA 205 deals with non-institutional questions of securing the waste stream related to municipal intent or desire to deliver waste to the RR system.

DESCRIPTION: Accurate information regarding the amount and content of the waste supply is collected. Each community must decide the waste tonnage for which it will be responsible. Level of expected commitment of waste from the commercial and industrial waste of each community is established.

MAJOR DECISIONS: The waste tonnage each town should control and for which it will be responsible; methods of waste stream control available for commercial/industrial waste; whether to establish a community committee to analyze risks and possibly obviate the need for new legislation in MA 206.

MASTER ACTIVITY: STRUCTURE RISKS TO RESOLVE INSTITUTIONAL PROBLEMS

number

206

PURPOSE: To structure risks according to the favored scenarios of MA 113, MA 114, MA 117, MA 201 and MA 204 and to seek the legislative action or the community action in attempting to effect the favored scenario. The legislative changes and community action will dictate the risk structure. If attempts at those changes or actions are successful, the scenario stands are structured. If attempts at those changes or actions are unsuccessful, the results are incorporated to prepare a favored scenario for risks, or perhaps to determine the only possible course of action open to the community.

DESCRIPTION: MA 113, MA 114, MA 117, MA 201 and MA 204 already have stated the desired project posture. In so doing, contracting constraints as well as financing, procurement, and energy sales constraints were identified, and the course of action which should be pursued to rectify unwanted constraints was identified. In some cases the course was modified legislation; in other cases the decision was to work with the legal mechanism in place. This activity pursues the legislative changes indicated. If the legislation is partly or wholly unsuccessful, this master activity incorporates the results of the legislative process, and sets a course of action for risk assignment. One arrangement or several different institutional arrangements are constructed which will result in that desired risk posture. The results of this activity are then factored into the overall project position of MA 209. If no legislative changes are required, and the method for proceeding is not altered by MA 205, the project definition of MA 204 holds unamended.

MAJOR DECISIONS: If appropriate legislation was identified, how to draft the legislation; if defeated, whether to return next session or just work around the problem; the mix of institutional arrangements which should result in an acceptable risk posture.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: STRENGTHEN MARKET COMMITMENTS

number

207

PURPOSE: To secure market commitments for energy and materials in the form of letters of intent to purchase. Legal questions and barriers to securing markets are addressed in MA 206, but this activity addresses the intent and desire to participate on the part of the market regardless of whether the legal mechanism or precedent exists to allow participation by the market with the municipality or vice-versa.

DESCRIPTION: The lead agency recontacts viable energy and material markets to determine:
a) the intent of the market to cooperate in the project, b) purchase requirements and contract terms.

MAJOR DECISIONS: Which market to approach; whether or not to include a pricing formula in the letter of intent; whether or not to develop a draft contract.

MASTER ACTIVITY: UPDATE PROJECT DEFINITION AND COSTS

number

208

PURPOSE: To update project cost estimates based on secured sites, further commitments from waste suppliers and markets and the decisions and options from the selection of technology(s), risk assignment, procurement and financing approaches developed concurrently during MA 209.

DESCRIPTION: Facility costs are refined based on secured sites, the amount of waste committed (taking into account source separation) and the preliminary agreements with the energy and materials markets. Previously calculated (MA 201 and MA 204) transportation costs continue to be incorporated to estimate tipping fee and life cycle costs. This master activity is performed in conjunction with MA 209 and adjusted accordingly.

MAJOR DECISIONS: Whether or not to perform this master activity, since if very little change in the project has occurred during MA 205, MA 206, and MA 207, the results of either MA 201 or MA 204 may be used.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: SELECT TECHNOLOGY(S), RISK ASSIGNMENT, PROCUREMENT
AND FINANCING APPROACH: WRITE REPORT

number

209

PURPOSE: To provide definitive information on the scope of the RR system and the risks which the project participants are to assume. This information is needed for the Political/Public Decision to proceed.

DESCRIPTION: Based on the analysis of energy and materials markets, waste quantity and composition (taking into account source separation programs), environmental impacts and site(s), the preferred RR technology(s) is selected. Previous cost analyses have assumed specific technologies; now, however, the desired technology is formally stated. The project team also decides on the amount of risk to assume in the project and how the RR system is to be owned and operated.

MAJOR DECISIONS: Selection of most appropriate technology(s), procurement and financing approach and risk assignment.

MASTER ACTIVITY: OBTAIN POLITICAL/PUBLIC DECISION TO PROCEED

number

210

PURPOSE: To obtain an official decision to proceed with the project as defined in Phase II from all involved agencies.

DESCRIPTION: A proposed project scope has been developed by the project team with the cooperation of some elected officials. However, in this master activity, all participating elected officials formally accept the project structure, and then make a decision to proceed to Phase III. While elected officials may agree with the project, they should get public reaction and support before they make a decision to proceed. Part of the activity is for the elected officials of both the lead agency and any participating communities to come to a conscious decision to endorse the project, to so state the support, and to demonstrate their commitment by resolution to appropriate the required funds budgeted for Phase III in MA 209.

MAJOR DECISIONS: Whether or not to proceed with the project structure, risk assignment, and procurement and financing approach.

MASTER ACTIVITY: ESTABLISH ADMINISTRATIVE FRAMEWORK (TURNKEY)

number

301

PURPOSE: To identify and secure commitments from the public and private organizational resources necessary to carry out the procurement process and to structure and schedule this process so as to accommodate the required inputs.

DESCRIPTION: During Phase II, the elected officials have selected or created a lead agency for Phase III. This agency now reviews the project status and then determines and obtains commitments from the project team participants, hires consultants, establishes and maintains liaison with involved agencies, plans for public and industry involvement, and outlines the approach for soliciting and evaluating proposals from private industry (some or all of this may already be established and does not have to be repeated).

MAJOR DECISIONS: Selection of lead agency and key personnel; composition of the project team for Phase III; selection of consultants; plans for public and industry involvement; procurement plan and schedule.

MASTER ACTIVITY: PRODUCE RFP (TURNKEY)

number

302

PURPOSE: To specify the content and organization of proposals from potential contractors, and to acquaint the proposers with the various technical, managerial, financial, and institutional aspects of the project; to indicate clearly the desires of the lead agency in seeking a turnkey approach. To prequalify contractors and obtain their input on a draft RFP (optional).

DESCRIPTION: The RFP should clearly transmit the proposal requirements of the lead agency to the potential proposers. These requirements produce proposals of sufficient content and uniform organization for comparable and effective evaluation. An RFQ may be issued to select companies for the receipt of the RFP, thereby limiting the subsequent number of proposals. The turnkey approach implies certain needs and expectations on the part of the lead agency, and the intent should be clearly stated in the RFP. This master activity is designed for procurement of either large or small scale systems, or a combination of the two. Regardless of size, the same areas should be addressed and resolved. The RFP is built on the system - large or small - defined and refined in MA 007, MA 116, MA 201, MA 204 and MA 209. If necessary, waste quantities are updated, taking into account source separation programs and new, expanded and upgraded sewage treatment plants (for co-disposal projects), and the anticipated effects of source reduction. An optional step is to produce and issue an RFP in order to prequalify contractors and obtain their input on the draft RFP.

MAJOR DECISIONS: Whether or not to issue RFQ; selection of qualified proposers; definition of parameters in RFP.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: ACQUIRE CONTRACTOR (TURNKEY)

number

303

PURPOSE: To engage the services of a contractor to carry out the project as defined in the RFP.

DESCRIPTION: The contractor is selected following an extensive evaluation of proposals and is contracted following either a sequential or simultaneous negotiation procedure. The contract negotiations actually begin upon receipt of proposals and are continued through proposer presentations until it is decided either that one company is superior or that further elaboration is required with a limited number of them. After selection of a preferred proposer, a second proposer should be selected as an alternate in the event of unforeseen difficulties with the preferred contractor. A key consideration is the responsiveness of the proposals to the RFP; no further negotiation is needed if a proposer meets all the requirements of the RFP and the proposed system is acceptable according to the principal criteria.

MAJOR DECISIONS: Evaluation and ranking of proposals; sequential or simultaneous negotiations; final form of contract.

MASTER ACTIVITY: PERFORM ENVIRONMENTAL ASSESSMENT (TURNKEY)

number

304

PURPOSE: To prepare an environmental assessment in conjunction with securing permits where necessary to assure all involved agencies, the markets, and the public that the project is viable.

DESCRIPTION: The environmental assessment required varies widely among municipalities in complexity and review criteria. In some cases it may not be necessary to perform an environmental assessment. Where it is required, the assessment is usually done by a consultant for U.S. EPA or a State environmental agency and considers all air, water, noise, safety, and aesthetic requirements.

MAJOR DECISIONS: Identification of the critical items for the system; what level of detail the assessment should involve; whether or not to directly involve the turnkey contractor.

MASTER ACTIVITY: ACQUIRE WASTE SUPPLY CONTRACTS (TURNKEY)

number

305

PURPOSE: To develop final agreements between the lead agency and communities for the supply of waste. This is the key agreement between the lead agency and the communities which identifies the service to be provided, the risks to be borne by either party, and the method of compensation to reflect such service and related risks. If a co-disposal project is being pursued, proper commitments of sewage sludge are also pursued.

DESCRIPTION: The communities and the lead agency will negotiate a contract for the supply of waste, whose revenues will partially offset the costs and act as security for financing. Provisions for existing or future source separation programs; transportation costs; separate industrial/commercial wastes; and previously committed host community incentives are considered for inclusion in these agreements as appropriate. Bond and other counsel, depending on the form of financing, will review the legality and efficacy of the document, at which time it must be approved by each participating community, which may involve a substantial educational effort. If a co-disposal project is being pursued, the commitment of sewage sludge and septic wastes (treated as appropriate) is sought for inclusion in the system. In the case of a single municipality or single controlling agent, the waste supply may be readily available without specific community contracts, and this task is virtually unnecessary.

MAJOR DECISIONS: What risk posture to take on industrial/commercial waste; whether to take a hard or soft negotiating posture on draft contracts; what risks the lead agency should take and what risks the communities should take.

MASTER ACTIVITY: SECURE PRECONSTRUCTION PERMITS (TURNKEY)

number

306

PURPOSE: To secure necessary permits such as air quality, NPDES, construction, operation, and highway permits where required before extensive design is performed. Principally to assure the lead agency; the financial community (if revenue bond financing is anticipated); the market(s); participating communities; and the public that the project is viable and will meet all regulatory requirements.

DESCRIPTION: Depending on State and local requirements, various types of permits may need to be secured prior to final design and construction in order for the project to have a reasonable probability of success. Some of the permits are contingent upon an acceptable site plan, expected emissions and effluents. The permits are issued. This master activity is performed in conjunction with MA 307 since meeting permit requirements may cause modifications to the contractor's proposed design.

MAJOR DECISIONS: Which agencies should be contacted; which permits should be applied for during this master activity, whether or not design modifications are necessary to meet the permit requirements.

MASTER ACTIVITY:

PERFORM PRELIMINARY DESIGN (TURNKEY)
(Performed in Conjunction with Master Activity 306)

number**307**

PURPOSE: To produce technical information from the turnkey contractor for preconstruction permits which are pursued for the purposes stated in MA 306; to assure that the proposal (and the contractor's preliminary design) meets the permit requirements of MA 306 and the environmental requirements of MA 304.

DESCRIPTION: Certain major preconstruction permits, such as air quality or water quality (e.g., for cooling water), may require additional technical data for evaluation by the regulatory agencies. Other examples of potential permit requirements are zoning approvals contingent on landscape architecture or solid waste facility permits requiring rodent and odor control details. Any preliminary design work in support of meeting permit requirements is performed as part of this master activity.

MAJOR DECISIONS: Level of effort required to support permit submittals; level of detail of design work; source of funds to perform enough of the design to support MA 304 and MA 306.

MASTER ACTIVITY:

ACQUIRE MARKET CONTRACTS (TURNKEY)

number**308**

PURPOSE: To develop final agreements by conversion of preliminary commitments or letters of intent obtained during Phases I and II into contractually binding documents between the lead agency and the buyer(s) of energy (and materials).

DESCRIPTION: The lead agency will negotiate and secure contracts for sale of energy and materials. Revenues from such contracts will partially offset the cost of RR. Negotiations for the sale of energy to utilities should include liaison with the PUC. In the case of RDF production, final contracts may not be deemed necessary at this time, depending on the amount of risk which the lead agency (and possibly the communities in a multi-jurisdictional project) is willing to bear. For materials recovery it may be desirable to wait for the facility to become operational before contracting for the sale of the product.

MAJOR DECISIONS: What level of compensation is appropriate; what risks should be borne by the lead agency; what risks should be borne by the market; whether or not to seek materials market contract(s).

MASTER ACTIVITY: SECURE FINANCING (TURNKEY)

number

309

PURPOSE: To secure capital for the construction of RR and related facilities.

DESCRIPTION: There are basically two financing methods available when a governmental organization owns the facility. General obligation bond financing is the method often used for financing publicly-operated projects and places the faith and credit of the sponsoring jurisdiction behind the project. Municipal revenue bond financing pledges the project revenues to guarantee the debt, thus shifting some of the risk from the owner to the user (if they are one and the same, there is no substantial difference between the two methods). Some States offer umbrella bond sales for obtaining a lower interest rate. The risks, however, usually remain with the local government. State or Federal aid in the form of grants, loans or loan guarantees may also be available; however, since the terms and conditions of these vary with State and project, they are not discussed here; the exact method of financing is project and locale specific.

MAJOR DECISIONS: Type, details, and timing of bond issue.

MASTER ACTIVITY: ESTABLISH ADMINISTRATIVE FRAMEWORK (A/E)

number

311

PURPOSE: To identify and secure commitments from the public and private organizational resources necessary to carry out the procurement process and to structure and schedule this process so as to accommodate the required inputs.

DESCRIPTION: During Phase II the elected officials have selected or created a lead agency for Phase III. This agency now reviews the project status and then determines and obtains commitments from the project team participants, hires consultants, establishes and maintains liaison with involved agencies, plans for public and industry involvement, and outlines the approach for soliciting and evaluating proposals from private industry (some or all of this may already be established and does not have to be repeated).

MAJOR DECISIONS: Selection of lead agency and key personnel; composition of the project team for Phase III, selection of consultants; plan for public involvement; procurement plan and schedule.

MASTER ACTIVITY: ACQUIRE PRELIMINARY DESIGN (A/E)

number

312

PURPOSE: To have an engineer perform the preliminary design of the appropriate facilities and address the critical environmental issues which are necessary to: a) decide on the appropriate plant configuration; b) obtain preconstruction permits; c) obtain waste supply and market contracts; d) satisfy concerns of project impact; and e) refine project economics.

DESCRIPTION: The engineer performs preliminary design (40% of total design work) and addresses all issues related thereto. Close liaison is maintained with agencies issuing permits for the facility, and their input and comments are solicited. If necessary, waste quantities are updated taking into account source separation programs, and new, expanded or upgraded sewage treatment plants (for co-disposal projects), and the anticipated effects of source reduction.

MAJOR DECISIONS: Whether to use A/E already on the team or to seek another; what percentage of the total design to complete; source of funds for the preliminary design.

MASTER ACTIVITY: SECURE PRECONSTRUCTION PERMITS (A/E)

number

313

PURPOSE: To secure necessary permits such as air quality, NPDES, construction, operation, and highway permits where required, before extensive design is performed; to assure the financial community that the project is indeed viable, and to assure communities and markets that the project is viable.

DESCRIPTION: Depending on local requirements, various types of permits may need to be secured for the project to have a reasonable probability of success. Some of the permits are contingent upon an acceptable site location, plan, expected emissions and effluents. The permits are issued.

MAJOR DECISIONS: Conceptual design; which permits should be pursued earliest.

MASTER ACTIVITY: PERFORM ENVIRONMENTAL ASSESSMENT (A/E)

number

314

PURPOSE: To prepare an environmental assessment in conjunction with securing permits where necessary to assure all the involved agencies, the markets, and the public that the project is viable.

DESCRIPTION: The environmental assessment required varies widely among municipalities in complexity and review criteria. In some cases it may not be necessary to perform an environmental assessment. Where it is required, the assessment is usually done by a consultant for U.S. EPA or a State environmental agency and considers all air, water, noise, safety, and aesthetic requirements.

MAJOR DECISIONS: Identify the critical items for this system and what level of detail the assessment should involve.

MASTER ACTIVITY: ACQUIRE WASTE SUPPLY CONTRACTS (A/E)

number

315

PURPOSE: To develop final agreements between the lead agency and communities for the supply of waste. This is the key agreement between the lead agency and the communities which identifies the service to be provided, the risks to be borne by either party, and the method of compensation to reflect such service and related risks. If a co-disposal project is being pursued, proper commitments of sewage sludge are also pursued.

DESCRIPTION: The communities and the lead agency will negotiate a contract for the supply of waste, whose revenues will partially offset the costs and act as security for financing. Provisions for existing or future source separation programs; transportation costs; separate industrial/commercial wastes; and previously committed host community incentives are considered for inclusion in these agreements as appropriate. Bond and other counsel, depending on the form of financing, will review the legality and efficiency of the document, at which time it must be approved by each participating community, which may involve a substantial educational effort. If a co-disposal project is being pursued, the commitment of sewage sludge and septic wastes (treated as appropriate) is sought for inclusion in the system. In the case of a single municipality or single controlling agent, the waste supply may be readily available without specific community contracts, and this task is virtually unnecessary.

MAJOR DECISIONS: What risk posture to take on industrial/commercial waste; whether to take a hard or soft negotiating posture on draft contracts; what risks the lead agency should take and what risks the communities should take.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: ACQUIRE DESIGN AND CONTRACTOR (A/E)

number

316

PURPOSE: To complete final design and acquire the contractor(s) who will construct the RR facility according to the design.

DESCRIPTION: The preliminary design (with any revisions required by MA 313 and MA 314) is used as the base for completing the final design including drawings, specifications, bid and contract documents. The procurement procedure should follow the local community's standard bidding procedures for acquiring a lowest responsible bidder for the construction project.

MAJOR DECISIONS: Whether or not the design meets all the permit and environmental constraints of MA 313 and MA 314; whether or not to accept construction bids and sign the construction contracts; whether one contract or multiple contracts is required or desirable.

MASTER ACTIVITY: ACQUIRE MARKET CONTRACTS (A/E)

number

317

PURPOSE: To develop final agreements by conversion of preliminary commitments or letters of intent obtained during Phases I and II into contractually binding documents between the lead agency and the buyer(s) of energy (and materials).

DESCRIPTION: The lead agency will negotiate and secure contracts for the sale of energy and materials. Revenues from such contracts will partially offset the cost of RR. Negotiations for sale of energy to utilities should include liaison with the PUC. In the case of RDF production, final contracts may not be deemed necessary at this time, depending on the amount of risk which the lead agency (and possibly the communities in a multi-jurisdictional project) is willing to bear. For materials recovery it may be desirable to wait for the facility to become operational before contracting for the sale of the product.

MAJOR DECISIONS: What level of compensation is appropriate; what risks should be borne by the lead agency; what risks should be borne by the market; whether or not to seek materials market contract(s).

MASTER ACTIVITY: SECURE FINANCING (A/E)

number

318

PURPOSE: To secure capital for the construction of RR and related facilities.

DESCRIPTION: There are basically two financing methods available when a governmental organization owns the facility. General obligation bond financing is the method often used for financing publicly-operated projects and places the faith and credit of the sponsoring jurisdiction behind the project. Municipal revenue bond financing pledges the project revenues to guarantee the debt, thus shifting some of the risk from the owner to the user (if they are one and the same, there is no substantial difference between the two methods). Some States offer umbrella bond sales for obtaining a lower interest rate. The risks, however, usually remain with the local government. State or Federal aid in the form of grants, loans, or loan guarantees may also be available; however, since the terms and conditions of these vary with State and project, they are not discussed here. The exact method of financing is project specific.

MAJOR DECISIONS: Type, details, and timing of bond issue.

MASTER ACTIVITY: ESTABLISH ADMINISTRATIVE FRAMEWORK (FULL SERVICE)

number

321

PURPOSE: To identify and secure commitments from the public and private organizational resources necessary to carry out the procurement process and to structure and schedule this process so as to accommodate the required inputs.

DESCRIPTION: During Phase II the elected officials have selected or created a lead agency for Phase III. This agency now reviews the project status and then determines and obtains commitments from the project team participants, hires consultants, establishes and maintains liaison with involved agencies, plans for public and industry involvement, and outlines the approach for soliciting and evaluating proposals from private industry (some or all of this may already be established and does not have to be repeated).

MAJOR DECISIONS: Selection of lead agency and key personnel; composition of the project team for Phase III; selection of consultants; plans for public involvement; procurement plan and schedule.

MASTER ACTIVITY: PRODUCE RFP (FULL SERVICE)

number

322

PURPOSE: To specify the content and organization of proposals from potential contractors and to acquaint the proposers with the various technical, managerial, financial, and institutional aspects of the project including risk allocation and revenue sharing. To obtain comments on a draft RFP (and other input) from potential contractors. To prequalify potential contractors (optional).

DESCRIPTION: The RFP should clearly transmit the proposal requirements of the lead agency to the potential proposers. These requirements produce proposals of sufficient content and uniform organization for comparable and effective evaluation. An RFQ may be issued to select companies for the receipt of the RFP, thereby limiting the subsequent number of proposals. This master activity is designed for a full service procurement of either large or small scale systems, or a combination of the two. Regardless of size, the same areas of concern should be addressed and resolved. The RFP is built on the system, large or small, and defined and redefined in MA 007, MA 116, MA 201, MA 204 and MA 209. If necessary, waste quantities are updated, taking into account source separation programs and new, expanded or upgraded sewage treatment plants (for co-disposal projects), and the anticipated effects of source reduction.

MAJOR DECISIONS: Whether to issue RFQ; selection of qualified proposers; definition of parameters in RFP.

MASTER ACTIVITY: ACQUIRE CONTRACTOR (FULL SERVICE)

number

323

PURPOSE: To engage the services of a contractor to carry out the project as defined in the RFP.

DESCRIPTION: The contractor is selected following an extensive evaluation of proposals and is contracted following either a sequential or simultaneous negotiation procedure. The contract negotiations actually begin upon receipt of proposals and are continued through proposer presentations until it is decided either that one company is superior or that further elaboration is required with a limited number of them. After selection of a preferred proposer, a second proposer should be selected as an alternate in the event of unforeseen difficulties with the preferred contractor. A key consideration is the responsiveness of the proposals to the RFP. Further negotiations are needed even if a proposer meets all the requirements of the RFP and the proposed system is acceptable according to the principal criteria, since detailed contractual language will have to be agreed to by all parties to the transaction.

MAJOR DECISIONS: Evaluation and ranking of proposals, sequential or simultaneous negotiations, final form of contract.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: PERFORM ENVIRONMENTAL ASSESSMENT (FULL SERVICE)

number

324

PURPOSE: To prepare an environmental assessment in conjunction with securing permits where necessary to assure all involved agencies, markets, and the public that the project is viable.

DESCRIPTION: The environmental assessment required varies widely among municipalities in complexity and review criteria. In some cases it may not be necessary to perform an environmental assessment. Where it is required, the assessment is usually done by a consultant for U.S. EPA or a State environmental agency and considers all air, water, noise, safety, and aesthetic requirements.

MAJOR DECISIONS: Identification of the critical items for the system; what level of detail the assessment should involve; whether or not to directly involve the full service contractor.

MASTER ACTIVITY: SECURE PRECONSTRUCTION PERMITS (FULL SERVICE)

number

325

PURPOSE: To secure necessary permits such as air quality, NPDES, construction, operation, and highway permits where required, before extensive design is performed, principally to assure the lead agency; the contractor (if contractor equity is involved); the financial community (if case revenue bond financing is anticipated); the market(s); participating communities and the public that the project is viable and will meet all regulatory requirements.

DESCRIPTION: Depending on State and local requirements, various types of permits may need to be secured prior to final design and construction for the project to have a reasonable probability of success. Some of the permits are contingent upon an acceptable site plan, expected emissions and effluents. The permits are issued. The master activity is performed in conjunction with MA 328, since meeting permit requirements may cause modifications to the contractor's proposed design. The permit applicant will be either the lead agency or the full service contractor, depending on the type of financing employed and the contractual arrangements of the project.

MAJOR DECISIONS: Which agencies should be contacted; which permits should be applied for during this master activity; whether or not design modifications are necessary to meet the permit requirements; whether the lead agency or the full service contractor should be the applicant for the permits.

RESOURCE RECOVERY MANAGEMENT MODEL

MASTER ACTIVITY: ACQUIRE WASTE SUPPLY CONTRACTS (FULL SERVICE)

number

326

PURPOSE: To develop final agreements between the lead agency or the full service contractor and communities for the supply of waste. This is the key agreement for the communities and identifies the service to be provided, the risks to be borne by either party, and the method of compensation to reflect such service and related risks. If a co-disposal project is being pursued, proper commitments of sewage sludge are also pursued.

DESCRIPTION: The communities and the lead agency or the full service contractor will negotiate a contract for the supply of waste, whose revenues partially offset the costs and act as security for financing. Provisions for existing or future source separation programs; transportation costs; separate industrial/commercial wastes; and previously committed host community incentives are considered for inclusion in these agreements as appropriate. Bond and other counsel, depending on the form of financing, will review the legality and efficacy of the document, at which time it must be approved by each participating community, which may involve a substantial educational effort. If a co-disposal project is being pursued, the commitment of sewage sludge and septic wastes (treated as appropriate) is sought for inclusion in the system. In the case of a single municipality or single controlling agent, the waste supply may be readily available without specific community contracts, and this task may be unnecessary unless the lead agency is to contract with the full service contractor for the supply of waste, which only reduces the scope.

MAJOR DECISIONS: What risk posture to take on industrial/commercial waste; whether to take a hard or soft negotiating posture on draft contracts; what risks the lead agency or the full service contractor should take and what risks the communities should risk.

MASTER ACTIVITY: ACQUIRE MARKET CONTRACTS (FULL SERVICE)

number

327

PURPOSE: To develop final agreements by conversion of preliminary commitments or letters of intent obtained during Phases I and II into contractually binding documents between the lead agency or the full service contractor and the buyer(s) of energy (and materials).

DESCRIPTION: The lead agency or the full service contractor (depending upon the contractual agreements arrived at in MA 323) will negotiate and secure contracts for sale of energy and materials. Revenues from such contracts will partially offset the cost of RR. Negotiations for the sale of energy to utilities should include liaison with the PUC. In the case of RDF production, final contracts may not be deemed necessary at this time, depending on the amount of risk which the lead agency or the full service contractor (and possibly the communities in a multi-jurisdictional project) is willing to bear. For materials recovery it may be desirable to wait for the facility to become operational before contracting for the sale of the product.

MAJOR DECISIONS: What level of compensation is appropriate; what risks should be borne by the lead agency; what risks should be borne by the market; whether or not to seek materials market contract(s).

MASTER ACTIVITY: PERFORM PRELIMINARY DESIGN (FULL SERVICE)
(Performed in Conjunction with Master Activities
324 and 325)

number

328

PURPOSE: To produce technical information from the full service contractor for preconstruction permits which are pursued for the purposes stated in MA 325; to assure that the proposal (and the contractor's preliminary design) meets the requirements of MA 324 and MA 325.

DESCRIPTION: Certain major preconstruction permits, such as air quality or water quality (e.g., for cooling water) may require additional technical data for evaluation by the regulatory agencies. Other examples of potential permit and environmental requirements are zoning approvals contingent on landscape architecture or solid waste facility permits and public hearings requiring rodent and odor control details. Any preliminary design work in support of meeting permit requirements is performed as part of this master activity.

MAJOR DECISIONS: Level of effort required to support permit submittals; level of detail of design work; source of funds to perform enough of the design to support MA 304 and MA 306.

MASTER ACTIVITY: SECURE FINANCING (FULL SERVICE)

number

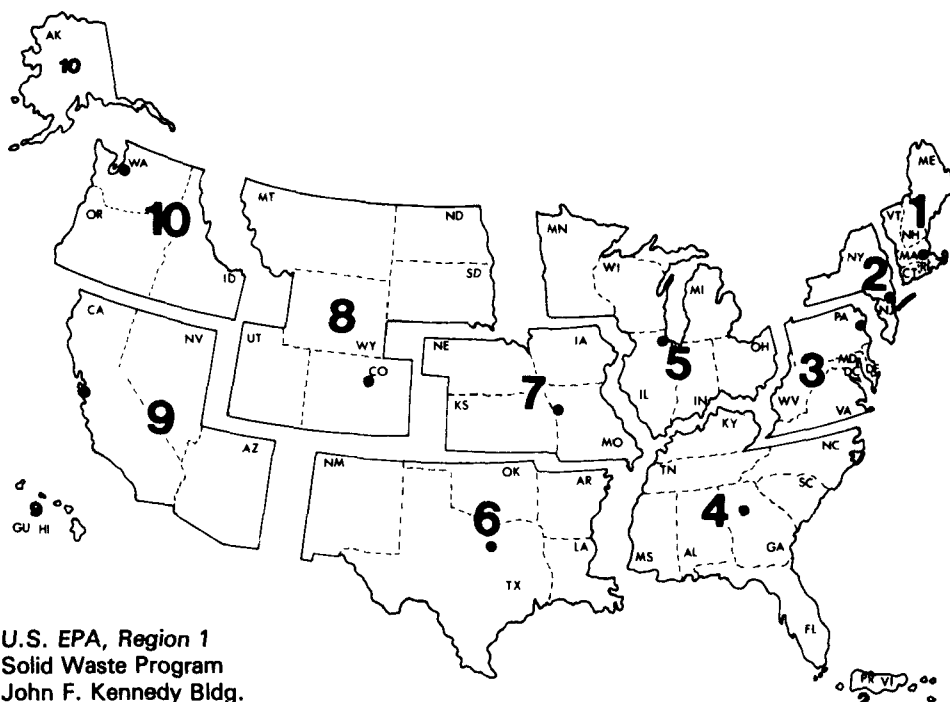
329

PURPOSE: To secure capital for the construction of the RR and related facilities; to choose one or some combination of a number of financing alternatives that provides capital at the lowest cost consistent with the level of risk that a public jurisdiction is willing to take.

DESCRIPTION: A number of financing options exist, including partial loans and grants, municipal general obligation bonds, municipal revenue bonds, 100% corporate financing, 100% tax-exempt revenue bonds. Equity participation can provide lowest cost financing based upon current tax laws, but also is the most complex to implement. In some situations, the method of financing may be supported by loan guarantees. Any or all of these methods may be used depending on the size and locale of the project. The more complex approach of leveraged financing is illustrated in A 32902 and A 32903. Other approaches can also be used.

MAJOR DECISIONS: Type of financing to pursue; establishment and approval of local financing authority for tax-exempt bonds; timing of bond issue.

EPA REGIONS



U.S. EPA, Region 1
Solid Waste Program
John F. Kennedy Bldg.
Boston, MA 02203
617-223-5775

U.S. EPA, Region 2
Solid Waste Section
26 Federal Plaza
New York, NY 10007
212-264-0503

U.S. EPA, Region 3
Solid Waste Program
6th and Walnut Sts.
Philadelphia, PA 19106
215-597-0980

U.S. EPA, Region 4
Solid Waste Program
345 Courtland St., N.E.
Atlanta, GA 30308
404-881-3016

U.S. EPA, Region 5
Solid Waste Program
230 South Dearborn St.
Chicago, IL 60604
312-353-2197

U.S. EPA, Region 6
Solid Waste Section
1201 Elm St.
Dallas, TX 75270
214-767-2645

U.S. EPA, Region 7
Solid Waste Section
324-E 11th St.
Kansas City, MO 64108
816-374-3307

U.S. EPA, Region 8
Solid Waste Section
1860 Lincoln St.
Denver, CO 80295
303-837-2221

U.S. EPA, Region 9
Solid Waste Program
215 Fremont St.
San Francisco, CA 94105
415-556-4606

U.S. EPA, Region 10
Solid Waste Program
1200 6th Ave.
Seattle, WA 98101
206-442-1260

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