FILE COPY

METRO Agenda

2000 S.W. First Avenue
Portland, OR 97201-5398
503/221-1646

Meeting: SWPAC

Date: May 12, 1986

Day: Monday

Time: 12:00 NOON

Place: Rm 330, Metro Building

12:00	Meeting called to order Announcements and approval of April 14th meeting minutes
12:10	Resource Recovery
12:50	Rate Incentives
1:30	Adjournment

SOLID WASTE POLICY ADVISORY COMMITTEE

SWPAC

April 14, 1986

Committee Members Present:	Bruce Rawls, Mike Sandberg, Craig Sherman, Shirley Coffin, Gary Newbore, Robert Harris, Pete Viviano, Michael Pronold, Carolyn Browne, Ken Spiegle for Clackamas County, Kathleen Cancilla
Committee Members Absent:	Ed Gronke, Dick Howard, George Hubel, Teresa DeLorenzo, Delyn Kies
Guest:	Bob Brown, DEQ
Staff Present:	Wayne Rifer, Steve Rapp, Mary Jane Aman, Chuck Geyer, Randi Wexler, Pat Vernon, Becky Crockett

The meeting was called to order at 12:00 Noon by Vice Chair Kathleen Cancilla.

Agenda Item: Approval of minutes

MOTION: Robert Harris moved that the minutes from both the 3/17/86 meeting and the 3/31/86 meeting be approved as written.

Seconded by Michael Pronold.
Carried unanimously

Kathleen Cancilla advised the committee that Teresa DeLorenzo would not be at this meeting, and that she will act as chair in Teresa's absence. Copies of the Chairpersons testimony from the Council Meeting of April 10th are available, and if anyone would like to see them, please advise her. Because of the lack of a quorum at the end of the last meeting, the chair decided to reopen the discussion on the SWPAC responses to DEQ that remain, rather than accepting the absentee ballots many of the members left last meeting.

Agenda Item: Responses to EQC Comments

Rate Incentives, #7:

Proposal: SWPAC will support Metro, is prepared to offer assistance, and expects to be actively involved in this process.

yes votes	Bruce Rawls, Craig Sherman, Shirley Coffin, Gary Newbore, Robert Harris, Pete Viviano, Michael Pronold, Kathleen Cancilla

NOTE: Clackamas County abstained on all votes

Certification Program, #8 :

Proposal: SWPAC supports the Metro response and will assist in putting the rate structures in place to address the issues for the certification program. SWPAC will study the usefulness of using certification incentives for high-grade loads through the results of the waste compostion study. SWPAC looks forward to addressing the yard debris problem as one of their first substantative issues.

SWPAC also supports the Metro staff proposal to have the Metro Council set yearly certification goals with the advice of the committee.

votes — same as above

Certification Program, #9 :

Proposal: SWPAC supports the Metro response.

yes votes — Bruce Rawls, Mike Sandbert, Craig Sherman, Shirley Coffin, Gary Newbore, Robert Harris, Pete Viviano, Michael Pronold, Carolyn Browne. Kathleen Cancilla

Certification Program #10:

Proposal: SWPAC is very aware of the problem, identified by DEQ and is aggressively studying how to assure fairness. It is one of the first issues on our work plan.

There was some discussion regarding penalties and concern that those complying will be over penalized to support the program. SWPAC would like to see an equitable certification process.

Vote taken on proposed statement with the addition of "We intend to have a valid certification process that rewards those that are doing their job as laid out by the Metro plan and penalizes those that are not. "

yes votes — Bruce Rawls, Craig Sherman, Shirley Coffin, Gary Newbore, Robert Harris, Pete Viviano, Michael Pronold, Carolyn Browne, Kathleen Cancilla

abstain — Mike Sandberg

Post Collection Recycling Materials Recovery #13-16

Proposal: SWPAC supports post collection recycling/materials recovery, and offers its advice and time to Metro Council on this issue if desired.

Comments on #15: Craig Sherman pointed out that tipping fees would have to be modified so that transferring high grade loads from CTRC to OPRC would be subsidized by increasing tipping fees at CTRC or other facilities

Comments #16: Gary Newbore, would like to see the recommendation not specify a particular recovery center.

Suggested to amend SWPAC comments to read "The Metro Council must require high-grade loads delivered to St. Johns to be diverted to a Processing and Recovery Center, or ny other viable operation."

Vote taken to accept the SWPAC response with the above changes.

yes vote	Bruce Rawls, Craig Sherman, Shirley Coffin, Gary Newbore,, Robert Harris, Pete Viviano, Michael Pronold, Carolyn Browne, Kathleen Cancilla, Mike Sandberg

Recycling Containers

Proposal: Support in principle A) used recycled material containers, B) prime education/promotion issue

yes vote	Bruce Rawls, Shirley Coffin, Gary Newbore, Robert Harris, Pete Viviano, Michael Pronold, Carolyn Brown
abstain	Craiq Sherman, Kathleen Cancilla,

Grants and Loans

Proposal:

Agree, however funds should be judiciously distributed

yes vote	Bruce Rawls, Mike Sandberg, Shirley Coffin, Gary Newbore, Robert Harris, Pete Viviano Michael Pronold, Carolyn Browne, Kathleen Cancilla
abstain	Craig Sherman

Institutional Purchasing Policies, #17:

Proposal: Support Metro's response to approach institutional purchasers about the need for purchasing recycled products.

Comments: Gary Newbore mentioned the need to define the objectives of the program and agree with concepts.

Shirley asked that it be recorded that there is some reservation about this response and SWPAC would rather look at what the end product will be before endorsment.

Vote taken to recommend to the Council that the program be defined in regard to cost effectiveness and objectives.

yes vote	Bruce Rawls, Mike Sandberg, Craig Sherman, Shirley Coffin, Gary Newbore, Robert Harris, Pete Viviano, Michael Pronold, Carolyn Browne, Kathleen Cancilla

Alternative Technology - Developmental Technologies, #18:

Proposal: Support the Metro response

Debbie Allmeyer, Metro Project Manager for the Resource Recovery Project, clarified the Metro response: Cellulosic conversion to ethanol would be a technology among those developmental technologies that would be looked at, about mid 1987 or after such time that an RFP has been issued, or a vendor selected for solving the 48% disposal problem, rather than try to include developmental technologies in the initial RFQ process . The developmental technology could also be handled with an RFQ and/or an RFP, just not at the same time.

vote taken to support Metro's response:

all vote	same as previous item

Waste Reduction Performance Goals

Proposal: SWPAC agrees with Metro response

yes vote	Bruce Rawls, Mike Sandberg, Craig Sherman, Shirley Coffin, Robert Harris, Pete Viviano, Michael Pronold, Carolyn Browne, Kathleen Cancilla
abstain	Gary Newbore

PHASE II

Proposal : Amend Metro's response with additional paragraph as outlined in handout.

Comments: Mike Sandberg asked if Metro anticipates requesting for authority over collection.

Wayne Rifer, Metro Staff responded that that would be an option, as the orginal draft listed optional techniques to be considered in Phase II. The Council amended that so it merely referred to disposal bans for recyclable material, without including the other techniques. DEQ came back and said they wanted Metro to go for legislative authority of some sort, however, they were not specific regarding what kind of legislative authority they meant.

After some discussion a vote was taken to accept the statement as it stands:

yes vote	Bruce Rawls, Craig Sherman, Shirley Coffin, Gary Newbore, Robert Harris, Michael Pronold, Carolyn Browne, Kathleen Cancilla
oppose	Pete Viviano, Mike Sandberg,

PHASE III # 21

Proposal: additional paragraph to be added to Metro's response

vote to accept as written

yes vote — Bruce Rawls, Cragin Sherman, Shirley Coffin, Gary Newbore, Robert Harris, Michael Pronold, Carolyn Browne, Kathleen Cancilla

Agenda Item — Resource Recovery Project

Doug Drennen, Metro Solid Waste Engineering Manager, introduced Bob Zier of Gershman Brickner and Bratton, the consultants assisting Metro with the present alternative technology project process. He reminded committee members of the Council workshop being held on Wednesday, April 16th, at 5:00 in room 330.

DEQ's response to Metro on the waste reduction plan asked that Metro commit up to 1,300 tons per day to an alternative technology project, or establish what costs may be paid for resource recovery. Because the law states a criteria for technical and economic feasibility, Metro's approach is to determine and define what possible cost (premium cost) may be paid for an alternative technology system. In looking at the criteria of technical and economic feasibility, staff did not feel that a premium should be established by just comparing the cost of landfilling to the cost of resource recovery because there may be other economic advantages to consider ie. money over time, location of facilities and impact on hauling. The approach being developed for determining premium cost is 1) consider % above landfilling costs which an alternative technology process may take on, 2) consider a cost over system cost 3) consider factors involved in lifecycle costing. Gershman, Brickner and Bratton (GBB) has prepared information on what goes into an AT project. Bob Zier will go over this information to give members a good background on the AT project.

The Workshop session should offer a firm concept from the Council on which approach will be utilized. This will be discussed in ordinance form at the April 22nd Council meeting. Council will be meeting May 1, 15 and 29th. This committee may want the opportunity before that time to review your input to the premium cost and present it at testimony.

Bob Zier then reviewed the GBB background information that will be discussed in greater detail at the Council Workshop.

Meeting adjourned at 1:34

Next Regular Meeting : May 19th

Special Meeting: Committee will be advised by mail if a special meeting is needed

METRO

2000 S.W. First Avenue
Portland, OR 97201-5398
503/221-1646

Memorandum

Date: May 5, 1986

To: SWPAC

From: Rich McConaghy, Analyst

Regarding: May 12th Rate Incentive Discussion

I apologize for being a bit late in getting the attached staff report and analysis to you. Hopefully you will still have adequate time to review the information prior to the May 12th SWPAC meeting.

Both the staff report and the "Analysis and Recommendation of Rate Incentive Options" report are in draft form, and it is posible that there may be some modifications before bringing them to the Metro Council on May 15. Council review of the general approach for providing rate incentives for recycling, as outlined in the staff report, and an OK to use this approach to solicit further comments and input, will provide the Environmental Quality Commission with an indication of the rate incentive program which is planned by Metro. Rate incentives are a key element of the Waste Reduction Plan, and particularly of the Certification Program.

At the May 12th SWPAC meeting, staff will summarize the general rate incentive approach which is indicated in the staff report. Since this will be your first introduction to the topic of rate incentives, it is not expected that you will provide extensive and detailed comments, however, we will be interested in learning of your initial thoughts and questions on the concepts. SWPAC will have the opportunity in June to have an in depth discussion and provide a formal recommendation on the rate incentive program.

Thank you for your time in reviewing this information.

STAFF REPORT

Agenda Item No. _____

Meeting Date May 15, 1986

PRESENTATION OF A RATE INCENTIVE APPROACH FOR THE SOLID WASTE REDUCTION PROGRAM

Date: May 6, 1986

Presented by: Rich McConaghy and Steve Rapp

FACTUAL BACKGROUND AND ANALYSIS

The purpose of this staff report is to summarize the general approach of the rate incentive program which is suggested for meeting the objectives of the Solid Waste Reduction Program. The Council is being asked to review this approach and give its consent to use the suggested approach as a means of obtaining input on a rate incentive program which will be adopted with the 1987 rates. Council approval to solicit comment on this approach will serve two purposes:

1. An indication can be provided to DEQ and EQC of Metro's approach for implementing a rate incentive program. EQC comments on Metro's Solid Waste Reduction Program requested an indication of the general rate incentive approach which would be taken as well as the rates or rate differentials which would be implemented.

2. Definition will be added to the rate policies which will be considered for the 1987 rate study through the review process which is shown in the attached "Process for Developing a Rate Incentive Program."

Metro Council Resolution No. 85-611-A (December 19, 1985) adopted solid waste reduction policies. Included in these policies was a statement committing to the use of rates to provide incentives for recycling:

> "Rates for disposal will be structured to provide adequate incentives to conduct maximum feasible source separation programs and to produce the maximum feasible high-grade select loads."

In the Waste Reduction Program Work Plan, staff agreed to analyze options and suggest an approach for a rate incentive program which would:

1. Encourage the production and recovery of high-grade loads of mixed wastes at waste processing facilities; and

2. Encourage compliance with SB 405 standards in 1987 and participation in the certification program in future years.

To arrive at an effective approach, staff examined a number of alternative strategies. The attached report entitled "Analysis and Recommendation of Rate Incentive Options" outlines possible rate structure modifications which were evaluated for meeting the two objectives indicated above (a matrix summarizing the various options considered will be presented at the May 15 meeting). From the various alternatives listed in the report, staff has suggested the ones which will be the most effective in accomplishing these objectives while causing the least amount of undesirable impacts. The staff recommended general approach to a rate incentive program is outlined below. Following Council approval to obtain comment on this general approach, it will be presented for public review. As indicated in the attached "Process for Developing a Rate Incentives Program," the comments will then be brought back to the Council for endorsement of a general approach and then for final adoption in conjunction with 1987 rates. Public review will be requested from the Metro Rate Review Committee and SWPAC, from local jurisdictions and from collection, disposal and recycling interests. The general approach may be modified as a result of comments received through this review process.

Suggested Approach

Six general areas have been identified in which rate incentives can impact recycling. The suggested rate incentive approach would focus on a different strategy for each of these areas:

I. Certification Rate Incentives

A differential rate program is suggested which would encourage waste collectors to offer recycling opportunities. Commercial haulers which provide collection service in areas which are designated by DEQ as complying with SB 405 requirements in 1986 would pay a lower tipping fee at Metro facilities (St. Johns and CTRC). This strategy of differential rates would be implemented on January 1, 1987. In future years, the designation of certified units under the Metro certification program would determine who would qualify for a lower rate. Standards applied to the certification program for yard debris or other issues in future years would need to be met before the lower rate could be received. The exact amount of the rates to be charged and the amount of the differential in disposal rates to be charged to certified versus non-certified area haulers in 1987 will be determined prior to September 1986 through the annual rate study process. It is suggested that non-certified area haulers would pay $7.00 more per ton for disposal than certified area haulers. The amount of this differential is based on the estimated cost of providing the SB 405 level of service the first year. In order for the differential to have an impact it must be

adequate to offset the cost of complying with the SB 405 requirements. In 1987, the increased fee revenue collected through the differential charge applied to waste from non-certified areas would not be counted on to offset Metro operating costs. This is because certification standards the first year coincide with SB 405 requirements and it is expected that all districts or units will be certified. Revenue earned through the surcharge on non-certified waste would be used for identified waste reduction efforts, future capital expenditures or for lowering rates. Any potential inequities or provisions for partial certification of areas or haulers operating in more than one area will be addressed through the certification program which is being developed and rates will be applied as appropriate.

Two other approaches are not suggested for the first year but could be considered in future years if additional incentives are needed to obtain the desired impact and participation in the certification program:

- A limited loan/grant program for local jurisdictions that would provide assistance in developing programs which would fulfill certification standards in 1988 and future years could be considered as an option which might be implemented later. These loans could be forgiven or converted to grants if the jurisdiction is successful in becoming certified the following year. A cap might be placed on the amount of funds available each year and a process would be established for reviewing and approving loan requests. The funds for providing these loan/grants would be obtained through the User Fee or through revenue generated by the differential rate.

- A voucher system which would allow disposers from certified areas to obtain a reduced rate at the landfill when they have recycled certain volumes of materials could also be introduced in future years. Those from certified areas would obtain a receipt from recycling depots or brokers which could be presented for a discount at the landfill. Funds to allow for the discount would have to be obtained through an increase in the User Fee. If it is determined that either of these programs is needed, they would be implemented after 1987.

II. Materials Processing Rate Incentives

Exemptions currently granted to materials processing and recovery centers through variances to the Metro Code remove the requirement that they collect Metro User Fees and Regional Transfer Charges on the wastes which they receive. Amendment of the Metro Code will categorically

exempt materials recovery and processing centers from collecting these fees. These fees will continue to be collected on any wastes which come out of these facilities and are disposed at a landfill or energy recovery facility. The net effect is to remove the current $5 per ton RTC and User Fees from that portion of the mixed waste stream which gets recycled. To meet revenue requirements, User Fees on other wastes will need to increase.

The assurance that high-grade loads will be generated provides a climate which is favorable to the operation of materials processing and recovery centers. In order for waste generators to produce and collectors to deliver high-grade select loads an adequate economic incentive must exist. Until the regional waste composition and system measurement study is completed in late 1986 it is not possible to know the volume of select loads which may potentially be available and the amount of the differential which may be needed to provide an adequate economic incentive for this to occur. The differential which currently exists between the St. Johns Landfill and the Oregon Processing and Recovery Center (in part due to not collecting the $5 RTC and User Fee) appears to be providing adequate flows to the waste facility.

As the cost of the landfill disposal system increases, a natural differential is created and generators have a greater incentive to avoid landfill disposal costs through either increased source separation or through the generation of high-grade loads which can be disposed of for a lesser amount at waste processing and materials recovery facilities. The rate incentive strategy for encouraging the production and recovery of high-grade loads from primarily commercial and industrial waste generators involves monitoring the amount of waste which goes to processing centers and comparing this to the amount which might potentially go to these facilities if an adequate economic incentive were provided.

If the natural incentive appears inadequate, Metro will incrementally increase the amount of the differential through providing an artificial incentive. The impact of each incremental increase in the artificial incentive amount over time in increasing processed waste volumes will be monitored and evaluated before further increases of the incentive are considered. The objective will be to determine and then maintain the differential between land disposal rates and materials recovery disposal rates which will assure the optimum amount of waste processing. If and when an artificial incentive is provided, it may be necessary to regulate disposal rates at waste processing facilities to assure that targeted objectives are met.

The recommended artificial incentive for providing this utilization of available processing capacity could involve one or both of two strategies:

- Disposal account credits could be offered at Metro facilities for those waste haulers who dispose of high-grade loads at materials recovery centers. For example, for each ton of waste delivered to a waste processing center (such as the Oregon Processing and Recovery Center), a commercial hauler would receive a credit on his St. Johns or CTRC disposal account. By taking more waste to the processing center a hauler reduces his total operating costs. A hauler could be expected to pass this savings along to his customers who generate the high-grade loads so that they would have a greater incentive for doing so. If it is determined through a review of waste flows that an increase over the existing $5 incentive is needed, the amount might be set at $7, then $9, then $11 and so on until some optimum amount of waste is delivered as high-grade loads.

- Alternatively, disposal credits could be given to waste processing centers which would allow them to pay reduced rates for disposal of their residuals at the landfill. The amount of credit given would be related to the volume or ratio of particular materials recovered through the processing operation. Centers would be provided with an incentive to process more waste and recover additional materials from the wastes which are processed. Rates to disposers would be kept low so that more wastes could be received. Again, Metro might need to regulate rates to assure that benefits of the incentive are passed along to disposers.

As mentioned, the artificial incentive would not be implemented until the waste system measurement results indicate that it is required. The mechanisms to allow for immediate application of either or both of the disposal credit options could, however, be in place for 1987. Funding for these incentives would need to be obtained through the User Fee.

III. Rate Incentives for Reuse Operations

The amount of waste which ends up in landfills is decreased by the existence of such non-profit organizations as Goodwill Industries and the Salvation Army which provide for the reuse of materials. In order to encourage the ongoing viability of material reuse centers, an opportunity might be provided to these types of organizations to dispose of some of their wastes in trade for a service which they might provide at the

transfer station of removing reusable items from the waste stream. For diverting one ton of reusable material at the transfer station they could dispose of one ton of refuse at no charge. It is suggested that nonprofit groups be contacted to determine if there is interest in such an arrangement. Results of the waste composition study should indicate the amount of material which could be recovered for reuse through such a mechanism. This strategy could be implemented in 1987 for little cost if interest is sufficient.

IV. Yard Debris Rate Incentives

Beginning on January 1, 1987, source separated yard debris will be accepted at St. Johns for somewhere between 25 percent and 75 percent of the total disposal rate applied to mixed wastes received for landfilling. Consideration could be given to implementing this incentive prior to fall of 1986, a period when seasonal yard debris disposal volumes are high. An exact rate to be charged for accepting source separated yard debris will be suggested through the 1987 rate study.

It is expected that Metro User Fees and Regional Transfer Charges, the St. Johns Rehabilitation and Enhancement Fee and the State Landfill Siting Fee will not be collected on source separated yard debris and that the base rate will be somewhat different and most likely lower than the base rate applied to wastes which are landfilled. The amount of the fee for accepting source separated yard debris will be based on the cost of processing and the offset provided through use of the product. Unless an additional incentive is needed, there should not be a need to generate new funds to provide this incentive. Since source separated yard debris will be recycled at St. Johns it is appropriate that rates and fees collected for its disposal be different than those applied to wastes accepted for land disposal.

Reduced rates for source separated yard debris should be available for both public and commercial customers. Yard debris volumes at CTRC would be reduced through a ban rather than through a rate incentive, once processing capacity is available. A strategy for recovering yard debris going to WTRC will be developed following an assessment of available options.

V. Flat Rate Incentive

It is not uncommon for a recycling fee to be collected on all waste disposed in some cities or areas of the country. Sometimes this fee has been imposed as a way of elevating total disposal costs so that avoidance of paying high disposal fees becomes an incentive to recycle. Metro

currently collects a flat rate for recycling as a part of its User Fee. In the past the amount of the Metro user fee has been based on obtaining revenue required to meet identified program costs. Staff suggests that this criteria be maintained and that arbitrary fee increases not be considered as a method to encourage recycling. The costs of User Fee programs, including waste reduction and recycling promotions will be considered in the 1987 rate study. Necessary funds to allow for rate incentives which will be offered must be provided through the User Fee.

VI. Public Recycling Rate Incentive

Public haulers who deliver their wastes to St. Johns or CTRC currently have the opportunity to pay a reduced disposal fee through the waiver of the minimum trip charge which applies when a half a cubic yard or more of source separated recyclables is delivered with mixed waste. This should be maintained.

Summary

This staff report has indicated the general approach which is suggested for implementing waste reduction rate incentives for 1987. After review by interested groups, a final approach can be agreed upon. Development of the actual numbers and programatic details to implement the rate incentive strategies for 1987 will be accomplished in the 1987 rate study and can be adopted through the rate ordinance which the Council will consider in September.

EXECUTIVE OFFICER'S RECOMMENDATION

RM/gl
5530C/453-3
05/06/86

RDM 5/6/86

PROCESS FOR DEVELOPING A RATE INCENTIVES PROGRAM

DATE	ACTIVITIES	COUNCIL ACTION
Dec. 85	Waste Reduction Program approved	Council adopts waste reduction policies
Apr. 86	Alternative rate incentive approaches identified and screened by staff	
May 2	Staff recommends rate incentive approach	
May 12	SWPAC reviews staff recommended approach	
May 15	Metro Council reviews staff recommended rate incentive approach	Council OKs general approach for soliciting comment
May 16	Transmit general approach for providing rate incentives to DEQ and EQC	
May & June	Review of staff recommended rate incentive approach through meetings with: SWPAC Rate Review Committee Local Juridictions Hauler Organizations Association of Oregon Recyclers	
July	Report to Council on comments and recommended modifications to the general rate incentive approach	Council endorses the general approach for rate incentives & direction to be taken in 1987 rate analysis
Aug	1987 rate study completed	
Sept.	1987 rates adopted	Council adopts rate incentive policies and rules through 1987 rate ordinance

ANALYSIS AND RECOMMENDATION OF RATE INCENTIVE OPTIONS

INTRODUCTION

Through its Waste Reduction Program, Metro has committed to using its rate structure to reduce the amount of waste disposed in landfills. Metro Resolution No. 85-611-A (December 19, 1985) adopted the following as one of ten key solid waste reduction policies:

> "Rates for disposal will be structured to provide adequate incentives to conduct maximum feasible source-separation programs and to produce the maximum feasible high-grade select loads."

Included in the work plan to further develop and implement these waste reduction policies is a program to provide these rate incentives. This analysis presents the alternative strategies which were reviewed as potential options for providing disposal rate incentives which encourage materials reuse and recycling. Staff review of the options considered has led to the identification of a preferred program approach to providing rate incentives. It is intended that this analysis as well as the staff-recommended general approach be extended for review by interested groups prior to adoption of the program and development of specific program details.

It is recognized that particular rate incentive strategies must be targeted at particular segments of the waste stream or towards meeting particular waste reduction program objectives. The six areas for which rate incentive options have been outlined include the following:

I. Rate incentives to encourage Senate Bill 405 compliance and participation in the Metro certification program.
II. Rate incentives to encourage use of waste processing centers for high-grade loads.
III. Rate incentives to encourage material reuse.
IV. Rate incentives to encourage yard debris source-separation and recovery.
V. Flat rate allocations to provide stable funding for identified waste reduction efforts.
VI. Rate incentives to encourage public recycling at the landfill and transfer stations.

RATIONALE

In order for an increase to occur in the volume of recycled materials, some changes in the behavior of waste generators, waste collectors, waste processors, and governments is needed. Economic incentives have been used successfully in other areas to promote changes in recycling behavior. Lane County, Oregon experienced a 40 percent increase in recycling rates by public landfill customers when a discount disposal fee was given for delivering recyclables along with other waste materials ($1.00 saved for every 10 pounds of recyclables delivered). Under a certification program to encourage curbside collection of recyclables, Lane County certified haulers pay $2.00 less per ton than non-certified haulers. All but one of the 17 county collectors are certified. In Palo Alto, California, waste generators are provided with a similar incentive for separating recyclables. A voucher system allows them to dispose of a certain volume of waste after depositing a certain quantity of recyclables. Also, yard debris with no contaminants may be placed in the compost pile at the landfill for 60 percent of the disposal rate applied to mixed waste. Palo Alto officials found the program resulted in a significant increase in the amount of recyclables collected. In Seattle, Washington, where refuse collection is controlled by the city, a variable can rate was instituted to encourage recycling and reduce wastes. Charging customers more for collecting additional cans increased recycling and reduced waste flows. Public support for the system is high.

The generator of waste can provide the greatest impact in reducing waste volumes and increasing recycling. Economic incentives at this level would be the most effective. However, Metro does not have the ability to provide most generators with direct economic incentives. Metro's strategies of rate incentives must therefore rely on waste collectors or local jurisdictions to pass along economic incentives which it can provide at the disposal point to the waste generators they serve.

Metro's authority for using rates which it collects for disposal to fund waste reduction efforts and to reduce the volume of landfilled wastes is granted by ORS 268.317(b) and 268.515 and by Senate Bill 662 (1985 OR laws, chapter 679, section 8). Potential strategies which have been considered as alternatives for using rates or rate revenue to increase recycling and thereby decrease volumes of landfilled wastes are presented in the outline which follows. Staff consideration of these alternatives has led to the identification of a recommended approach. Review and comment on the options outlined or other options which might be offered is expected before the adoption of specific rate policies and programs for 1987.

OUTLINE OF OPTIONS

I. CERTIFICATION RATE INCENTIVES

Incentives to comply with standards for certification. 1986 standards are compliance with Senate Bill 405 (SB405), to apply to 1987 rates. In future years the rate incentive would apply to other certification standards.

Option A. Differential Rates.

Reduced tipping fees for haulers operating in areas conforming with the law (these areas will be identified by DEQ for rates which would be applied in 1987). In future years, areas will be certified by different standards to qualify for the lower fee.

To have an impact, the size and benefit of the rate differential the first year should be at least as great as the cost of complying with SB405 requirements. (That cost was calculated for West Linn, based on an October, 1984 to September, 1985 study, to be approximately $7.50 per ton of waste landfilled.) However, the differential paid should not be so large that the industry would be disrupted, and create ill-will for the program. Therefore, the differential should be in the $5 to $10 range. A $10 increase in tipping fees translates to about $.80 per month to residences for one can per week service. Any differential may not necessarily be passed on to the generators, given the variability in the regulation of collection.

Haulers complying with the law but operating in a non-complying area might be penalized. SWPAC should function as an adjudication board to handle possible inequities which might arise.

<u>Advantages</u>

1. Direct and immediate reward to haulers for offering recycling opportunities.

2. The force behind the program is economic pressure.

3. Less administration required than for options B

or C.

Disadvantages

1. Garbage service is inelastic - people do not change their behavior quickly as a result of price changes.

2. The option may create problems in forecasting Metro revenue and cause additional administrative involvement.

3. Haulers in franchised areas must face their customers with the rate increase news.

4. No assurance, given the nature of franchise regulation, that rate benefits of compliance would be passed on to waste generators.

5. Included in the cost (assuming the program is not revenue-neutral - see issue 1) is the benefit payable to those already complying.

Issues & Policy Questions

1. Should higher, non-certified area rates be offset by lower than cost rates for certified area haulers? i.e. should the rate be lowered or raised, depending on compliance, so total revenue is the same as without the program? Participation rates could be conservatively estimated to ensure a revenue shortfall does not occur. Possibly excess funds could be used for reducing compliers fees the following year.

   a. Advantages of offsetting the rates

      i. Public, haulers, and local governments will more easily be able to support the program.

      ii. Metro will not be subject to the criticism of raising rates without, in some people's perspective, increasing service.

      iii. No excess funds will be generated.

   b. Disadvantages of offsetting the rates

      i. Participation levels may be difficult to forecast, resulting in a revenue shortfall or surplus.

2. Should the amount of the rate differential applied to the program be responsive to the secondary materials market?

   a. Advantages of responding to the market

      i. Collection industry supports market-driven recycling.

      ii. Government intrusion reduced to the extent secondary materials sales could provide economic incentive.

   b. Disadvantages of responding to the market

      i. Would require close monitoring of the markets by Metro.

      ii. Would require frequent changes in the amount of the differential.

      iii. Would hinder forecasting revenues.

3. Should the differential be small at first, allowing for subsequent increases if results are insufficient?

   a. Advantages of starting small

      i. The impact would be the minimum necessary, while still accomplishing the objective.

   b. Disadvantages of starting small

      i. A substantial impact may be necessary to gain the necessary attention to ensure success of the program.

      ii. People may not notice small increases.

Option B. Loan/grants Program.

Credits program to benefit cities and counties adjusting, and cities and counties conforming, to the law. Loans could be given to jurisdictions to help meet SB405 requirements. These loans could be forgiven when the jurisdiction shows compliance with the certification standards. Since the interest on the loan accumulates over time, not forgiving the interest on the loan could provide an added incentive to act early. The funds for limited number of loans could be obtained through rates

paid by all disposers at the landfill and transfer stations. The maximum amount of the benefit available to a jurisdiction could be proportional to a measure of the size of the jurisdiction, such as population (number of residents plus workers).

1. The form of benefit could be money to allow use where each local government believes it is most useful.

2. The form of benefit could be promotional help to further aid local waste reduction programs.

Advantages

a. Predictable - staff can forecast the amount of money to be lent out. Returned loans from districts not conforming could be used for new loans elsewhere, or allocated to other waste reduction programs.

b. Provides an incentive directly to local governments for accomplishing SB405 requirements.

c. Provides flexibility to allow recyclables to be collected by businesses unlikely to benefit from disposal credits or reduced tipping fees.

Disadvantages

a. Less direct and immediate incentive for collection customers or waste haulers.

b. Metro competes with banks in loaning to private industry.

c. Included in the cost is the grant payable to those cities and counties already complying.

Option C. Voucher System.

Commercial and public haulers could receive vouchers for delivering source-separated recyclables to the landfill recycle area, transfer station recycle boxes, or any private or non-profit recycle center depositories. The vouchers could be redeemed for some benefit, such as disposal credits at the landfill, or for cash. The system would be available only to those haulers operating in a certified area, or residents in a certified area.

1. The benefit could be in the form of disposal credits. A predetermined amount of recyclables could allow a specified reduction in the tipping fee at the landfill.

a. Advantages

i. Direct, immediate, and proportional reward for recycling efforts.

ii. Encourages pressure from both haulers and public to force local governments to become certified.

iii. Metro is provided a solid measure of impacts of the certification program on recycling.

iv. Metro would not need to pay out cash.

b. Disadvantages

i. Government involvement increased.

ii. Figures on amount recycled not immediately available at privately-owned recycling centers.

iii. Requires private industry, i.e. recycling centers, to submit more data to Metro to allow supervision of the program.

iv. Requires Metro to monitor the program closely to prevent abuses.

v. No advantage given to recyclers not handling waste to be landfilled.

vi. Included in the cost of encouraging any incremental recycling is the benefit payable to those already recycling.

2. The benefit could be money.

a. Advantages

i. same as C-1-a-i

ii. ii

iii. iii

b. Disadvantages

i. same as C-1-b-i

ii. ii

iii. iii

iv. iv

v. vi

vi. Metro acting as Robin Hood, taking money away and giving it back to particular people.

vii. Encourages scavengers to steal recyclables.

Impacts

A one for one voucher system, for example, where one ton or yard of waste could be landfilled free in return for one ton or yard recycled would cost approximately $15/ton of extra waste removed from the landfill. With an existing recycling rate of approximately 22%, a revenue-neutral program would dictate approximately a $3.25 increase in tipping fees.

Option D. Monitor conformity to SB405, but provide no incentive to comply.

Option E. Status quo.

II. PROCESSING CENTER RATE INCENTIVES

These options to encourage generators of waste and collectors to create and deliver high-grade loads (containing mostly recyclables and not contaminated by putresibles) to a processing center would be implemented after the Waste Composition Study, due to be completed in 12/86, indicates the need for such efforts.

Option A. Disposal Credits to Haulers.
For a set number of tons of high-grade waste delivered to a processing center by haulers, credit is given for reduced disposal rates at the Metro-owned landfill or transfer stations. Unused credits could be redeemed for cash from Metro. This option may require extra promotion and education aimed at both the public and the haulers, since the generators and the haulers need to work together to increase waste flow at processing centers (generators must source separate their recyclables or high-grade wastes, and haulers must keep them separate or not further contaminate them, and deliver to a processing center).

Advantages

1. Allows some benefit to accrue to haulers even in franchised areas.

2. With proper promotion and education, generators can reap some of the benefit, too.

3. Administratively simple.

Disadvantages

1. Somewhat reduces Metro's ability to forecast revenues.

2. May require regulation of processing center rates.

Option B. Diversion Credits for Processing Centers. Metro would pay the operator an amount for every ton recycled.

Advantages

1. Direct aid to recycling operations.

2. Help operator keep disposal fees down.

Disadvantages

1. Government subsidy of private industry.

2. Would require Metro to regulate processing center rates to assure reduction in operating costs is passed through to processing center customers.

Option C. Tipping Fee Break for Residual Wastes from Processing Centers.
The residual wastes from these facilities (about 40% of the total disposed at OPRC) could be given a discounted disposal rate at the Metro-owned landfill.

Advantages

1. Aids processing centers in keeping operating costs low, and therefore allows lower rates for disposing there.

Disadvantages

1. Requires monitoring to be sure recycled percentages remain high.

2. Requires rate regulation.

Option D. Metro Operation of the Gatehouse at Processing Facilities.
Private businesses own and operate the facilities, while Metro operates the gatehouses and pays the owner through contract on the basis of volumes and grades processed. Metro would pay the operator more than is collected through tipping fees if needed to provide an incentive for haulers to use the facility.

Advantages

1. Guarantees the processing center an income for each ton processed, regardless of how poor the secondary materials market is.

2. Ensures that loads will remain high-grade and allows lower grade loads to be processed.

Disadvantages

1. Government involvement in an industry currently operated by the private sector.

Option E. Modify Ordinances to Waive Metro Fees.
Metro Regional Transfer Charges and User Fees are presently waived at processing centers through variances, but an ordinance modification would make the policy universal and consistent.

Advantages

1. Formalizes existing policy and assures operators of its continued application.

Disadvantages

1. Metro fees not collected on recovered materials results in loss of revenue.

Option F. Low-interest Financing for Start-up of New Processing Centers or Expansion of Existing Facilities.
This option would be considered only after the Waste Composition Study indicates a need for additional process capacity.

Advantages

1. Promotes post-collection recycling by encouraging development of more waste processing capacity.

Disadvantages

1. Puts Metro in competition with banks in lending to private enterprise.

2. Places an economic burden on Metro. In case of business failure of the new processing center, Metro is stuck with a bad debt.

3. Offering venture capital may encourage development of operations which are not viable on their own.

III. REUSE CENTER AIDS (e.g. Goodwill, Salvation Army)

Option A. Tipping Fee Break.
Non-profit organizations providing for reuse of materials have a significant landfilling cost. A tipping fee break of 50% would lower that cost for them, and allow them to remain economically viable or even to expand their efforts. The organization would be required to request the discount, submitting information on the amount of material recovered for reuse and amount landfilled, as well as providing proof of non-profit status. A limit would be set for each organization on the amount landfilled at the discounted rate.

Advantages

1. Encourages nonprofit reuse centers.

Disadvantages

1. Subsidizes illegal dumping at reuse center drop-off locations.

2. May not provide a direct increase in the amount of reusable materials that get recovered.

Option B. Disposal Credits.
Credits would be given to dispose of waste at the transfer station or the public transfer area at the landfill for material taken out of the public transfer area boxes which reuse centers deem usable. A one for one ratio is suggested (for every ton pulled out, and therefore kept out of the landfill, one ton could be disposed at no charge.

Advantages

1. Direct reduction of waste going into the landfill since reusable materials are taken out of the waste stream, and replace with non-reusables headed for

the landfill anyway.

2. Cost is small, since fees were already collected from the individual who originally deposited the waste in the box.

3. Doesn't subsidize illegal dumping as in option III-A.

Disadvantages

1. Could present operational problems, with someone picking through the box while someone else wants to dispose there.

2. Requires commitment from non-profit groups to provide consistent service at Metro facilities.

Option C. Status Quo
No rate incentives for reuse centers.

IV. YARD DEBRIS RATE INCENTIVES.

Option A. Reduced Fee for Yard Debris.
Source-separated yard debris would be defined as any yard debris which the generator or hauler keeps separate from other waste. A small fee could be charged for waste placed in the public transfer box, such as a bag of non-compostibles, when a minimum amount of yard debris is also delivered. Thus, a generator would be encouraged to separate his or her yard debris until the fee equals the $7.00 minimum. A hauler would also get a reduced fee for placing separated yard debris in the specified container.

Advantages

1. Yard debris comprises a significant portion of the landfilled waste, and special efforts must be made to remove it from the waste stream.

2. Curbside collecting and composting of source-separated yard debris is not economically feasible without some financial enhancements. Metro has the ability to provide such financial enhancements on the method of its disposal.

3. Since many generators of yard debris haul their own, landscapers could benefit significantly from the program, and haulers will dispose of large amounts of yard debris, the program needs to be structured to benefit all types of disposers.

Disadvantages

1. Places a judgement burden on the person at the gatehouse to determine how much to charge the disposer, which require borderline and arguable decisions such as degree of contamination of the compostibles, or how much to charge for items placed in the public transfer box.

Option B. Status Quo.
No rate incentives for yard debris.

V. FLAT RATE INCENTIVE.
Metro currently finances waste reduction and recycling programs through rates paid by all disposers. Increasing the rates could promote waste reduction in two ways: people would be less inclined to dispose in the landfill because of the increased cost; and more funds generated by the higher fees could support more recycling and other waste reduction programs.

Option A. Status Quo.
User fees based on identified needs.

Advantages

1. Predictable amount of funds raised to fund identified programs.

2. Impacts all groups equally based on amount of waste generated or disposed.

Disadvantages

1. Small increases may not have an effect on reducing landfilled waste volumes.

Option B. Fee Increases.
User fee increases will raise the total cost of land disposal.

Advantages

1. Will reduce land disposal of wastes to the extent generators or haulers turn to reducing, reusing, or recycling to avoid disposal costs.

Disadvantages

1. The amount of increase to gain the desired effect is not known, but is thought to be high.

2. Unknown impacts on businesses, the poor, and illegal dumping.

3. Revenue would be generated without identified use.

VI. PUBLIC RECYCLING PROGRAMS.
Currently, public haulers delivering their wastes to St Johns or CTRC and bringing at least a half a cubic yard of recyclables, do not pay the minimum trip charge. A greater discount could provide more incentive.

Option A. Salvage Revenue Credit.
The public could pay the base rate minus salvage revenue from public disposers.

Advantages

1. Allows increased benefit to self-haulers who recycle.

Disadvantages

1. Requires close monitoring of secondary markets and public recycling amounts, for a predicted small increase in recycling.

2. Would compete with buy back centers.

Option B. Status Quo.
No further incentive for public recycling at Metro facilities.

STAFF RECOMMENDATION

I-A; the rates should be offsetting; the rates should not be responsive to the secondary materials markets; the differential should be small at first.
II-A and/or II-B&C combined, where a tipping fee break will be given to residuals from waste processing centers based on the ratio of materials recycled to residuals generated.
II-E
III-B should be further evaluated.
IV-A
V-A
VI-B

MEMORANDUM

DATE: May 15, 1986

TO: Metro Council

FROM: SWPAC

RE: Response to Ordinance 66-201

SWPAC supports adoption of this ordinance and believes that it is a reasonable document given the curent level of knowledge regarding alternative technology options for the area. The Committee appreciates that Metro is making every effort to select the best criteria for evaluating the alternative technology option.

The Committee prefers that ultimately a lower than 20% premium be placed on the alternative technology option.

The Committee favors a smaller, more manageable alternative technology option and particularly supports the concept that project(s) will maximize flexibility by minimizing capital costs and limiting construction time.

The Committee wants strong project and economic guidelines established for the alternative technology project that challenge Metro to seek the best, most cost effective option in a timely manner, including the possibility that this option could be the no alternative technology option.

FROM:

Debbie Gorham Allmeyer
Solid Waste Department

5/5/86

Dear Members of SWPAC:

The enclosed information concerns Metro's process to determine what, if any, premium cost should be paid for the services of a resource recovery facility/ facilities.

The draft Ordinance included for your review will be heard by the Council for the third time on May 15, 1986. As this follows your meeting on the 12th, it is my thought that you may want to review these documents independently and work together on the 12th toward a recommendation on the most prudent approach for including resource recovery in Metro's program. SWPAC's testimony could then be received by the Council on May 15th.

An overview of this decision-making process will be provided at your meeting, to help frame the subject once again in light of the staff work done to assist the Council, and the Council's input to date.

I look forward to meeting with you to discuss the wisdom of including resource recovery in Metro's waste reduction program.

Sincerely,

Debbie Gorham Allmeyer

Debbie Gorham Allmeyer

METRO

2000 S.W. First Avenue
Portland, OR 97201-5398
503/221-1646

MEMORANDUM

DATE: April 29, 1986

TO: Solid Waste Policy Advisory Committee

FROM: Wayne Rifer

REGARDING: Lane County Certification Program

Metro staff has conducted a search to identify other areas where programs similar to certification are being conducted. The only similar program we have found is that of Lane County, Oregon.

Lane County has the same separation of collection authority (local jurisdictions) from disposal authority (the county) which prompted the certification program here.

The Lane County program is structured very similarly to ours. Special requirements are spelled out for haulers. Those who meet those requirements are certified and receive a reduction in their tipping fee of $2 per ton.

There are a couple important differences:

1. As you will see from the attached materials, the requirements for certification are limited to curbside collection of source separated recyclables. For the Metro region, that would essentially duplicate the requirements of SB 405.

2. The program is structured such that the haulers submit a report directly to the County, rather than working through the local jurisdiction and certification units as we are proposing.

The good news is that 16 of the 17 haulers in Lane County are certified.

If you have any questions about the Lane County program, I would be happy to obtain answers for you.

CURBSIDE RECYCLING CERTIFICATION

To be eligible for the fee incentives and promotional assistance associated with Lane County's Curbside Recycling Program, the following criteria must be met:

- Collect at least the following six materials: newspaper; cardboard; tin cans; container glass-brown, green, and clear; used motor oil; and aluminum (household foils and cans)

- Provide at least once per month collection of the above named materials

- Offer the curbside recycling service to all of your residential customers, and recycling collection services to your commercial customers as well

- Submit a quarterly report to the Waste Management Division which provides information on the volume of material collected and the types of promotion undertaken as a result of the recycling effort. Sales receipts and or donation slips shall accompany the report for materials collected and sold or donated during the quarter. The recycling report forms shall be supplied by Lane County.

Your signature on this certification form indicates agreement to comply with the above criteria. Further, Lane County shall have the right to inspect any storage areas for recyclables to confirm that materials have been collected in the event they are not sold during the quarter, and shall have access to customer lists for the purpose of spot checks to confirm that recycling services are being offered to all of your customers. Customer lists are to remain in your possession at all times.

Failure to offer recycling services on the basis outlined in the criteria, or fraudulent reporting, may result in loss of certification.

I Have Read The Above And Agree To Provide Recycling Services On The Terms And Conditions Set Forth Therein:

_____
(Company Name)

_____
(Signature)

_____
(Date)

RECYCLING REPORT

This report is due by the 25th of April for materials collected and sold during the months of January, February, and March, 1986. Materials sold or donated during the three month period, even if collected earlier should also be reported.

COMPLETED REPORTS SHOULD BE SENT TO: Waste Management Division
125 E. 8th Ave.
Eugene, Oregon 97401

Company Name_____

Person Completing Report_____

Phone Number_____

1. How often do you collect recyclables on route?

   [] Weekly [] Monthly [] Twice Per Month [] Other_____

2. How many residential households do you serve?_____

3. Of your residential accounts, how many set out recyclables at least once per month?_____

4. Indicate the amount in pounds of each of the following materials you sold or donated in the quarter:

   Glass_____ Tin Cans_____ Oil (gallons)_____

   Newspapers_____ Aluminum_____ Cardboard_____

   Other Materials_____
   (specify)

5. If you collected materials during the quarter, but did not sell or donate them, where are they stored?

   _____
   Address

6. What promotional efforts did you undertake during the quarter?

   _____

   _____

SUBMIT ALL SALES RECEIPTS AND DONATION SLIPS WITH THIS REPORT.

STAFF REPORT Agenda Item No. 9.2
Meeting Date: May 1, 1986

CONSIDERATION OF ORDINANCE NO. 86-201, FOR THE PURPOSE OF AMENDING THE WASTE REDUCTION PROGRAM, ORDINANCE NO. 86-199, BY ADOPTING PREMIUM COST FOR ALTERNATIVE TECHNOLOGY PROJECTS.

DATE: MAY 1, 1986 Presented by Debbie Allmeyer

FACTUAL BACKGROUND AND ANALYSIS

The question before the Metro Council is what premium cost should be paid for inclusion of alternative technology/resource recovery in Metro's Waste Reduction Program. It is established policy that resource recovery be included in this program if it can be shown to be economically and technically feasible.

Technical feasibility has been demonstrated for the three alternative technologies in contention, composting, RDF, and mass burn. Appendix I of Metro's Waste Reduction Program-"Alternative Technologies", published in December 1985, discusses the merits of the different technologies. This document also includes data from a symposium Metro sponsored in August 1985 called "Resource Recovery: Alternatives to Burying Waste". The information presented at the symposium and included in the chapter on Alternative Technologies corroborates the technical viability of the technologies.

Determination of economic viability will be made by Council based in part on findings in a report titled "Determination of Premium Costs for Metropolitan Service District Resource Recovery Project". This report utilized comparisons of components costs, such as cost of a new landfill, transfer stations, various types and sizes of resource recovery facilities and comparisons of system costs which show combinations of different components to express the impacts of possible resource recovery scenarios on a disposal system.

Adding resource recovery to a disposal system typically adds cost particularly in the initial years. A number of the impacts of including resource recovery are quantifiable; many are not. Some of the factors which may be considered for including resource recovery are difficult to quantify, as they have to do with quality of life, and diversification of the landfill based system. Some of these factors are briefly described.

Resource recovery is one of the primary alternative forms to landfilling which results in a major reduction of waste. Recycling can be successful for some products and potentially capture 25% to 50% of the waste stream. Resource recovery, fully compatible with recycling, reduces the waste 75% by weight and 90% by volume.

If refuse is put in landfills, the greatest potential environmental risk is to ground water. If it is processed in a waste-to-energy facility, the greatest environmental risk is to air quality. While strict landfill regulations are today's norm, air pollution control technology is more developed than ground water pollution control technology. Because of the national concern for better air quality in the last fifteen years, the industrial market has demanded solutions, and money has been invested in refining and improving air pollution control equipment. The results from this investment have been substantial. In the last fifteen years, advances in air pollution control technology have reduced common air pollutants nationally by 50%.

Resource recovery facilities are clean burning due to the equipment available-electrostatic precipitators, baghouses, scrubbers, and modern stacks. The efficiency of combustion in modern incinerators, coupled with state-of-the-art air pollution control equipment provides for low emissions from resource recovery facilities.

Frequently recognized advantages of resource recovery include the following: 1) landfill life is extended, 2) ash residue is inert and safer for land disposal than raw waste, 3) unlike landfills, facilities may be located in or near population centers, reducing haul distances. Future construction and operational costs are usually less predictable for landfill than for resource recovery.

Open space is preserved when resource recovery is implemented. Such plants require 2-10 acres compared to hundreds of acres for landfills. Some proponents feel there is an intrinsic value in preserving farm land, wood land, or open acreage which may otherwise be designated for a landfill.

Before you is a draft ordinance concerning premium cost allowance for resource recovery. This is a revision of the draft ordinance presented to Council on April 22, 1986, incorporating changes suggested by Council. Language is added in Section 1 to describe how this ordinance amends the Waste Reduction Program, Ordinance No. 86.199. A definition of "system cost"is added in Section 5.

EXECUTIVE OFFICER RECOMMENDATION

The Executive Officer makes no recommendation at this time.

BEFORE THE COUNCIL OF THE METROPOLITAN SERVICE DISTRICT

FOR THE PURPOSE OF AMENDING ORDINANCE NO. 86-199 BY ADOPTING CRITERIA FOR IMPLEMENTATION OF ALTERNATIVE TECHNOLOGY PROJECTS.	)ORDINANCE NO. 86-201)))

WHEREAS, The Metropolitan Service District (Metro) has adopted a Waste Reduction Program in compliance with ORS 459.015 which declares the priorities for solid waste management plan, "to include 1) reduce the amount of solid waste generated, 2) reuse material as it was originally intended, 3) recycle material that cannot be reused, 4) recover energy from solid waste that cannot be reused or recycled, 5) dispose of solid waste that cannot be reused, recycled or from which energy cannot be recovered, by landfilling...and that such priority in methods of managing solid waste shall be followed after consideration of technical and economic feasibility"; and

WHEREAS, Metro's Waste Reduction Program is intended to reduce the dependency on sanitary landfills as the primary disposal method; and

WHEREAS, Metro's Solid Waste Reduction Program recognizes that up to 52% of the waste stream is potentially available for reduce, reuse, and recycling; and

WHEREAS, Metro's Waste Reduction Program recognizes that up to 48% of the waste stream is available for alternative technology/resource recovery projects to develop useful by-products and/or recover energy from solid waste; and

WHEREAS, Metro issued Appendix 1-"Alternative Technologies" as part of its Waste Reduction Program to the Department of Environmental Quality (DEQ) in December 1985 which describes resource recovery technologies; and

WHEREAS, Federal Policy established in the Resource Conservation and Recovery Act of 1976 (Public Law 580) states that solid waste management agencies shall consider facilities for conservation of energy resources and materials recovery; and

WHEREAS, Metro held a nationally advertised symposium in August 1985 called, "Resource Recovery Symposium: Alternatives to Burying Waste"; and

WHEREAS, Metro conducted a workshop in April 1986 to review the advantages of resource recovery, the cost and revenue factors that impact such projects, and possible methods for evaluating economic feasibility for inclusion of resource recovery in a solid waste disposal system; and

WHEREAS, Metro has committed through current budget allocation staff, and the professional services of consulting engineers, to provide technical assistance in the endeavor to implement resource recovery; and

WHEREAS, Metro issued a Request for Qualifications and Information (RFQ/I) in March 1986 in order to review project concepts by May 19th 1986; now, therefore,

THE COUNCIL OF THE METROPOLITAN SERVICE DISTRICT HEREBY ORDAINS:

Section 1. Ordinance No. 86-199 is amended. Following Exhibit B (Waste Reduction Program Final Report), page 12, paragraph 3 under section B. Alternative Technologies/Material and Energy Recovery insert the sentence: The basis for proceeding with an alternative technology/resource recovery project(s) is attached as Appendix 1 of the Final Report.

Section 2. Metro will budget funds in FY 86-87 and subsequent years to complete a competitive Request for Proposal (RFP) process for selecting vendor(s) and/or to continue to evaluate the feasibility of implementing resource recovery.

Section 3. Metro will commit up to 48% of the waste stream to an alternative technology project(s) provided it is determined to be economically and technically feasible using the criteria established by this Council.

Section 4. Metro will evaluate proposals and decide to proceed with resource recovery when the following criteria have been met:

a) public acceptability of technology used, cost, and location
b) compliance with environmental protection regulations, minimizing risk to the public
c) use of material recovery (including composting), RDF, and/or mass burn technology(ies)
d) demonstration of vendor's financial strength and corporate commitment to resource recovery
e) maximum reduction of waste volume and weight, in order to extend landfill life and conserve open space
f) reduced reliance on one solution to solid waste disposal
g) long-term cost effectiveness of project(s) through analysis over the financial life cycle compared to a landfill based system
h) negotiation of a sound business arrangement between vendor(s) and Metro
i) acceptable marginal cost per ton for the specific proposal(s)

Section 5. Metro, in keeping with the policy set forth in Federal Law (RCRA), and State Law (ORS459) adopts a policy to maximize resource recovery from waste by committing to accept a proposal(s) that increases system cost [no more than] up to 20% over a landfill based system cost. This system cost includes disposal costs associated with operating transfer stations and a landfill; it does not include collection costs. Determination of whether a proposal(s) meets this criterion will be based on system cost figures available from Metro at the time of evaluation.

Section 6. Metro will proceed with resource recovery that increases the system cost more than 20% if the Council determines that the project(s) results in sufficient waste reduction, environmental protection, and overall system efficiency.

Section 7. Metro, in cooperation with the Department of Environmental Quality (DEQ), will pursue satisfactory resolution to issues concerning siting, environmental protection regulation, BTU content of waste, and ash disposal regulation.

Section 8. Reduce, reuse, and recycling programs will be pursued for the amount of waste for which no alternative technology project(s) is implemented.

Section 9. Metro will urge maintenance and/or creation of tax benefits at both the State and Federal level to enhance resource recovery.

Section 10. The Executive Officer is directed to continue to pursue resource recovery alternatives as part of the Solid Waste Management Plan provided they are consistent with the guidelines and policies established by this Council.

ADOPTED by the Council of the Metropolitan Service District this _____ day of _____, 1986.

METRO

2000 S.W. First Avenue
Portland, OR 97201-5398
503/221-1646

Agenda

Meeting: Council Workshop

Date: April 16, 1986

Day: Wednesday

Time: 5:00 p.m.

Place: Room 330, Metro Offices, Third Floor

5:00 to 7:00 PRESENTATION BY STAFF AND REPRESENTATIVES FROM THE CONSULTING FIRM OF GERSHMAN, BRICKNER & BRATTON

1. Review of Waste Reduction Program policies adopted by the Council relative to resource recovery
2. Comparison of benefits of landfill-based system versus system that includes resource recovery facility(ies)
3. Factors that influence cost differences between 11 representative resource recovery facilities in the U.S.
4. Estimated cost for resource recovery
5. Cost estimates for new, 20-year landfill, representing true landfill cost
6. System cost estimates that show impacts of resource recovery on total system cost over time

7:00 to 8:00 COUNCIL DISCUSSION

7. Premium cost for resource recovery
8. Draft ordinance for April 22, 1986, Council meeting
9. Review of selection criteria for Request for Qualifications/ Information (RFQ/I)
10. Report on industry reaction to Metro RFQ/I

8:00 MEETING ADJOURNS

NOTE: Meeting materials will be available at the Metro Offices after 9:00 a.m., Monday, April 14, 1986

BEFORE THE COUNCIL OF THE
METROPOLITAN SERVICE DISTRICT

FOR THE PURPOSE OF AMENDING THE WASTE REDUCTION PROGRAM ORDINANCE NO. 86-199 BY ADOPTING PREMIUM COST FOR ALTERNATIVE TECHNOLOGY PROJECTS	)))))	ORDINANCE NO. 86-201

WHEREAS, The Metropolitan Service District (Metro) has adopted a Waste Reduction Program in compliance with ORS 459.015 which declares the priorities for solid waste management plan, "to include 1) reduce the amount of solid waste generated, 2) reuse material as it was originally intended, 3) recycle material that cannot be reused, 4) recover energy from solid waste that cannot be reused or recycled, 5) dispose of solid waste that cannot be reused, recycled or from which energy cannot be recovered, by landfilling... and that such priority in methods of managing solid waste shall be followed after consideration of technical and economic feasibility"; and

WHEREAS, Metro's Solid Waste Reduction Program recognizes that up to 52 percent of the waste stream is potentially available for reduce, reuse and recycling; and

WHEREAS, Metro's Waste Reduction Program recognizes that up to 48 percent of the waste stream is available for resource recovery projects; and

WHEREAS, Metro's Waste Reduction Program is intended to reduce the dependency on sanitary landfills as the primary disposal method; and

WHEREAS, Metro is the authorized agency for developing and implementing the solid waste management plan for the region; and

WHEREAS, Federal Policy established in the Resource Conservation and Recovery Act of 1976 (Public Law 580) states that solid waste management agencies shall consider facilities for conservation of energy resources and materials recovery; and

WHEREAS, Alternative technology offers an opportunity to consider using solid waste as a resource for developing useful by-products from solid waste; and

WHEREAS, The Waste Reduction Program states that a premium cost may be paid for the benefit of processing and recovering these materials rather than disposing of these materials in a sanitary landfill; and

WHEREAS, The premium cost will recognize the benefits of minimizing the dependency on one solution to solid waste disposal for this region and the environmental advantages that can be obtained by implementing a resource recovery project; and

WHEREAS, The Council of the Metropolitan Service District has considered and has relied on information in the "Background Information on Premium Cost for Resource Recovery" attached hereto. THE COUNCIL OF THE METROPOLITAN SERVICE DISTRICT HEREBY ORDAINS:

Section 1. That the Council of the Metropolitan Service District will commit up to 48 percent of the waste stream to alternative technology projects provided it is determined to be economically and technically feasible using the criteria established by this Council and contained in this Ordinance.

Section 2. That the Council of the Metropolitan Service District, in keeping with the policy set forth in Federal Law (RCRA), and State Law (ORS Chapter 459) adopts a policy to maximize the

recovery of resources from the waste stream by accepting a premium cost of _____/ton (or _____ percent) over the cost of landfilling.

Section 3. The Executive Officer is directed to continue to persue Resource Recovery alternatives as part of the Solid Waste Management Plan provided it is considered with the guidelines and policies established by the Council.

ADOPTED by the Council of the Metropolitan Service District this _____ day of _____, 1986.

_____
Richard Waker, Presiding Officer

Attest:

_____
Clerk of the Council

DD/srs
5481C/453-2
04/16/86

[BEFORE THE COUNCIL OF THE METROPOLITAN SERVICE DISTRICT

FOR THE PURPOSE OF ADOPTING SOLID WASTE REDUCTION POLICIES	)))))	*RESOLUTION NO. 85-611-A* *Introduced by Councilor Richard Waker and Executive Officer Rick Gustafson]*

WASTE REDUCTION PROGRAM POLICIES

WHEREAS, The Metropolitan Service District is required by ORS 459 to prepare and submit a solid waste reduction plan to the Environmental Quality Commission no later than January 1986 that shall provide for a commitment by the District to substantially reduce the volume of solid waste that would otherwise be disposed of in land disposal sites through techniques including, but not limited to, rate structures, source reduction, recycling, reuse and resource recovery; and

WHEREAS, The program must provide for energy-efficient, cost-effective approaches for solid waste reduction that are legally, technically, and economically feasible and that carry out the public policies in ORS 459.015 (2); and

WHEREAS, The program must provide a time table for implementing each portion of the plan and use procedures commensurate with the type and volume of solid waste generated within the District;

WHEREAS, It is appropriate to measure whether the reduction achieved by the program is substantial in light of the maximum reduction which can be achieved under the legislative requirement that the approaches used be both cost effective and technically feasible -- an approach called maximum feasible reduction; and

WHEREAS, The policies described below substantially reduce the volume of waste otherwise disposed of in landfills because sufficient programs will be implemented to increase waste reduction subject to the requirement that they will be energy efficient, cost effective, legally, technically, and economically feasible, and consistent with ORS 459.015 (2); now, therefore,

BE IT RESOLVED,

That the Council of the Metropolitan Service District adopts the following policies:

1. The goal of the solid waste management system for the tri-county region shall be to achieve maximum feasible reduction of solid waste being landfilled in accord with the state priorities of action (ORS 459.015). The Council will set waste reduction goals to achieve the maximum feasible reduction based on an evaluation of: a) the amount of waste which is recoverable, b) the available technical methods, and c) the acceptable cost for recovery. Technical, economic, and risk factors will be the primary consideration used to determine the feasibility of:

- Reducing the amount of solid waste generated;
- Reusing material for the purpose for which it originally was intended;
- Recycling material that cannot be reused;
- Recovering energy from solid waste that cannot be reused or recycled, so long as the energy recovery facility preserves the quality of air, water and land resources; and
- Disposing of solid waste that cannot be reused, recycled or from which energy cannot be recovered by landfilling or other methods approved by the Department of Environmental Quality.

All methods shall be pursued concurrently to reduce waste.

2. Waste generation and collection policies will be encouraged and developed through a partnership of state, regional, local governments and private sector.

3. Rates for disposal will be structured to provide adequate incentives to conduct maximum feasible source-separation programs and to produce the maximum feasible high-grade select loads.

4. [*Budget amendments*] APPROPRIATE BUDGETS will be [*considered*] ADOPTED for programs contained in the Solid Waste Reduction Program.

5. Metro will consider supporting a higher premium for reduction or recovery based on the state priority list in order to accomplish the maximum feasible reduction of waste.

6. A phased approach will be used to reach regional waste reduction goals:

a. Phase I (January 1, 1986) will maximize

the system of free choice.

b. Phase II (January 1, 1989) If the Metro Council determines that waste reduction goals were not achieved in Phase I, loads containing a high percentage of recyclable materials will not be accepted at disposal facilities which do not process waste for recovery of those materials if more appropriate disposal options are available. **IF NECESSARY TO ACHIEVE WASTE REDUCTION GOALS, CHANGES IS STATE LAW WILL BE REQUESTED.**

Staff EQC

c. Phase III (January 1, 1993) expands the commitment of waste to alternative technologies if Phase I and II goals are not achieved.

7. The Council of the Metropolitan Service District will issue a Request for Qualifications (RFQ) to alternative technology vendors by March 1986. Based upon the responses to the RFQ, and before issuing a Request for Proposals, Metro will, by July 31, 1986:

a. Allocate specific amounts of waste to selected technologies;

b. Determine the range of acceptable costs and other specific criteria for projects;

c. Develop a list of vendor finalists [*for each type of technology*]; and

d. Determine a process for working cooperatively with the vendor finalists to develop the final proposals (which process could include partial compensation for the costs of the RFP submittal).

The maximum amount of waste that could be allocated to alternative technology is 48 percent of the total waste stream. (Phase I)

8. Private investment, ownership and operation of waste recovery facilities will be encouraged wherever possible.

9. A certification program for local collection services will be used to assure full participation in the region's recycling effort. Rates will be used [*in*] TO encourage recycling programs that Metro designates as being most effective in increasing participation and reducing the waste flow.

Staff EQC

[*10. The Council of the Metropolitan Service District directs the Executive Officer to prepare a solid waste reduction program (including an Executive Summary, Framework,*

Work Plan/Time Frame, and Appendix) consistent with these policies, to submit it to the Environmental Quality Commission and to begin its immediate implementation. The Program and Time Frame submitted to the Council are consistent with these policies.

ADOPTED by the Council of the Metropolitan Service District this 19th day of December, 1985.

Richard C. Waker
Deputy Presiding Officer]

DETERMINATION OF PREMIUM COSTS FOR METROPOLITAN SERVICE DISTRICT RESOURCE RECOVERY PROJECT

Submitted By:

Gershman, Brickner & Bratton, Inc.
1025 Vermont Avenue, N.W.; Suite 608
Washington, D.C. 20005
(202) 783-5400

April 16, 1986

BACKGROUND INFORMATION FOR DETERMINATION OF PREMIUM COSTS FOR METROPOLITAN SERVICE DISTRICT

Introduction

The Metropolitan Service District (Metro) has adopted a policy to implement Alternative Technology (AT) to dispose of up to 453,000 tons per year (TPY) of solid waste from its waste stream, if it is technically and economically feasible to do so. Clark County, Washington has recently expressed interest in combining 100,000 tons per year from Clark County with that of Metro's for AT/resource recovery.

Metro has initiated a procurement process for contractors to present resource recovery project concepts to meet this objective. Metro is open to various sizes of plants, keeping in mind its AT hierarchy and the AT policy of implementing the maximum practicable feasible projects for up to 453,000 tons per year, or up to 553,000 TPY, including Clark County waste.

Metro is required by DEQ to adopt a premium costs policy if Metro's service system includes resource recovery. A premium cost policy must be adopted by Metro ordinance by June 13, 1986 for submission to DEQ. DEQ is required to act on this policy in June 1986.

This paper describes the methodology used by Metro staff and advisors for determination of premium costs for consideration by the Council.

System Cost Concept

Costs for several different types of waste disposal systems have been compared. The different systems are summarized and the assumptions listed that characterize each system. These different systems represent a probable set of alternatives, costs for which can be logically forecast at this time.

Best efforts have been made to forecast system costs based upon (a) Metro's current costs for operation; (b) DEQ and Metro's forecast of future true cost of landfill; and (c) recast costs of various resource recovery facilities based upon recently financed projects and local economic factors.

DEQ has recently initiated an evaluation of alternative sites for landfill capacity that Metro will utilize. Additionally, it is expected that landfill operating regulatory requirements will be greater than in the past thus increasing operational cost requirements for land disposal based systems in the

future. Future cost projections for new landfill capacity will include the establishment of reserve funds for landfill consumption use and perpetual maintenance and landfill closure expenses.

It is assumed that resource recovery facilities will be located within the tri-county area and not cause significant increase in transportation costs. It is also assumed that residues from the resource recovery facility(ies) will be transported to the same new landfill.

An array of resource recovery project costs have been developed utilizing recently financed/implemented resource recovery projects across the U.S. A listing of the projects that were used as a basis for building cost elements for the resource recovery systems are listed in Exhibit #1. This list includes a mix of various size facilities, technology type, risk posture, procurement and financing methods since it is not clear which specific type of technology or methods or size might be selected by Metro at this time. The costs for these resource recovery projects are normalized for such factors as current interest rates and value of products to reflect current economic conditions both on a national basis as well as on a regional basis. The project costs listed in Exhibit #1 have not been adjusted to a common risk posture, technical approach and all local conditions.

The systems described in this paper demonstrate the general cost impacts of various projects on total waste disposal system unit cost. The cost figures are projections from estimates and are not intended to guarantee the exact impact on future waste disposal rates. The details of the financing and contractual arrangements for the alternative technology as well as the decisions on the transfer and landfill system will all markedly influence those rates.

System A (BASE CASE)

DESCRIPTION: Continued reliance on landfill disposal. Three transfer stations will transport all waste to the landfill.

KEY ASSUMPTIONS:
1. Average one-way haul time is 45 minutes or about 30 miles.
2. Cost of transfer system is based on CTRC and escalated at a CPI rate of 4%.
3. Landfill cost is based on a study prepared by Metro staff for determining "true landfill cost" (TLC) using a fill rate of 650,000 TPY.
4. A new landfill is located in the tri-county area, and has a site life of 20 yrs.
5. For the purpose of considering life-cycle cost a new site with similar cost would be located for the following 20 years.

System B RDF/Compost Production

DESCRIPTION: Refuse derived fuel (RDF) is produced at two plants for use in new dedicated boilers, for 302,000 TPY. One plant produces compost from 151,000 TPY.

KEY ASSUMPTIONS:
1. Plant cost was adjusted by using three Biddeford, Maine facilities producing RDF for new boilers.
2. RDF markets are located near the plants such that no hauling costs are incurred. NOTE: These could be at existing transfer stations, however, hauling costs would have to be added.
3. Compost from the facility totaling 77,000 TPY is sold for approximately $11.11/ton in 1990.
4. MSW travels via direct haul to the plants with 197,000 TPY landfilled along with residue from the plants.
5. Cost of landfilling is based on a landfill operating at a fill rate of approximately 300,000 TPY.

System B-1 One RDF to Electric System

DESCRIPTION : RDF from 151,000 TPY is produced at one plant for use in one new dedicated boiler. No compost is produced.

KEY ASSUMPTIONS:
1. Plant cost was adjusted by using one Biddeford, Maine facility producing RDF for one new boiler.
2. RDF markets are located near the plant such that no hauling costs are incurred.
3. MSW travels via direct haul to the plant with 500,000 TPY landfilled along with residue from the plant.
4. Cost of landfilling is based on a landfill operating at a fill rate of approximately 540,000 TPY.
5. Transfer costs are based upon Metro using 3 transfer stations.

System C Two electrical generating mass burn facilities.

DESCRIPTION: Two electric generation facilities with direct haul to each. Combined tonnage is 453,000 TPY.

KEY ASSUMPTIONS:
1. Resource recovery cost is based on Marion County project. One facility is increased in size to handle 302,000 TPY and produce electricity. The second facility is comparable to Marion County handling 151,000 TPY.
2. Electricity is sold to a utility using 1985 levelized avoided cost schedule for a 35 year contract. (schedule shown as exhibit #3).

3. Landfill cost is adjusted for a fill rate of 197,000 TPY of solid waste and ash residue for a fill rate of approximately 300,000 TPY as with System B.
4. Metro will continue to transfer from 2 transfer stations.
5. Direct haul of 453,000 TPY to the resource recovery facilities.

System C-1 One electrical generating mass burn facility.

DESCRIPTION: Direct haul of MSW to one electrical generation facility processing 302,000 TPY.

KEY ASSUMPTIONS:
1. The same as assumption for System C.
2. The same as assumption for System C.
3. Landfill cost is adjusted for a fill rate of 348,000 TPY of MSW and ash residue for a total fill rate of approximately 438,000 TPY.
4. Metro will continue to transfer from 2 transfer stations.

System C-2 One electrical generating mass burn facility.

DESCRIPTION: Direct haul of MSW to one electric generation facility processing 151,000 TPY.

KEY ASSUMPTIONS:
1. The same as assumption for System C.
2. The same as assumption for System C.
3. Landfill cost is adjusted for a fill rate of 500,000 TPY of MSW and ash residue for a total fill rate of approximately 544,000 TPY.
4. Metro will transfer from 3 transfer stations.

System D Two steam generating mass burn facilities.

DESCRIPTION: Two steam generating mass burn facilities with a combined tonnage of 453,000 TPY. Each facility would process 226,500 TPY and sell steam to nearby industries, replacing fossil fuel.

KEY ASSUMPTIONS:
1. Resource recovery cost is based on town of Babylon, N.Y. facilities of comparable size producing steam.
2. Fossil fuel cost will escalate at a rate of 5% per year for one of the plants.
3. Cost for steam pipeline and for required air pollution control equipment is assumed to be equal to the cost of replacing electric generators.

4. Direct haul assumption same as System C.
5. Landfill and transfer assumptions same as System C.

System D-1 One steam generating mass burn facility.

DESCRIPTION: Direct haul to one 226,500 TPY steam generating mass burn facility selling steam to nearby industries, replacing fossil fuel.

KEY ASSUMPTIONS:
1. The same assumptions as System D.
2. Fossil fuel cost will escalate at a rate of 5% per year.
3. The same assumptions as System D.
4. Direct haul to plant and Metro will operate 2 transfer stations.
5. Landfill cost is adjusted for a fill rate of 423,000 TPY of MSW and ash residue for a total fill rate of approximately 491,000 TPY.

System D-2 The same as D-1 except Metro will operate 3 transfer stations and fossil fuel cost will escalate at a rate of 4% per year. (The assumed rate for CPI).

System E One RDF facility producing electricity.

DESCRIPTION: Direct haul to one resource recovery facility producing electricity for sale to local utility.

KEY ASSUMPTIONS:
1. Project cost is based on the Hartford, Connecticut facility normalized for local conditions.
2. Landfill and transfer system cost is the same as for System D.

Exhibit 2 is a matrix of Metro system alternatives, and the cost/ton of each system component for the year 1990. For each component there are two unit cost/ton shown. The first is the cost of the component averaged over the entire system of disposal of 650,000 TPY. These costs are additive to provide the total cost of each system.

Below each system unit cost is the actual cost per ton of that individual component in parentheses. This provides a comparison of various types of resource recovery scenarios. These figures should be used to establish a relative basis of comparison between the different scenarios for the purpose of discussing the premium cost for resource recovery.

The quantity of waste (650,000 TPY) is the same amount used in the landfill cost study and reflects additional recycling of source separated materials anticipated as a result of Metro's waste reduction program.

The graphed data following the matrix compares system costs from 1990 for a period of 30 years. This information provides a basis for comparing life-cycle cost. All costs are escalated at a rate of 4%. The graphs show the cost impact of adding each resource recovery component to a base system of landfilling and transfer stations as previously described.

CONCLUSION

This report presents several concepts for defining what the premium cost for an alternative technology may be.

In reviewing existing resource recovery facilities it is clear that there are several factors which affect the cost. Exhibit 1 portrays plants that are either operating or that have been recently financed. The expected tip fee for these plants ranges from $10/ton to about $50/ton. These cost vary with project size, energy markets, interest rates and many other parameters which cannot be analyzed and are beyond the scope of this document.

Adjusting the costs to reflect local conditions it is shown that the cost may vary from $30/ton to $60/ton. The average of the costs results in about $45/ton. However, the actual price for which a facility may be built is only speculative at this time. Information obtained from the RFQ/I may be helpful in advising the Council on whether or not to proceed.

Another concept for considering an alternative technology project is the impact on system cost. New landfills sited in and around the urbanized area will be difficult to locate. Transfer stations will be required for this system to work efficiently. If a resource recovery plant can be sited such that haul cost is minimized there could be cost advantages that offset some of the higher initial costs of an alternative technology project.

Exhibit 2 shows a base system using the estimated cost of a new landfill and 3 transfer stations which produces a system cost of about $31/ton. As an example, it is conceivable that an alternative technology system cost could be less than $40/ton if a small resource recovery plant were built (see System B-1). The per ton cost for operation of the facility would be greater than that of landfilling, and the system cost difference would be approximately $7/ton.

The life-cycle cost analysis is another consideration when

weighing the relative benefits of resource recovery. Cost advantages may be realized for resource recovery scenarios over the life of a facility, as depicted on the graphs.

A flexible approach is recommended when Council adopts a premium cost policy since many factors can adversely influence the tipping fee at the alternative technology facility(ies). The assumptions used in this paper for Exhibit 2 are:

1. Bond rating of revenue bonds for the project is AA with interest rate (fixed) of 8 percent per annum; 20 year financing term; 3 years for construction.
2. Property tax = 2 percent of capital cost.
3. No inflation of 1986 capital costs for the facility.
4. Underwriters discount and expenses of issuance = 3.5 percent of bond issue.
5. Electricity prices in accordance with Exhibit 3 which displays levelized prices based upon a 35 year contract beginning in 1990.
6. Steam values of $6.00 per thousand pounds in 1990 escalating at the CPI.
7. CPI escalating at 4 percent per annum.

The effect of changes in these assumptions result in an increase in tipping fees in 1990. as indicated below:

1. An increase in interest rate of 1% on the revenue bonds issued for the project either because of a change in tax law (tax exempt status) or in market conditions results in an increase of about $3/ton.
2. An increase in property tax by 1% either due to an increase in tax rate or in the assessed value of the facility results in an increase of about $3/ton.
3. Each one percent per annum in the inflation rate on capital costs to the expected mid point of construction results in an increase of about $1/ton. Inflation is running at 3% per annum at present which would indicate another $3/ton.
4. An increase of 1% in the underwriters discount and expenses of insurance results in an increase of about $.50/ton. Some projects have had such expenses run as high as 9.5% for bond insurance, efficacy insurance, letter of credit fees, etc., which would add another $3/ton.
5. A decrease in the term of the electricity contract to 20 years results in an increase of about $5/ton.
6. A decrease in steam revenues of 10% results in an increase of about $3/ton.
7. An increase in the Operating and Maintenance expenses by an extra 10% because the CPI escalates foster than the 4% per annum assumption results in an increase of about $3/ton.

As can be seen,if all of these adverse conditions were to take place, an increase of $23/ton would result. mj/b/4/16

EXHIBIT 1

RECENTLY FINANCED/IMPLEMENTED RESOURCE RECOVERY PROJECTS USED IN METRO PREMIUM COST ANALYSIS

Location	Technology	Plant Size (TPD)	Bond Size	($ Million) 1 Year Financed	Tip Fee[1] 1990 (Proj)	Tip Fee Adjustment for Financing	Tip Fee Adjustment for Energy Value	Tip Fee Adjustment for Property Tax	Tip Fee Adjustment for Residue Disposal	Adjusted Tip Fee 1990
Connecticut, Hartford	RDF DB	2,000	178	1985	38.58	-7.91	+21.15	+9.22	=	$61.04
Maine, Biddeford	RDF DB	500	81	1985	9.97	-21.19	+48.83	+5.81	-5.71	$37.71
Massachusetts, Springfield	MB-Modular	360	31	1985	N/A	-	-	-	-	-
Massachusetts, North Andover	MB-Waterwall	1,500	104	1983	21.37	-10.70	+12.19	+3.34	+0.51	$26.71
New York, Babylon	MB-Waterwall	750	89	1985	42.77	+13.48	+0.84	+5.67	+5.32	$68.08
Pennsylvania, Erie	RDF-Fluid Bed	600	70	1985	N/A	-	-	-	-	-
Georgia, Savannah	MB-Refractory	500	35	1981	N/A	-	-	-	-	-
Connecticut, Bridgeport	MB-Waterwall	2,250	240	1985	N/A	-	-	-	-	-
Florida, Tampa	MB-Refractory	1,000	115.6	1983	$47.86	-12.72	-0.88	+5.55	+1.02	$40.83
Oregon, Marion Co.	MB-Waterwall	550	19.4	1985	$42.73	+3.55	+0.25	+3.73	N/A	$50.26
Delaware, New Castle County	Compost, Materials Recovery, DB (This is a combination of Raytheon-Fairfield and Crouse-Vicon Projects.)	600	57.9	1979	$31.48	+3.30	N/A	+3.62	N/A	$38.40

N/A = Not available at this time.
1. = Tipping fee projection from official statement base case.

EXHIBIT 2

1990
650,000 tons per year
(cost per ton figures)

COMPONENT	A Base System	B RDF & Compost *	B-1 RDF Only	C 2-Mass Burn Electric	C-1 1-Mass Burn Electric	C-2 1-Mass Burn Electric	D 2-Mass Burn Steam	D-1 1-Mass Burn Steam	D-2 1-Mass Burn Steam	E 1-RDF Electric
Transfer Stations										
2 Transfer Stations		7 (22)		7 (22)	10 (19)		7 (22)	11 (17)		9 (22)
3 Transfer Stations	16 (16)		15 (20)			15 (20)			14 (21)	
ALTERNATIVE TECHNOLOGY										
1. RDF-151,000 TPY Electric Generation			10 (41)							
2. RDF-151,000 TPY Electric Generation		43 (62)								
3. Composting 151,000 TPY (compost sales @ $11.11/ton)										
4. Electric Generation 151,000 TPY				13 (54)		13 (54)				
5. Electric Generation 302,000 TPY				19 (41)	19 (41)					
6. Steam Generation @ one 226,000 TPY plant							17 (49)	17 (49)	17 (49)	
7. Steam Generation @ one 225,500 TPY plant							17 (49)			
8. Electric Generation 453,000 TPY										21 (30)
LANDFILL										
TLC (Based on Metro Report)	15 (15)	11 (23)	13 (16)	11 (23)	12 (18)	13 (16)	11 (23)	13 (17)	13 (17)	11 (23)
System Cost	$31	$61	$38	$50	$41	$41	$52	$41	$44	$41

* Alternative Technology Costs are averaged over the three subsystems.

NOTE: Numbers in parentheses are unit costs handled at respective facility.

EXHIBIT 3

CURRENT METRO ELECTRIC PRICES FROM PGE
LEVELIZED 35 YEAR CONTRACT
BEGINNING IN 1990

Year	Capacity	Fixed Cost Energy	Energy	Variable Cost Total
1990	0.845	3.18	2.65	6.675
1991	0.845	3.18	2.9	6.925
1992	0.845	3.18	3.05	7.075
1993	0.845	3.18	3.2	7.225
1994	0.845	3.18	3.2	7.225
1995	0.845	3.18	3.25	7.275
1996	0.845	3.18	3.7	7.725
1997	0.845	3.18	3.7	7.725
1998	0.845	3.18	4.35	8.375
1999	0.845	3.18	6.3	10.325
2000	0.845	3.18	6.5	10.525
2001	0.845	3.18	6.9	10.925
2002	0.845	3.18	7.2	11.225
2003	0.845	3.18	7.6	11.625
2004	0.845	3.18	7.9	11.925
2005	0.845	3.18		$4.025 + 7.9\ (1+CPI)^m$
2006	0.845	3.18	Escalating	m = no of years
2007	0.845	3.18	@ CPI	
2008	0.845	3.18	from	
2009	0.845	3.18	2004 on	
2010	0.845	3.18		

DATA INPUT

METRO WASTE-TO-ENERGY PROJECT:
LIFE-CYCLE ECONOMIC ANALYSIS BACKGROUND DATA
RDF SYSTEM - ALL ELECTRIC
SYSTEM B.1 & SYSTEM B.2

1	CAPITAL COSTS ESTIMATES (YEAR)	==))	1986
2	DATE OF FINANCING (YEAR)	==))	1987
3	CONSTRUCTION PERIOD (MONTHS)	==))	36
4	FINANCE PERIOD (YEARS)	==))	20
5	EQUITY CONTRIBUTION (PERCENT)	==))	12.50%
6	WASTE THROUGHPUT, (TONS PER DAY)	==))	487
7	SYSTEM AVAILABILITY (PERCENT)	==))	85.0%
8	WASTE THROUGHPUT,OPERATING (TONS PER DAY)	==))	414
9	FACILITY O & M COSTS ESCALATION (PERCENT PER YEAR)	==))	4.0%
10	PASS THROUGH ESCALATION (PERCENT PER YEAR)	==))	4.0%
11	STEAM VALUE ($/1000 POUNDS)	==))	$5.33
12	STEAM VALUE ESCALATION RATE (PERCENT PER YEAR)	==))	4.0%
13	ANNUAL STEAM DEMAND (1000#)	==))	0
14	ELECTRICITY VALUE ($/KWH)	==))	$0.029
15	ELECTRICITY ESCALATION RATE (PERCENT PER YEAR)	==))	4.0%
16	ELECTRICITY SOLD (MMKWH)	==))	81
17	CAPITAL COSTS ($1000)	==))	45,300
18	REINVESTMENT EARNINGS RATE	==))	8.000%
19	UNDERWRITERS DISCOUNT AND ISSUANCE COSTS	==))	3.500%
20	BOND INTEREST RATE ON FIXED RATE DEBT (%)	==))	8.000%
21	CAPITAL RESERVE FUND	==))	10.185%
22	BOND SIZE - NO EQUITY ($1000)	==))	60,658
23	BOND SIZE - WITH 12.5% EQUITY ($1000)	==))	53,076
24	DEBT SERVICE NO EQUITY ($1,000)	==))	6,178
25	DEBT SERVICE WITH 12.5% EQUITY ($1,000)	==))	5,406
24	INTEREST NO EQUITY ($1,000)	==))	494
25	INTEREST WITH 12.5% EQUITY ($1,000)	==))	432
26	OPERATION AND MAINTENANCE COSTS ($1000)	==))	4,077
27	HAUL COSTS $/TON (56 MILE)	==))	5.00
28	RESIDUE DISPOSAL COSTS ($/TON)	==))	9.60
29	PROPERTY TAX ($1000)	==))	906

PORTLAND METRO ENERGY RECOVERY PROJECT - REFUSE DERIVED FUEL SYSTEM
LIFE-CYCLE COST ANALYSIS
ALL ELECTRIC
SYSTEM D.1 & SYSTEM D.2

	FACILITY PERFORMANCE	1	6	11	16	21	22	26	31	36	41
		1990	1995	2000	2005	2010	2011	2015	2020	2025	2030
	ANNUAL TONNAGE										
1	Total Waste Processed (Tons)	151,000	151,000	151,000	151,000	151,000	151,000	151,000	151,000	151,000	151,000
2	Total Quantity of Residue (Tons)	39,336	39,336	39,336	39,336	39,336	39,336	39,336	39,336	39,336	39,336
3	Electricity Produced (MWKH)	81	81	81	81	81	81	81	81	81	81
	RESOURCE RECOVERY PLANT COSTS ($000)										
4	Debt Service	6,178	6,178	6,178	6,178	~~6,178~~	0	0	0	0	0
5	Operation and Maintenance Costs	4,770	5,803	7,060	8,590	10,451	10,869	12,715	15,469	18,821	22,899
6	Property Tax	1,060	1,290	1,569	1,909	2,322	2,415	2,825	3,438	4,182	5,089
7	Residue Haul Cost	230	280	341	414	504	524	613	746	908	1,105
8	~~Residue Disposal Cost~~	~~442~~	~~537~~	~~654~~	~~796~~	~~968~~	~~1,007~~	~~1,178~~	~~1,433~~	~~1,743~~	~~2,121~~
9	Total Expenses	12,679	14,088	15,802	17,887	20,423	14,815	17,331	21,086	25,655	31,213
	TOTAL REVENUES										
10	Subtotal Energy ($000)	5,437	5,925	8,573	9,970	11,420	11,746	13,184	15,330	17,941	21,118
11	Interest on all Reserve Funds ($000)	494	494	494	494	~~494~~	0	0	0	0	0
12	Material Revenues (4% metal $000)	60	73	89	109	132	138	161	196	238	290
13	Total Gross Revenues ($000)	5,991	6,493	9,156	10,573	12,047	11,883	13,345	15,526	18,179	21,408
	SYSTEM WIDE COST SUMMARY					2693					
14	Net Tipping Fee ($000)	6,688	7,595	6,645	7,313	~~8,377~~	2,932	3,986	5,560	7,475	9,805
15	Net Tipping Fee w/12.5% equity($000)	5,978	6,884	5,935	6,603	~~7,666~~	2,932	3,986	5,560	7,475	9,805
16	Net Tipping Fee ($/Ton)	44.29	50.30	44.01	48.43	~~55.47~~	19.41	26.40	36.82	49.50	64.93
17	Net Tipping Fee w/12.5% equity($/ton)	39.59	45.59	39.30	43.73	~~50.77~~ 17.83	19.41	26.40	36.82	49.50	64.93
	* SOURCE: GERSHMAN, BRICKNER & BRATTON, INC.										
	* PROGRAMMER:DAS 14 w/o Residue Disposal	6246	7058	5991	6517	1733	1925	2816	4127	5732	7684
	* PORTLAND METRO, C8622 16 w/o Residue Disposal	41.36	46.74	39.68	43.16	11.48	12.75	18.65	27.83	37.96	50.89
	* April 9, 1986 Adjusted for System cost	9.61	10.86	9.22	10.03	2.67	2.96	4.33	6.35	8.82	11.82

DATA INPUT

METRO WASTE-TO-ENERGY PROJECT:
LIFE-CYCLE ECONOMIC ANALYSIS BACKGROUND DATA
RDF PROCESSING & COMPOSTING
SYSTEM B.3

1 CAPITAL COSTS ESTIMATES (YEAR)	==>>	1986
2 DATE OF FINANCING (YEAR)	==>>	1987
3 CONSTRUCTION PERIOD (MONTHS)	==>>	36
4 FINANCE PERIOD (YEARS)	==>>	20
5 EQUITY CONTRIBUTION (PERCENT)	==>>	12.50%
6 WASTE THROUGHPUT, (TONS PER DAY)	==>>	487
7 SYSTEM AVAILABILITY (PERCENT)	==>>	85.0%
8 WASTE THROUGHPUT,OPERATING (TONS PER DAY)	==>>	414
9 FACILITY O & M COSTS ESCALATION (PERCENT PER YEAR)	==>>	4.0%
10 PASS THROUGH ESCALATION (PERCENT PER YEAR)	==>>	4.0%
11 STEAM VALUE ($/1000 POUNDS)	==>>	$0.00
12 STEAM VALUE ESCALATION RATE (PERCENT PER YEAR)	==>>	4.0%
13 ANNUAL STEAM DEMAND (1000$)	==>>	0
14 ELECTRICITY VALUE ($/KWH)	==>>	$0.029
15 ELECTRICITY ESCALATION RATE (PERCENT PER YEAR)	==>>	4.0%
16 ELECTRICITY SOLD (MMKWH)	==>>	0
17 CAPITAL COSTS ($1000)	==>>	57,380
18 REINVESTMENT EARNINGS RATE	==>>	8.000%
19 UNDERWRITERS DISCOUNT AND ISSUANCE COSTS	==>>	3.500%
20 BOND INTEREST RATE ON FIXED RATE DEBT (%)	==>>	8.000%
21 CAPITAL RESERVE FUND	==>>	10.185%
22 BOND SIZE - NO EQUITY ($1000)	==>>	76,834
23 BOND SIZE - WITH 12.5% EQUITY ($1000)	==>>	67,229
24 DEBT SERVICE NO EQUITY ($1,000)	==>>	7,826
25 DEBT SERVICE WITH 12.5% EQUITY ($1,000)	==>>	6,847
24 INTEREST NO EQUITY ($1,000)	==>>	626
25 INTEREST WITH 12.5% EQUITY ($1,000)	==>>	548
26 OPERATION AND MAINTENANCE COSTS ($1000)	==>>	6,493
27 HAUL COSTS $/TON (56 MILE)	==>>	5.00
28 RESIDUE DISPOSAL COSTS ($/TON)	==>>	9.60
29 PROPERTY TAX ($1000)	==>>	1,148

PORTLAND METRO ENERGY RECOVERY PROJECT - REFUSE DERIVED FUEL SYSTEM
LIFE-CYCLE COST ANALYSIS
RDF PROCESSING & COMPOSTING
SYSTEM D.3

	FACILITY PERFORMANCE	1	6	11	16	21	22	26	31	36	41
		1990	1995	2000	2005	2010	2011	2015	2020	2025	2030
	ANNUAL TONNAGE										
1	Total Waste Processed (Tons)	151,000	151,000	151,000	151,000	151,000	151,000	151,000	151,000	151,000	151,000
2	Total Quantity of Residue (Tons)	39,336	39,336	39,336	39,336	39,336	39,336	39,336	39,336	39,336	39,336
	RESOURCE RECOVERY PLANT COSTS ($000)										
3	Debt Service	7,826	7,826	7,826	7,826	~~7,826~~	0	0	0	0	0
4	Operation and Maintenance Costs	7,596	9,242	11,244	13,680	16,644	17,309	20,249	24,636	29,974	36,468
5	Property Tax	1,343	1,633	1,987	2,418	2,942	3,059	3,579	4,354	5,298	6,446
6	Residue Haul Cost	230	280	341	414	504	524	613	746	908	1,105
7	~~Residue Disposal Cost~~	~~442~~	~~537~~	~~654~~	~~796~~	~~968~~	~~1,007~~	~~1,178~~	~~1,433~~	~~1,743~~	~~2,121~~
8	Total Expenses	17,436	19,518	22,051	25,133	28,883	21,900	25,619	31,170	37,923	46,139
	TOTAL REVENUES										
9	Interest on all Reserve Funds ($000)	626	626	626	626	~~626~~	0	0	0	0	0
10	Material Revenues from Coopost ($000)	854	1,040	1,265	1,539	1,872	1,947	2,278	2,771	3,372	4,102
11	Material Revenues (4% metal $000)	60	73	89	109	132	138	161	196	238	290
12	Total Gross Revenues ($000)	1,541	1,739	1,980	2,274	2,630	2,085	2,439	2,967	3,610	4,392
	SYSTEM WIDE COST SUMMARY					19052					
13	Net Tipping Fee ($000)	15,895	17,779	20,071	22,860	~~26,252~~	19,815	23,181	29,203	34,313	41,747
14	Net Tipping Fee w/12.5% equity($000)	14,995	16,879	19,171	21,960	~~25,353~~	19,815	23,181	28,203	34,313	41,747
15	Net Tipping Fee ($/Ton)	105.27	117.74	132.92	151.39	~~173.86~~	131.22	153.51	186.77	227.24	276.47
16	Net Tipping Fee w/12.5% equity($/ton)	99.31	111.78	126.96	145.43	~~167.90~~ 126.17	131.22	153.51	186.77	227.24	276.47
	* SOURCE: GERSHMAN, BRICKNER & BRATTON, INC.										
	* PROGRAMMER: BAS 13 w/o Residue Disposal	15453	17242	19417	22064	18084	18808	22003	26770	32570	39626
	* PORTLAND METRO, C8622 15 w/o Residue Disposal	102.34	114.19	128.59	146.12	119.76	124.56	145.72	177.28	215.69	262.42
	* April 9, 1986 Adjusted for System Cost	23.77	26.53	29.87	33.94	27.82	28.94	33.85	41.18	50.11	60.96

DATA INPUT

METRO WASTE-TO-ENERGY PROJECT:
LIFE-CYCLE ECONOMIC ANALYSIS BACKGROUND DATA
MASS BURN SYSTEM
SYSTEM C.1

1	CAPITAL COSTS ESTIMATES (YEAR)	==>>	1986
2	DATE OF FINANCING (YEAR)	==>>	1987
3	CONSTRUCTION PERIOD (MONTHS)	==>>	36
4	FINANCE PERIOD (YEARS)	==>>	20
5	EQUITY CONTRIBUTION (PERCENT)	==>>	12.50%
6	WASTE THROUGHPUT, (TONS PER DAY)	==>>	973
7	SYSTEM AVAILABILITY (PERCENT)	==>>	85.0%
8	WASTE THROUGHPUT,OPERATING (TONS PER DAY)	==>>	827
9	RESIDUE (PERCENT)	==>>	30.0%
10	FACILITY O & M COSTS ESCALATION (PERCENT PER YEAR)	==>>	4.0%
11	PASS THROUGH ESCALATION (PERCENT PER YEAR)	==>>	4.0%
12	STEAM VALUE ($/1000 POUNDS)	==>>	$5.13
13	STEAM VALUE ESCALATION RATE (PERCENT PER YEAR)	==>>	4.0%
14	ANNUAL STEAM DEMAND (1000#)	==>>	0
15	ELECTRICITY VALUE ($/KWH)	==>>	$0.029
16	ELECTRICITY ESCALATION RATE (PERCENT PER YEAR)	==>>	4.0%
17	ELECTRICITY SOLD (MMKWH)	==>>	148
18	CAPITAL COSTS ($1000)	==>>	98,150
19	REINVESTMENT EARNINGS RATE	==>>	8.000%
20	UNDERWRITERS DISCOUNT AND ISSUANCE COSTS	==>>	3.500%
21	BOND INTEREST RATE ON FIXED RATE DEBT (%)	==>>	8.000%
22	CAPITAL RESERVE FUND	==>>	10.185%
23	BOND SIZE - NO EQUITY ($1000)	==>>	131,426
24	BOND SIZE - WITH 12.5% EQUITY ($1000)	==>>	114,998
25	DEBT SERVICE NO EQUITY ($1,000)	==>>	13,386
24	DEBT SERVICE WITH 12.5% EQUITY ($1,000)	==>>	11,713
25	INTEREST NO EQUITY ($1,000)	==>>	1,071
26	INTEREST WITH 12.5% EQUITY ($1,000)	==>>	937
27	OPERATION AND MAINTENANCE COSTS ($1000)	==>>	6,040
28	HAUL COSTS $/TON (56 MILE)	==>>	5.00
29	RESIDUE DISPOSAL COSTS ($/TON)	==>>	9.60
30	PROPERTY TAX ($1000)	==>>	1,963

PORTLAND METRO ENERGY RECOVERY PROJECT
LIFE-CYCLE COST ANALYSIS
MASS BURN SYSTEM - ALL STEAM
SYSTEM C.1

	FACILITY PERFORMANCE	1 1990	6 1995	11 2000	16 2005	21 2010	22 2011	26 2015	31 2020	36 2025	41 2030
	ANNUAL TONNAGE										
1	Waste Processed (Tons)	302,000	302,000	302,000	302,000	302,000	302,000	302,000	302,000	302,000	302,000
2	Quantity of Residue (Tons)	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600	90,600
	ANNUAL ENERGY PRODUCED										
3	Electricity Produced (MWKWH)	148	148	148	148	148	148	148	148	148	148
	RESOURCE RECOVERY PLANT COSTS ($000)										
4	Debt Service	13,386	13,386	13,386	13,386	~~13,386~~	0	0	0	0	0
5	Operation and Maintenance Costs	7,066	8,597	10,459	12,725	15,482	16,102	18,837	22,918	27,883	33,924
6	Property Tax	2,296	2,794	3,399	4,136	5,032	5,233	6,122	7,448	9,062	11,025
7	Residue Haul Cost	530	645	784	954	1,161	1,208	1,413	1,719	2,091	2,544
8	~~Residue Disposal Cost~~	~~1,017~~	~~1,238~~	~~1,506~~	~~1,832~~	~~2,229~~	~~2,319~~	~~2,712~~	~~3,300~~	~~4,015~~	~~4,885~~
9	Total System Costs	24,296	26,659	29,535	33,034	37,291	24,861	29,084	35,385	43,051	52,378
	TOTAL REVENUES										
10	Subtotal Energy ($000)	9,878	10,766	15,575	18,114	20,748	21,340	23,953	27,852	32,596	38,368
11	Interest on Reserve Funds ($000)	1,071	1,071	1,071	1,071	~~1,071~~	0	0	0	0	0
12	Total non-Tipping Fee Revenues ($000)	10,949	11,836	16,646	19,185	21,819	21,340	23,953	27,852	32,596	38,368
13	Net Tipping Fee ($000)	13,347	14,823	12,889	13,849	31.57 ~~15,472~~	3,521	5,131	7,533	10,455	14,011
~~13~~ 14	Net Tipping Fee w/12.5% EQUITY ($000)	11,808	13,284	11,350	12,309	~~13,932~~	14,297	15,906	18,308	21,231	24,786
~~14~~ 15	Net Tipping Fee ($/Ton)	44.20	49.08	42.68	45.86	~~51.23~~	11.66	16.99	24.94	34.62	46.39
~~15~~ 16	Net Tipping Fee w/12.5% EQUITY ($/Ton)	39.10	43.99	37.58	40.76	~~46.13~~ 20.91	11.66	16.99	24.94	34.62	46.39
	* SOURCE: GERSHMAN, BRICKNER & BRATTON, INC.										
	* PROGRAMMER:BAS 13 w/o Residue Disposal	12330	13585	11383	12017	928	1202	2419	4233	6440	9126
	* PORTLAND METRO, CB622 15 w/o Residue Disposal	40.83	44.98	37.69	39.79	3.07	3.98	8.01	14.02	21.32	30.22
	* APRIL 9, 1986 Adjusted for System Cost	18.97	20.90	17.51	18.49	1.43	1.85	3.72	6.51	9.91	14.04

DATA INPUT

METRO WASTE-TO-ENERGY PROJECT:
LIFE-CYCLE ECONOMIC ANALYSIS BACKGROUND DATA
MASS BURN SYSTEM
SYSTEM C.2

1 CAPITAL COSTS ESTIMATES (YEAR)	==>>	1986
2 DATE OF FINANCING (YEAR)	==>>	1987
3 CONSTRUCTION PERIOD (MONTHS)	==>>	36
4 FINANCE PERIOD (YEARS)	==>>	20
5 EQUITY CONTRIBUTION (PERCENT)	==>>	12.50%
6 WASTE THROUGHPUT, (TONS PER DAY)	==>>	487
7 SYSTEM AVAILABILITY (PERCENT)	==>>	85.0%
8 WASTE THROUGHPUT,OPERATING (TONS PER DAY)	==>>	414
9 RESIDUE (PERCENT)	==>>	30.0%
10 FACILITY O & M COSTS ESCALATION (PERCENT PER YEAR)	==>>	4.0%
11 PASS THROUGH ESCALATION (PERCENT PER YEAR)	==>>	4.0%
12 STEAM VALUE ($/1000 POUNDS)	==>>	$5.13
13 STEAM VALUE ESCALATION RATE (PERCENT PER YEAR)	==>>	4.0%
14 ANNUAL STEAM DEMAND (1000#)	==>>	0
15 ELECTRICITY VALUE ($/KWH)	==>>	$0.029
16 ELECTRICITY ESCALATION RATE (PERCENT PER YEAR)	==>>	4.0%
17 ELECTRICITY SOLD (MMKWH)	==>>	74
18 CAPITAL COSTS ($1000)	==>>	51,340
19 REINVESTMENT EARNINGS RATE	==>>	8.000%
20 UNDERWRITERS DISCOUNT AND ISSUANCE COSTS	==>>	3.500%
21 BOND INTEREST RATE ON FIXED RATE DEBT (%)	==>>	8.000%
22 CAPITAL RESERVE FUND	==>>	10.185%
23 BOND SIZE - NO EQUITY ($1000)	==>>	58,746
24 BOND SIZE - WITH 12.5% EQUITY ($1000)	==>>	60,153
25 DEBT SERVICE NO EQUITY ($1,000)	==>>	7,002
24 DEBT SERVICE WITH 12.5% EQUITY ($1,000)	==>>	6,127
25 INTEREST NO EQUITY ($1,000)	==>>	560
26 INTEREST WITH 12.5% EQUITY ($1,000)	==>>	490
27 OPERATION AND MAINTENANCE COSTS ($1000)	==>>	4,379
28 HAUL COSTS $/TON (56 MILE)	==>>	5.00
29 RESIDUE DISPOSAL COSTS ($/TON)	==>>	9.60
30 PROPERTY TAX ($1000)	==>>	1,027

PORTLAND METRO ENERGY RECOVERY PROJECT
LIFE-CYCLE COST ANALYSIS
MASS BURN SYSTEM - ALL STEAM
SYSTEM C.2

	FACILITY PERFORMANCE	1	6	11	16	21	22	26	31	36	41
		1990	1995	2000	2005	2010	2011	2015	2020	2025	2030
	ANNUAL TONNAGE										
1	Waste Processed (Tons)	151,000	151,000	151,000	151,000	151,000	151,000	151,000	151,000	151,000	151,000
2	Quantity of Residue (Tons)	45,300	45,300	45,300	45,300	45,300	45,300	45,300	45,300	45,300	45,300
	ANNUAL ENERGY PRODUCED										
3	Electricity Produced (MWH)	74	74	74	74	74	74	74	74	74	74
	RESOURCE RECOVERY PLANT COSTS ($000)										
4	Debt Service	7,002	7,002	7,002	7,002	~~7,002~~	0	0	0	0	0
5	Operation and Maintenance Costs	5,123	6,233	7,583	9,226	11,225	11,674	13,657	16,615	20,215	24,595
6	Property Tax	1,201	1,461	1,778	2,163	2,632	2,737	3,202	3,896	4,740	5,767
7	Residue Haul Cost	265	322	392	477	581	604	706	859	1,046	1,272
8	~~Residue Disposal Cost~~	~~509~~	~~619~~	~~753~~	~~916~~	~~1,115~~	~~1,159~~	~~1,356~~	~~1,650~~	~~2,008~~	~~2,443~~
9	Total System Costs	14,100	15,637	17,508	19,785	22,554	16,174	18,921	23,021	28,008	34,076
	TOTAL REVENUES										
10	Subtotal Energy ($000)	4,939	5,383	7,787	9,057	10,374	10,670	11,977	13,926	16,298	19,184
11	Interest on Reserve Funds ($000)	560	560	560	560	~~560~~	0	0	0	0	0
12	Total non-Tipping Fee Revenues ($000)	5,499	5,943	8,348	9,617	10,934	10,670	11,977	13,926	16,298	19,184
13	Net Tipping Fee ($000)	8,601	9,694	9,161	10,167	3178 ~~11,620~~	5,504	6,945	9,095	11,710	14,893
~~14~~	Net Tipping Fee w/12.5% EQUITY ($000)	7,795	8,889	8,355	9,362	~~10,814~~	11,141	12,581	14,731	17,347	20,529
~~15~~	Net Tipping Fee ($/Ton)	56.96	64.20	60.67	67.33	~~76.95~~	36.45	45.99	60.23	77.55	98.63
~~16~~	Net Tipping Fee w/12.5% EQUITY ($/Ton)	51.63	58.87	55.33	62.00	~~71.62~~ 34.29	36.45	45.99	60.23	77.55	98.63

* SOURCE: GERSHMAN, BRICKNER & BRATTON, INC.
* PROGRAMMER:DAS 13 w/o Residue Disposal 8092 9075 8408 9251 4063 4345 5589 7445 9702 12450
* PORTLAND METRO, C8622 15 w/o Residue Disposal 53.59 60.10 55.68 61.26 26.91 28.77 37.01 49.30 64.25 82.45
* APRIL 9, 1986 Adjusted for System Cost 12.45 13.96 12.94 14.23 6.25 6.68 8.60 11.45 14.93 19.15

DATA INPUT

METRO WASTE-TO-ENERGY PROJECT:
LIFE-CYCLE ECONOMIC ANALYSIS BACKGROUND DATA
MASS BURN SYSTEM - ALL STEAM
SYSTEM D.1

1 CAPITAL COSTS ESTIMATES (YEAR)	==>>	1986
2 DATE OF FINANCING (YEAR)	==>>	1987
3 CONSTRUCTION PERIOD (MONTHS)	==>>	36
4 FINANCE PERIOD (YEARS)	==>>	20
5 EQUITY CONTRIBUTION (PERCENT)	==>>	12.50%
6 WASTE THROUGHPUT, (TONS PER DAY)	==>>	730
7 SYSTEM AVAILABILITY (PERCENT)	==>>	85.0%
8 WASTE THROUGHPUT,OPERATING (TONS PER DAY)	==>>	621
9 RESIDUE (PERCENT)	==>>	30.0%
10 FACILITY O & M COSTS ESCALATION (PERCENT PER YEAR)	==>>	4.0%
11 PASS THROUGH ESCALATION (PERCENT PER YEAR)	==>>	4.0%
12 STEAM VALUE ($/1000 POUNDS)	==>>	$5.13
13 STEAM VALUE ESCALATION RATE (PERCENT PER YEAR)	==>>	4.0%
14 ANNUAL STEAM DEMAND (1000#)	==>>	1,137,265
15 ELECTRICITY VALUE ($/KWH)	==>>	$0.029
16 ELECTRICITY ESCALATION RATE (PERCENT PER YEAR)	==>>	4.0%
17 ELECTRICITY SOLD (MMKWH)	==>>	0
18 CAPITAL COSTS ($1000)	==>>	75,425
19 REINVESTMENT EARNINGS RATE	==>>	8.000%
20 UNDERWRITERS DISCOUNT AND ISSUANCE COSTS	==>>	3.500%
21 BOND INTEREST RATE ON FIXED RATE DEBT (%)	==>>	8.000%
22 CAPITAL RESERVE FUND	==>>	10.185%
23 BOND SIZE - NO EQUITY ($1000)	==>>	100,996
24 BOND SIZE - WITH 12.5% EQUITY ($1000)	==>>	88,371
25 DEBT SERVICE NO EQUITY ($1,000)	==>>	10,287
24 DEBT SERVICE WITH 12.5% EQUITY ($1,000)	==>>	9,001
25 INTEREST NO EQUITY ($1,000)	==>>	823
26 INTEREST WITH 12.5% EQUITY ($1,000)	==>>	720
27 OPERATION AND MAINTENANCE COSTS ($1000)	==>>	5,436
28 HAUL COSTS $/TON (56 MILE)	==>>	5.00
29 RESIDUE DISPOSAL COSTS ($/TON)	==>>	9.60
30 PROPERTY TAX ($1000)	==>>	1,508

PORTLAND METRO ENERGY RECOVERY PROJECT
LIFE-CYCLE COST ANALYSIS
MASS BURN SYSTEM - ALL STEAM
SYSTEM B.1

	FACILITY PERFORMANCE	1 1990	6 1995	11 2000	16 2005	21 2010	22 2011	26 2015	31 2020	36 2025	41 2030
	ANNUAL TONNAGE										
1	Waste Processed (Tons)	226,500	226,500	226,500	226,500	226,500	226,500	226,500	226,500	226,500	226,500
2	Quantity of Residue (Tons)	67,950	67,950	67,950	67,950	67,950	67,950	67,950	67,950	67,950	67,950
	ANNUAL ENERGY PRODUCED										
3	Annual Steam Demand (1000#)	1,137,265	1,137,265	1,137,265	1,137,265	1,137,265	1,137,265	1,137,265	1,137,265	1,137,265	1,137,265
4	Annual Steam Revenues MSW ($000)	6,824	~~8,302~~ 8,709	~~10,101~~ 11,116	~~12,289~~ 14,197	~~14,951~~ 18,106	~~15,549~~ 19,011	~~18,191~~ 23,108	~~22,132~~ 29,493	~~26,926~~ 37,641	~~32,760~~ 48,641
	RESOURCE RECOVERY PLANT COSTS ($000)										
5	Debt Service	10,287	10,287	10,287	10,287	~~10,287~~	0	0	0	0	0
6	Operation and Maintenance Costs	6,359	7,737	9,413	11,453	13,934	14,491	16,953	20,626	25,095	30,531
7	Property Tax	1,765	2,147	2,612	3,178	3,867	4,021	4,704	5,724	6,964	8,472
8	Residue Haul Cost	397	484	588	716	871	906	1,060	1,289	1,568	1,908
9	Residue Disposal Cost	~~763~~	~~928~~	~~1,130~~	~~1,374~~	~~1,672~~	~~1,739~~	~~2,034~~	~~2,475~~	~~3,011~~	~~3,664~~
10	Total System Costs	19,571	21,583	24,030	27,008	30,630	21,158	24,751	30,114	36,638	44,576
	TOTAL REVENUES										
11	Subtotal Energy ($000)	6,824	8,302	10,101	12,289	14,951	15,549	18,191	22,132	26,926	32,760
12	Interest on Reserve Funds ($000)	823	823	823	823	~~823~~	0	0	0	0	0
13	Total non-Tipping Fee Revenues ($000)	7,647	9,125	10,924	13,112	15,774	15,549	18,191	22,132	26,926	32,760
14	Net Tipping Fee ($000)	11,925	12,458	13,107	13,896	~~14,856~~ 6392	5,608	6,561	7,982	9,712	11,816
~~14~~15	Net Tipping Fee w/12.5% EQUITY ($000)	10,742	11,275	11,924	12,713	~~13,673~~	13,889	14,842	16,263	17,992	20,096
~~15~~16	Net Tipping Fee ($/Ton)	52.65	55.00	57.87	61.35	~~65.59~~	24.76	28.97	35.24	42.88	52.17
~~16~~17	Net Tipping Fee w/12.5% EQUITY ($/Ton)	47.43	49.78	52.64	56.13	~~60.37~~ 23.91	24.76	28.97	35.24	42.88	52.17

* SOURCE: BERSHMAN, BRICKNER & BRATTON, INC.
* PROGRAMMER: BAS
* PORTLAND METRO, CB622
* APRIL 9, 1986

LINE 14 w/o Residue Disposal	11162	11123	10962	10624	565	407	(390)	(1854)	(4014)	(7129)
16 w/o Residue Disposal	49.28	49.11	48.40	46.91	2.49	1.80	(1.72)	(8.19)	(17.72)	(31.47)
Adjusted for System Cost	17.17	17.11	16.86	16.34	0.87	0.63	(0.60)	(2.85)	(6.18)	(10.97)

DATA INPUT

METRO WASTE-TO-ENERGY PROJECT:
LIFE-CYCLE ECONOMIC ANALYSIS BACKGROUND DATA
MASS BURN SYSTEM - ALL STEAM
SYSTEM D.2

1 CAPITAL COSTS ESTIMATES (YEAR)	==>>	1986
2 DATE OF FINANCING (YEAR)	==>>	1987
3 CONSTRUCTION PERIOD (MONTHS)	==>>	36
4 FINANCE PERIOD (YEARS)	==>>	20
5 EQUITY CONTRIBUTION (PERCENT)	==>>	12.50%
6 WASTE THROUGHPUT, (TONS PER DAY)	==>>	730
7 SYSTEM AVAILABILITY (PERCENT)	==>>	85.0%
8 WASTE THROUGHPUT,OPERATING (TONS PER DAY)	==>>	621
9 RESIDUE (PERCENT)	==>>	30.0%
10 FACILITY O & M COSTS ESCALATION (PERCENT PER YEAR)	==>>	4.0%
11 PASS THROUGH ESCALATION (PERCENT PER YEAR)	==>>	4.0%
12 STEAM VALUE ($/1000 POUNDS)	==>>	$5.13
13 STEAM VALUE ESCALATION RATE (PERCENT PER YEAR)	==>>	4.0%
14 ANNUAL STEAM DEMAND (1000#)	==>>	1,137,265
15 ELECTRICITY VALUE ($/KWH)	==>>	$0.029
16 ELECTRICITY ESCALATION RATE (PERCENT PER YEAR)	==>>	4.0%
17 ELECTRICITY SOLD (MMKWH)	==>>	0
18 CAPITAL COSTS ($1000)	==>>	51,642
19 REINVESTMENT EARNINGS RATE	==>>	8.000%
20 UNDERWRITERS DISCOUNT AND ISSUANCE COSTS	==>>	3.500%
21 BOND INTEREST RATE ON FIXED RATE DEBT (%)	==>>	8.000%
22 CAPITAL RESERVE FUND	==>>	10.185%
23 BOND SIZE - NO EQUITY ($1000)	==>>	69,150
24 BOND SIZE - WITH 12.5% EQUITY ($1000)	==>>	60,506
25 DEBT SERVICE NO EQUITY ($1,000)	==>>	7,043
24 DEBT SERVICE WITH 12.5% EQUITY ($1,000)	==>>	6,163
25 INTEREST NO EQUITY ($1,000)	==>>	563
26 INTEREST WITH 12.5% EQUITY ($1,000)	==>>	493
27 OPERATION AND MAINTENANCE COSTS ($1000)	==>>	5,436
28 HAUL COSTS $/TON (56 MILE)	==>>	5.00
29 RESIDUE DISPOSAL COSTS ($/TON)	==>>	9.60
30 PROPERTY TAX ($1000)	==>>	1,033

PORTLAND METRO ENERGY RECOVERY PROJECT
LIFE-CYCLE COST ANALYSIS
MASS BURN SYSTEM - ALL STEAM
SYSTEM D.2

	FACILITY PERFORMANCE	1	6	11	16	21	22	26	31	36	41
		1990	1995	2000	2005	2010	2011	2015	2020	2025	2030
	ANNUAL TONNAGE										
1	Waste Processed (Tons)	226,500	226,500	226,500	226,500	226,500	226,500	226,500	226,500	226,500	226,500
2	Quantity of Residue (Tons)	67,950	67,950	67,950	67,950	67,950	67,950	67,950	67,950	67,950	67,950
	ANNUAL ENERGY PRODUCED										
3	Annual Steam Demand (1000#)	1,137,265	1,137,265	1,137,265	1,137,265	1,137,265	1,137,265	1,137,265	1,137,265	1,137,265	1,137,265
4	Annual Steam Revenues MSW ($000)	6,824	8,302	10,101	12,289	14,951	15,549	18,191	22,132	26,926	32,760
	RESOURCE RECOVERY PLANT COSTS ($000)										
5	Debt Service	10,132	10,132	10,132	10,132	~~10,132~~	0	0	0	0	0
6	Operation and Maintenance Costs	6,359	7,737	9,413	11,453	13,934	14,491	16,953	20,626	25,095	30,531
7	Property Tax	1,738	2,115	2,573	3,130	3,809	3,961	4,634	5,638	6,859	8,345
8	Residue Haul Cost	397	484	588	716	871	906	1,060	1,289	1,568	1,908
9	~~Residue Disposal Cost~~	~~763~~	~~928~~	~~1,130~~	~~1,374~~	~~1,672~~	~~1,739~~	~~2,034~~	~~2,475~~	~~3,011~~	~~3,664~~
10	Total System Costs	19,390	21,396	23,837	26,806	30,418	21,097	24,681	30,028	36,534	44,449
	TOTAL REVENUES										
11	Subtotal Energy ($000)	6,824	8,302	10,101	12,289	14,951	15,549	18,191	22,132	26,926	32,760
12	Interest on Reserve Funds ($000)	811	811	811	811	~~811~~	0	0	0	0	0
13	Total non-Tipping Fee Revenues ($000)	7,634	9,113	10,911	13,099	15,762	15,549	18,191	22,132	26,926	32,760
14	Net Tipping Fee ($000)	11,756	12,284	12,925	13,706	~~14,656~~ 5335	5,548	6,490	7,896	9,607	11,688
~~14~~ 15	Net Tipping Fee w/12.5% EQUITY ($000)	10,591	11,118	11,760	12,541	~~13,491~~	~~13,704~~	~~14,647~~	~~16,053~~	~~17,763~~	~~19,845~~
~~15~~ 16	Net Tipping Fee ($/Ton)	51.90	54.23	57.07	60.51	~~64.71~~	24.49	28.65	34.86	42.42	51.60
~~16~~ 17	Net Tipping Fee w/12.5% EQUITY ($/Ton)	46.76	49.09	51.92	55.37	~~59.56~~ 23.55	24.49	28.65	34.86	42.42	51.60
	* SOURCE: GERSHMAN, BRICKNER & BRATTON, INC.										
	* PROGRAMMER:BAS 14 w/o Residue Disposal	10993	11356	11795	12332	3663	3809	4456	5421	6596	8024
	* PORTLAND METRO, C8622 16w/o Residue Disposal	48.53	50.14	52.08	54.45	16.17	16.82	19.67	23.93	29.12	35.43
	* APRIL 9, 1986 Adjusted for system Cost	16.91	17.47	18.15	18.97	5.64	5.86	6.86	8.34	10.15	12.34

DATA INPUT

METRO WASTE-TO-ENERGY PROJECT:

LIFE-CYCLE ECONOMIC ANALYSIS BACKGROUND DATA

RDF SYSTEM - ALL ELECTRIC

SYSTEM E

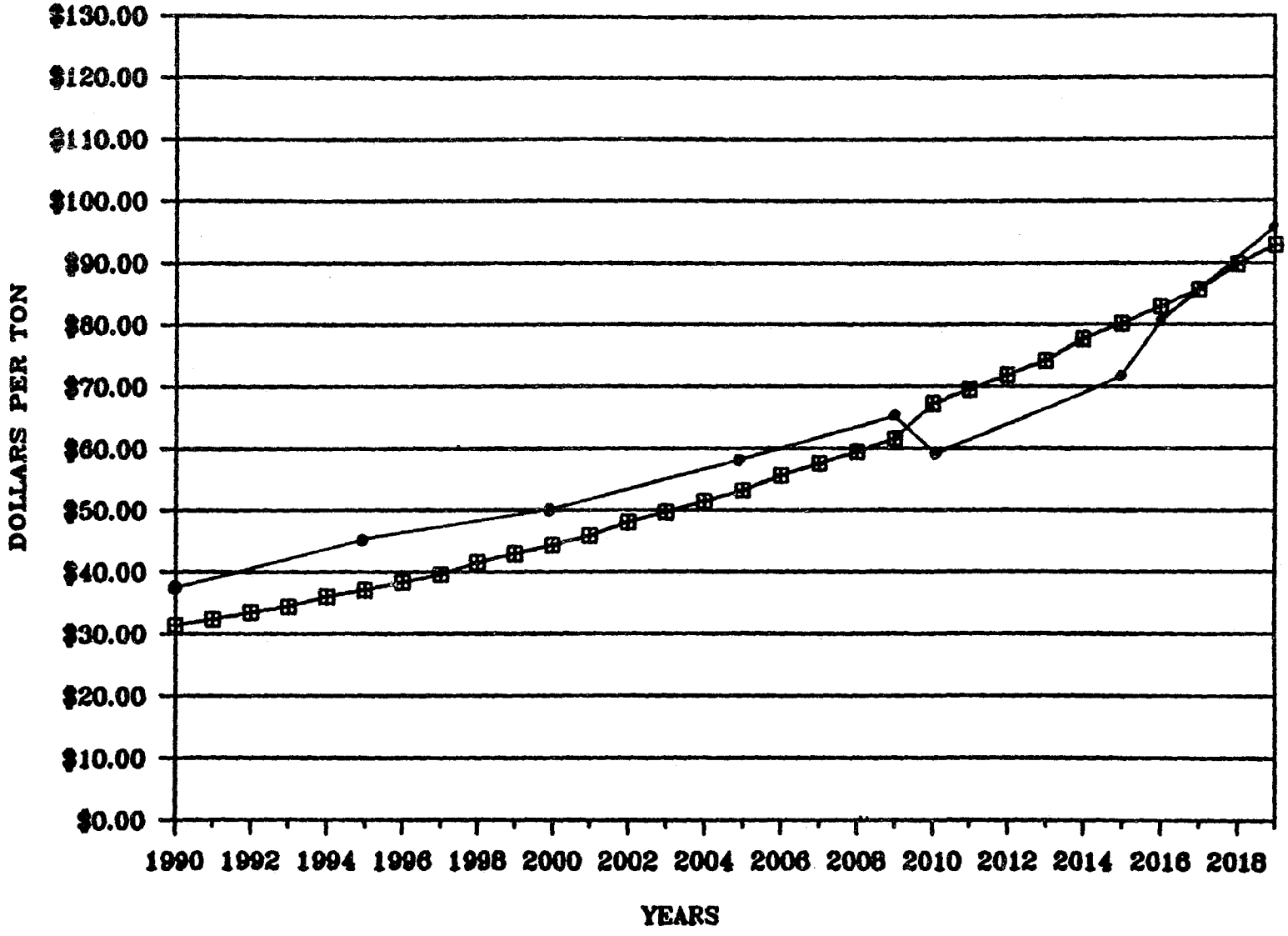
1 CAPITAL COSTS ESTIMATES (YEAR)	==>>	1986
2 DATE OF FINANCING (YEAR)	==>>	1987
3 CONSTRUCTION PERIOD (MONTHS)	==>>	36
4 FINANCE PERIOD (YEARS)	==>>	20
5 EQUITY CONTRIBUTION (PERCENT)	==>>	12.50%
6 WASTE THROUGHPUT, (TONS PER DAY)	==>>	1,460
7 SYSTEM AVAILABILITY (PERCENT)	==>>	85.0%
8 WASTE THROUGHPUT,OPERATING (TONS PER DAY)	==>>	1,241
9 FACILITY O & M COSTS ESCALATION (PERCENT PER YEAR)	==>>	4.0%
10 PASS THROUGH ESCALATION (PERCENT PER YEAR)	==>>	4.0%
11 STEAM VALUE ($/1000 POUNDS)	==>>	$5.33
12 STEAM VALUE ESCALATION RATE (PERCENT PER YEAR)	==>>	4.0%
13 ANNUAL STEAM DEMAND (1000#)	==>>	0
14 ELECTRICITY VALUE ($/KWH)	==>>	$0.029
15 ELECTRICITY ESCALATION RATE (PERCENT PER YEAR)	==>>	4.0%
16 ELECTRICITY SOLD (MMKWH)	==>>	244
17 CAPITAL COSTS ($1000)	==>>	117,780
18 REINVESTMENT EARNINGS RATE	==>>	8.000%
19 UNDERWRITERS DISCOUNT AND ISSUANCE COSTS	==>>	3.500%
20 BOND INTEREST RATE ON FIXED RATE DEBT (%)	==>>	8.000%
21 CAPITAL RESERVE FUND	==>>	10.185%
22 BOND SIZE - NO EQUITY ($1000)	==>>	157,711
23 BOND SIZE - WITH 12.5% EQUITY ($1000)	==>>	137,997
24 DEBT SERVICE NO EQUITY ($1,000)	==>>	16,063
25 DEBT SERVICE WITH 12.5% EQUITY ($1,000)	==>>	14,055
24 INTEREST NO EQUITY ($1,000)	==>>	1,285
25 INTEREST WITH 12.5% EQUITY ($1,000)	==>>	1,124
26 OPERATION AND MAINTENANCE COSTS ($1000)	==>>	9,966
27 HAUL COSTS $/TON (56 MILE)	==>>	5.00
28 RESIDUE DISPOSAL COSTS ($/TON)	==>>	9.60
29 PROPERTY TAX ($1000)	==>>	2,356

PORTLAND METRO ENERGY RECOVERY PROJECT - REFUSE DERIVED FUEL SYSTEM
LIFE-CYCLE COST ANALYSIS
ALL ELECTRIC
SYSTEM E

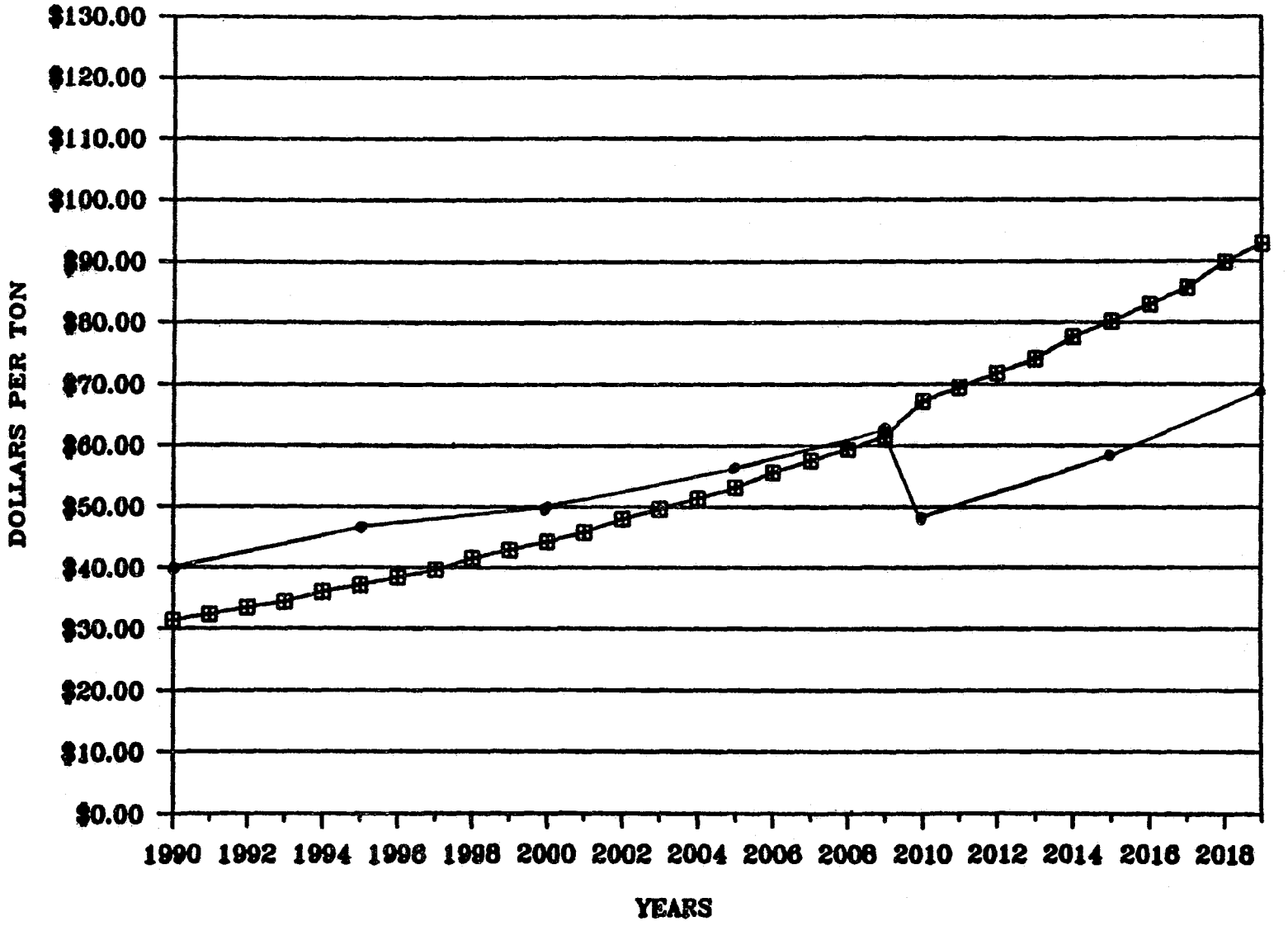
	FACILITY PERFORMANCE	1 1990	6 1995	11 2000	16 2005	21 2010	22 2011	26 2015	31 2020	36 2025	41 2030
	ANNUAL TONNAGE										
1	Total Waste Processed (Tons)	453,000	453,000	453,000	453,000	453,000	453,000	453,000	453,000	453,000	453,000
2	Total Quantity of Residue (Tons)	118,007	118,007	118,007	118,007	118,007	118,007	118,007	118,007	118,007	118,007
3	Electricity Produced (MMKWH)	244	244	244	244	244	244	244	244	244	244
	RESOURCE RECOVERY PLANT COSTS ($000)										
4	Debt Service	16,063	16,063	16,063	16,063	~~16,063~~	0	0	0	0	0
5	Operation and Maintenance Costs	11,659	14,185	17,258	20,997	25,346	26,588	31,080	37,814	46,007	55,974
6	Property Tax	2,756	3,353	4,079	4,963	6,038	6,280	7,346	8,938	10,874	13,230
7	Residue Haul Cost	690	840	1,022	1,243	1,512	1,573	1,840	2,239	2,724	3,314
8	~~Residue Disposal Cost~~	~~1,325~~	~~1,612~~	~~1,962~~	~~2,387~~	~~2,904~~	~~3,020~~	~~3,533~~	~~4,298~~	~~5,230~~	~~6,363~~
9	Total Expenses	32,493	36,053	40,384	45,653	52,064	37,440	43,800	53,289	64,835	78,881
	TOTAL REVENUES										
10	Subtotal Energy ($000)	16,310	17,776	25,718	29,911	34,260	35,237	39,552	45,990	53,823	63,353
11	Interest on all Reserve Funds ($000)	1,285	1,285	1,285	1,285	~~1,285~~	0	0	0	0	0
12	Material Revenues (4% metal $000)	181	220	268	326	397	413	483	588	715	870
13	Total Gross Revenues ($000)	17,776	19,282	27,271	31,522	35,942	35,650	40,035	46,578	54,538	64,223
	SYSTEM WIDE COST SUMMARY										
14	Net Tipping Fee ($000)	14,717	16,771	13,113	14,131	1343 ~~16,121~~	1,790	3,765	6,711	10,296	14,658
15	Net Tipping Fee w/12.5% equity($000)	12,870	14,924	11,266	12,284	~~14,274~~	1,790	3,765	6,711	10,296	14,658
16	Net Tipping Fee ($/Ton)	32.49	37.02	28.95	31.19	~~35.59~~	3.95	8.31	14.82	22.73	32.36
17	Net Tipping Fee w/12.5% equity($/ton)	28.41	32.94	24.87	27.12	~~31.81~~ 2.96	3.95	8.31	14.82	22.73	32.36

* SOURCE: GERSHMAN, BRICKNER & BRATTON, INC.
* PROGRAMMER:DAS (4 w/o Residue Disposal) 13392 15159 11151 11744 (1521) (1330) 232 2413 5066 8295
* PORTLAND METRO, C8622 (16 w/o Residue Disposal) 29.56 33.46 24.62 25.92 (3.45) (2.71) 0.51 5.33 11.18 18.31
* April 9, 1986 Adjusted for System Cost 20.60 23.32 17.16 18.07 (2.46) (1.89) 0.36 3.71 7.79 12.76

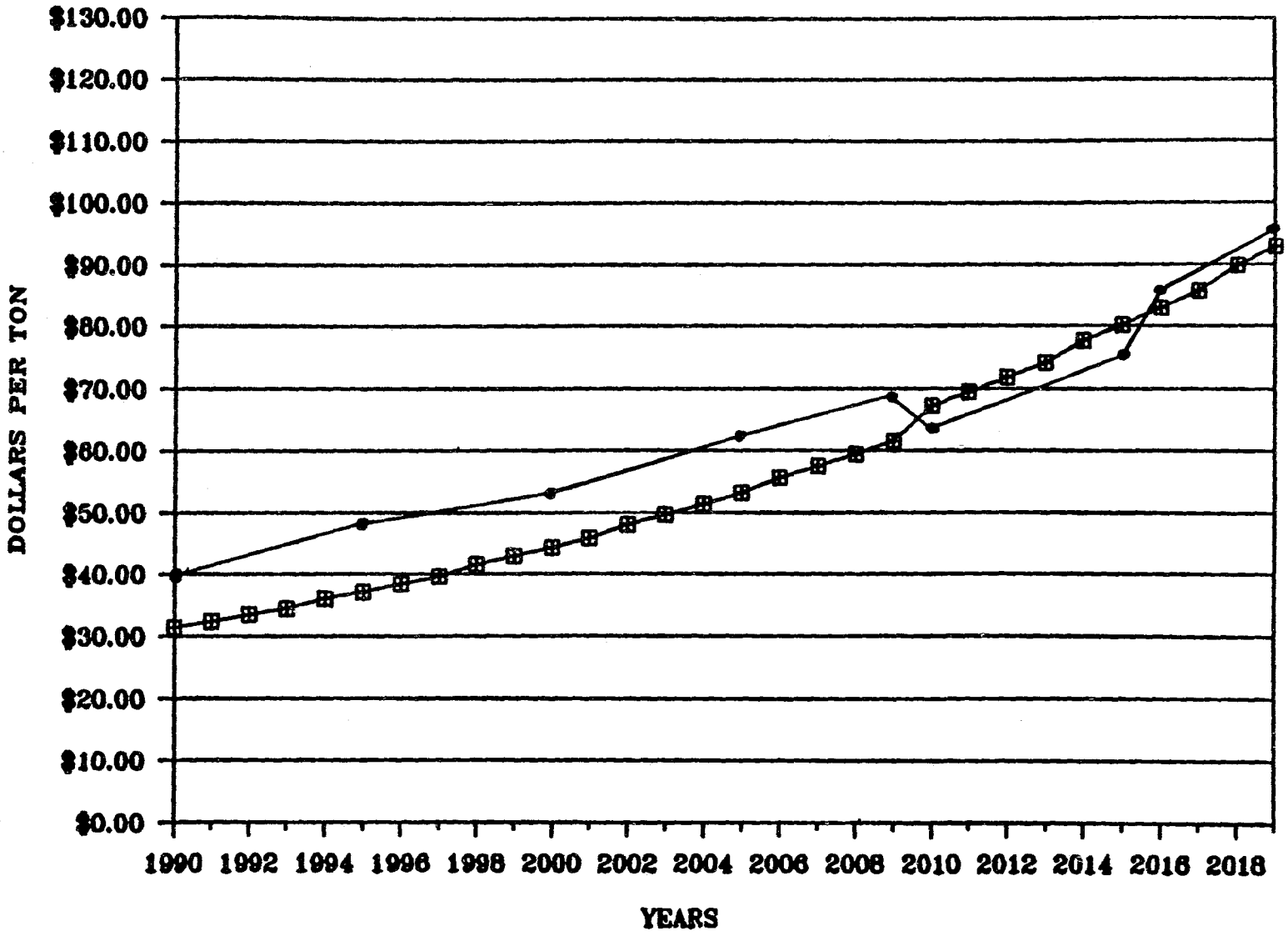
SCENARIO A & B-1



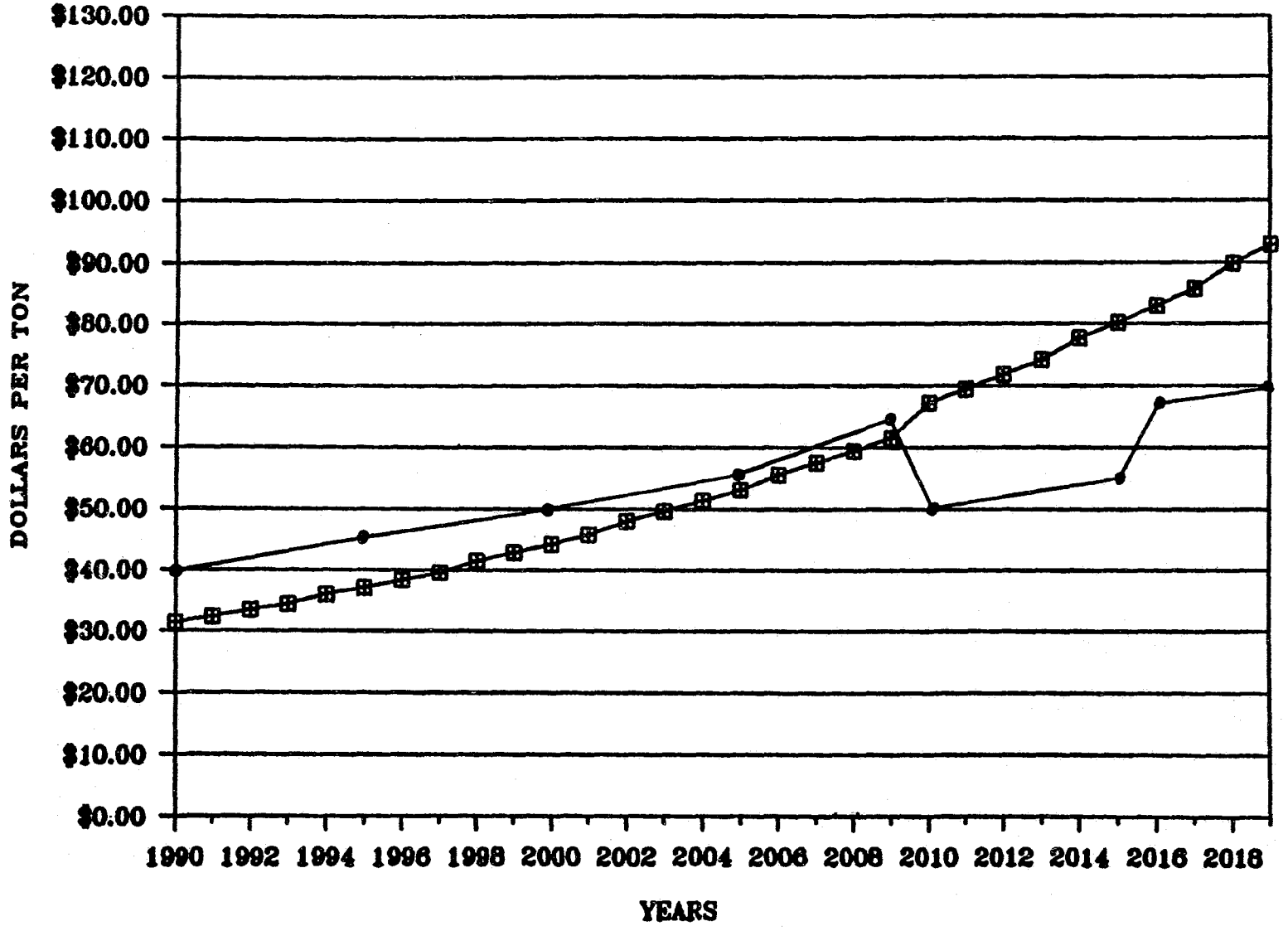
SCENARIO A & C-1



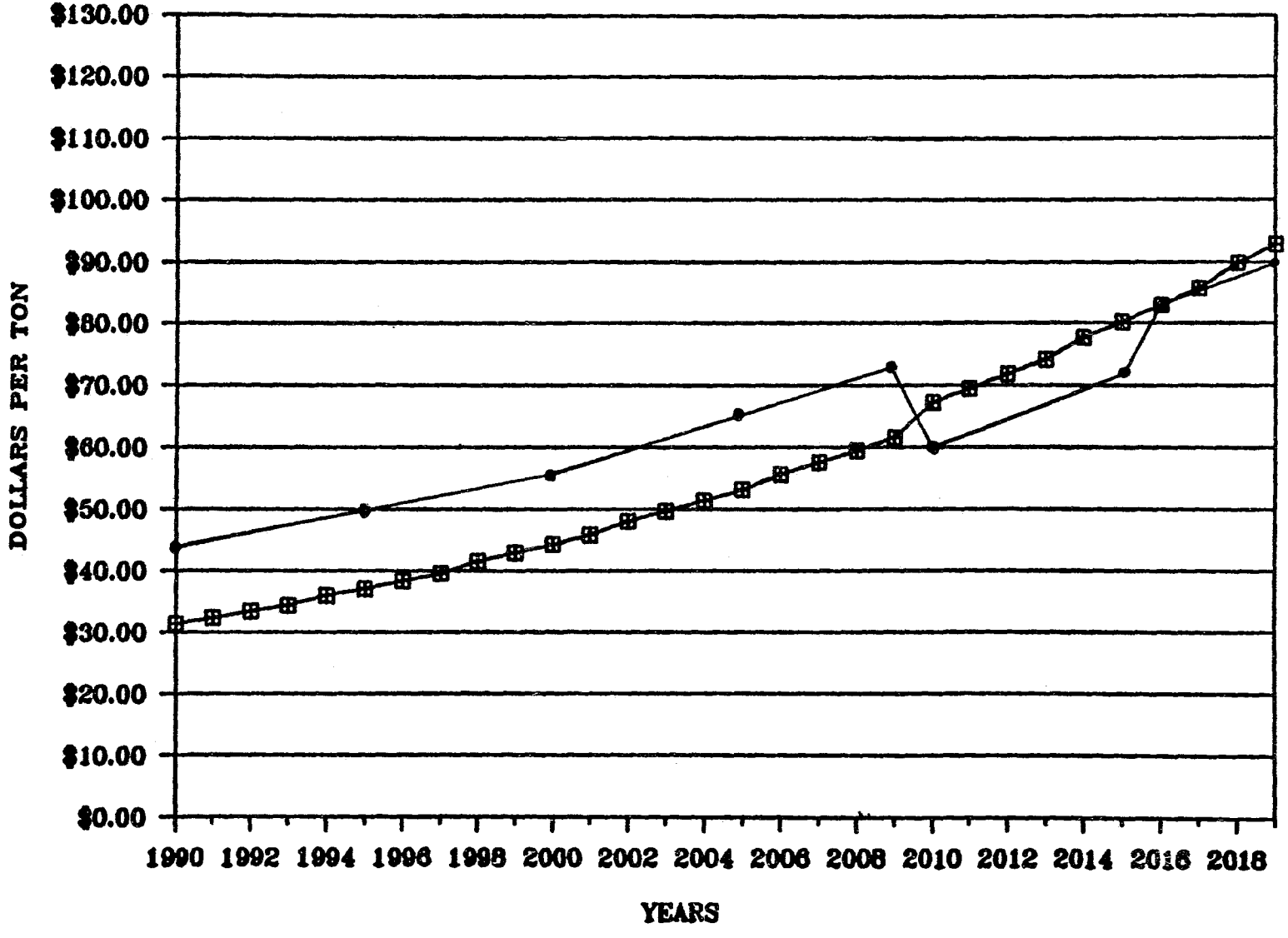
SCENARIO A & C-2



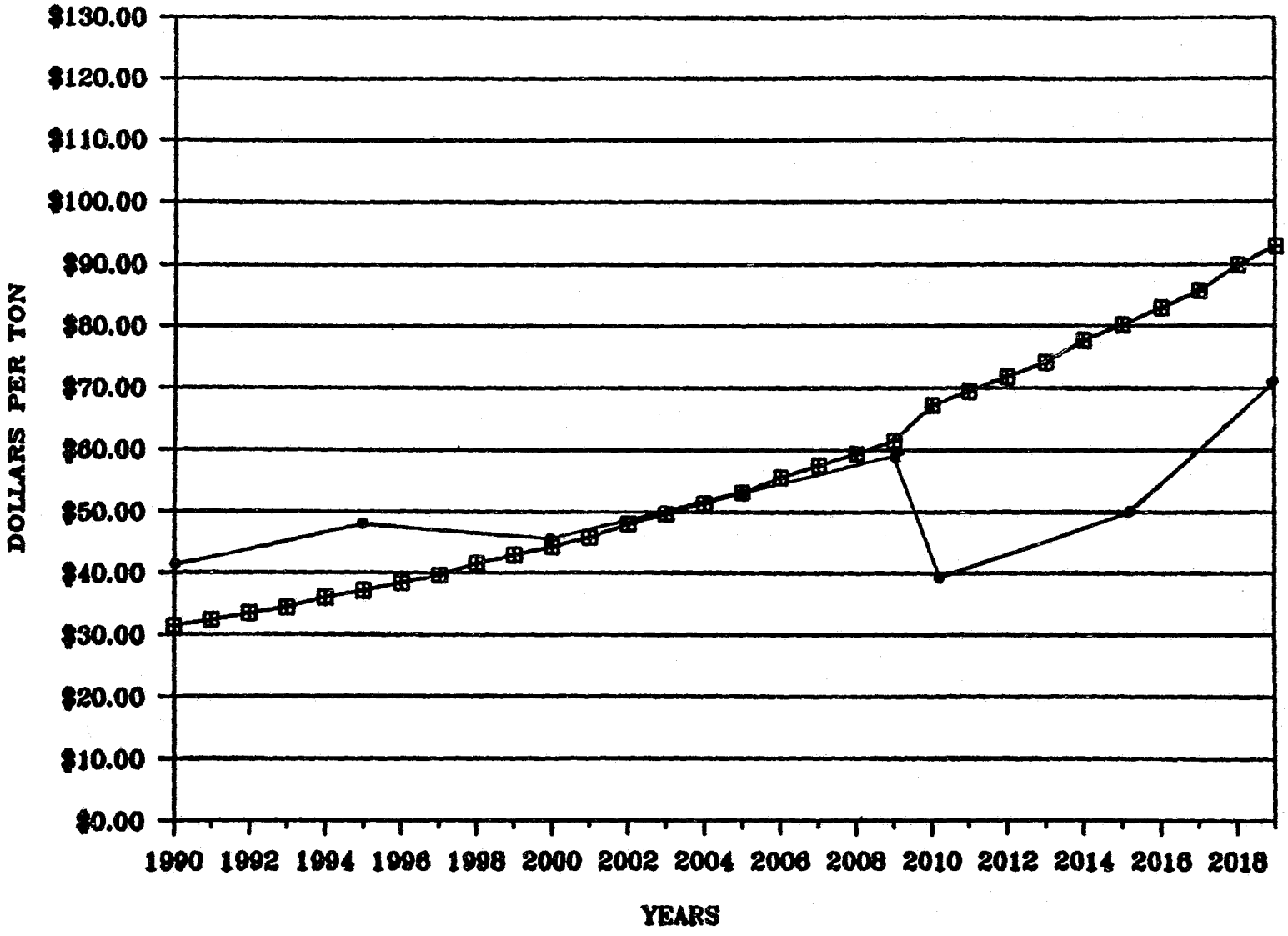
SCENARIO A & D-1



SCENARIO A & D-2



SCENARIO A & E


$130.00
$120.00
$110.00
$100.00
$90.00
$80.00
$70.00
$60.00
$50.00
$40.00
$30.00
$20.00
$10.00
$0.00
DOLLARS PER TON
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018
YEARS

METRO COUNCIL
BACKGROUND INFORMATION
FOR WORKSHOP ON
ALTERNATIVE TECHNOLOGY
APRIL 16, 1986, 5 P.M.
COUNCIL INFORMAL MEETING ROOM
PRESENTED BY GBB

Resource Recovery Equation:

Tipping Fees = All Expenses - Revenues

Expenses = Capital Cost +
Cost of Operating Facility +
Cost of Maintaining Facility +
Cost of Disposing of Residue +
Property Tax +
Owner/Operator's Share of Revenues

Revenues = Electricity Revenue +
Steam Revenue +
RDF Revenue +
Materials Revenue +
Investment Earnings

Tipping fees must make up the difference or project will cease to be solvent

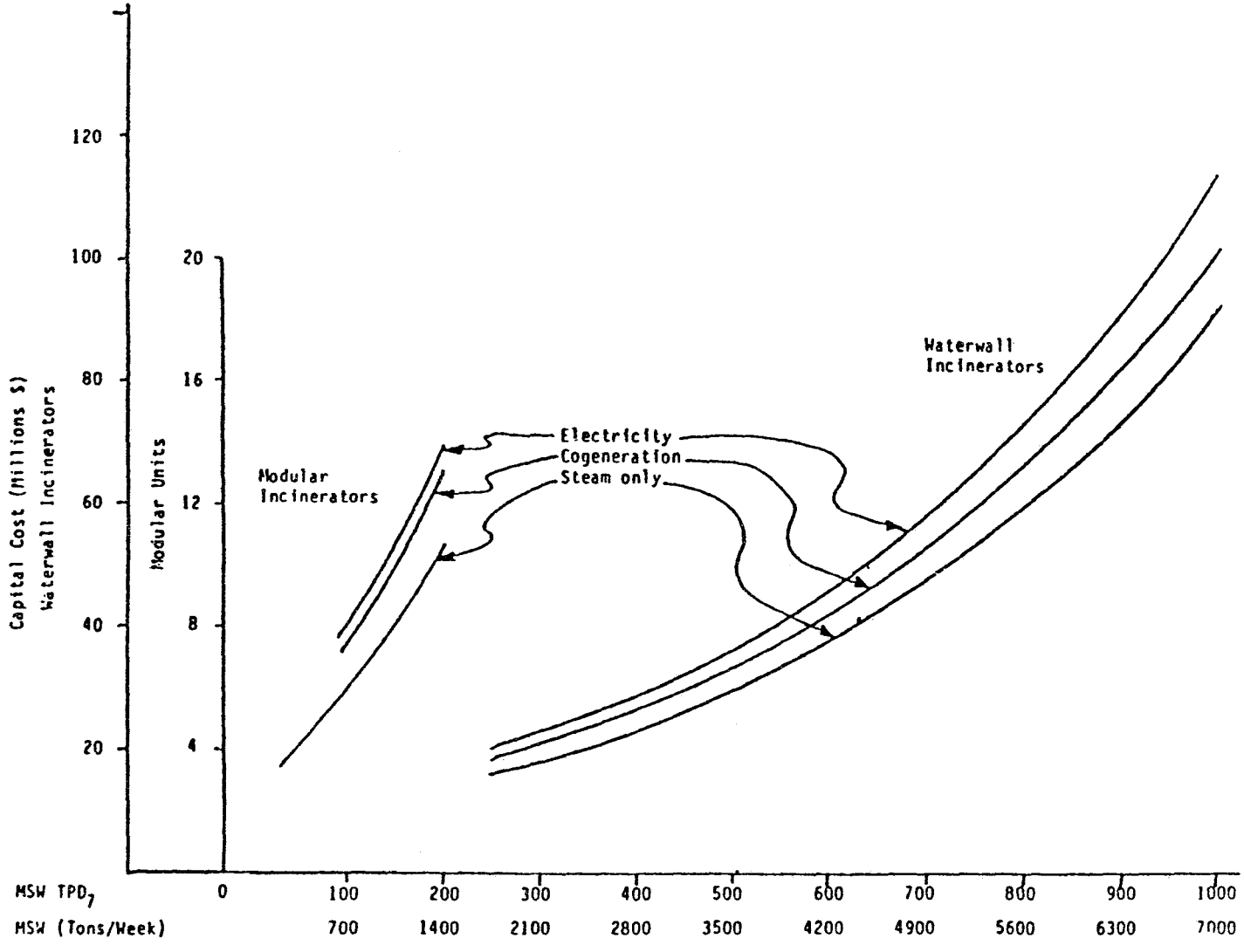
ITEMIZED CAPITAL COSTS

- Design
- Land and Site Work
- Buildings
- Waste Handlings/Loading Equipment
- Combustion/Steam Generation Equipment
- Power Generation Equipment (If an electricity generating project)
- Steam/Condensate Transmission Line(s)
- Electrical Switchgear and Transmission Line (If appropriate)
- Air Pollution Control Equipment
- Stack(s) (including foundation and erection)
- Spare Parts
- Bid Performance and Payment Bonds
- Insurance
- Start-up and Initial Operations Tests
- Acceptance Tests

POSSIBLE ADDITIONS TO CAPITAL COSTS

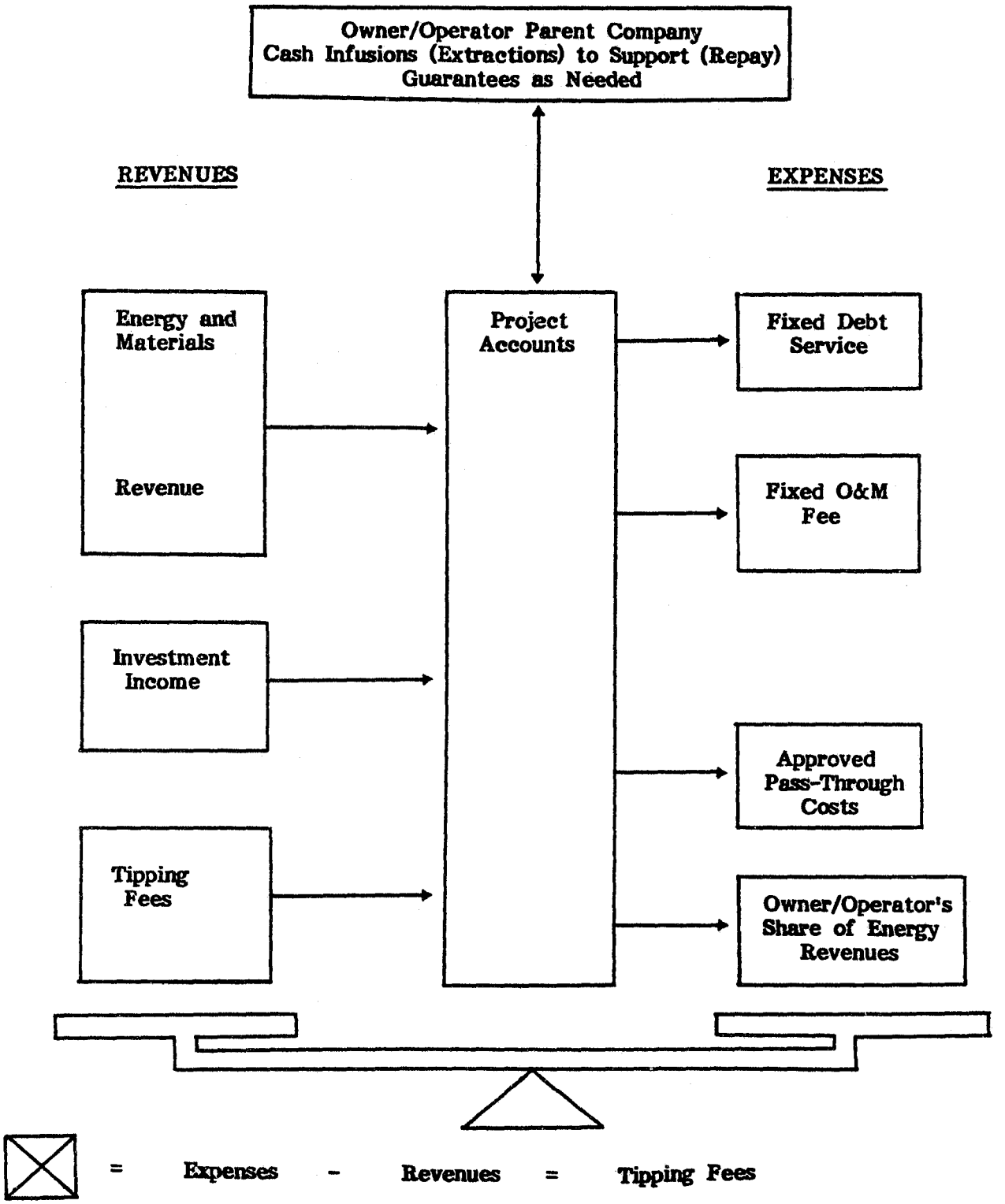
- **Special Insurance**
  - **Efficacy Insurance**
  - **Bond Insurance**
  - **Title Insurance**
  - **Other**
- **Sales Tax**
- **Ancillary Facilities**
- **Trustee Expenses**

DIRECT COMBUSTION SYSTEM CAPITAL COSTS
($ 1984)

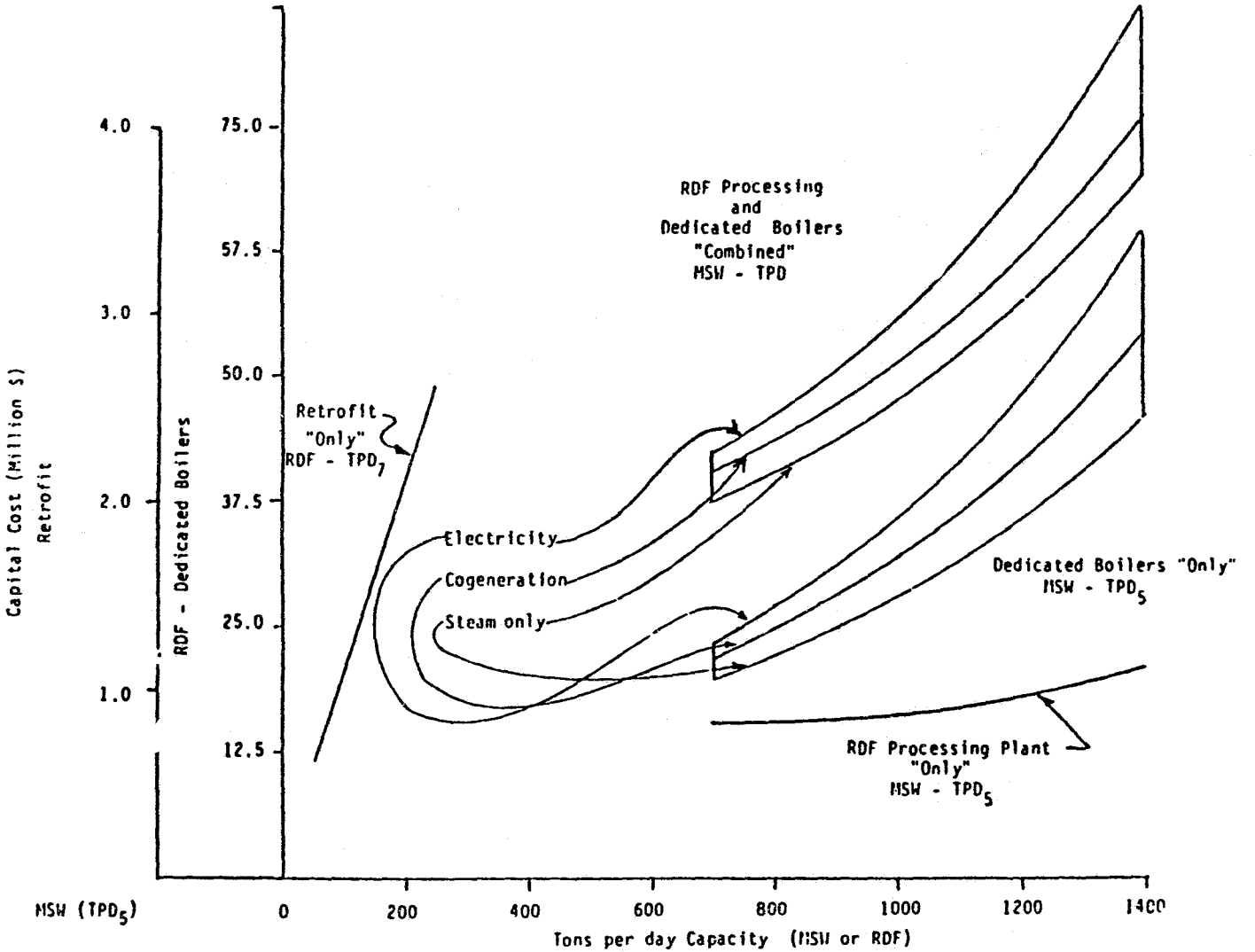


RESOURCE RECOVERY EQUATION

TIPPING FEE CALCULATION



RDF FACILITIES
ESTIMATED DIRECT CAPITAL COSTS
($ 1984)



ITEMIZED ANNUAL OPERATING AND MAINTENANCE COSTS

- Labor
- Utilities
- Energy Plant Maintenance and Supplies
- Waste Receiving/Handling Equipment Maintenance and Supplies
- Building Maintenance and Supplies
- Raw Materials
- Contract Services
- Equipment Rental
- Site Lease (If any)
- Equipment Replacement/Maintenance Fund
- Insurance
- Residue Haul and Disposal

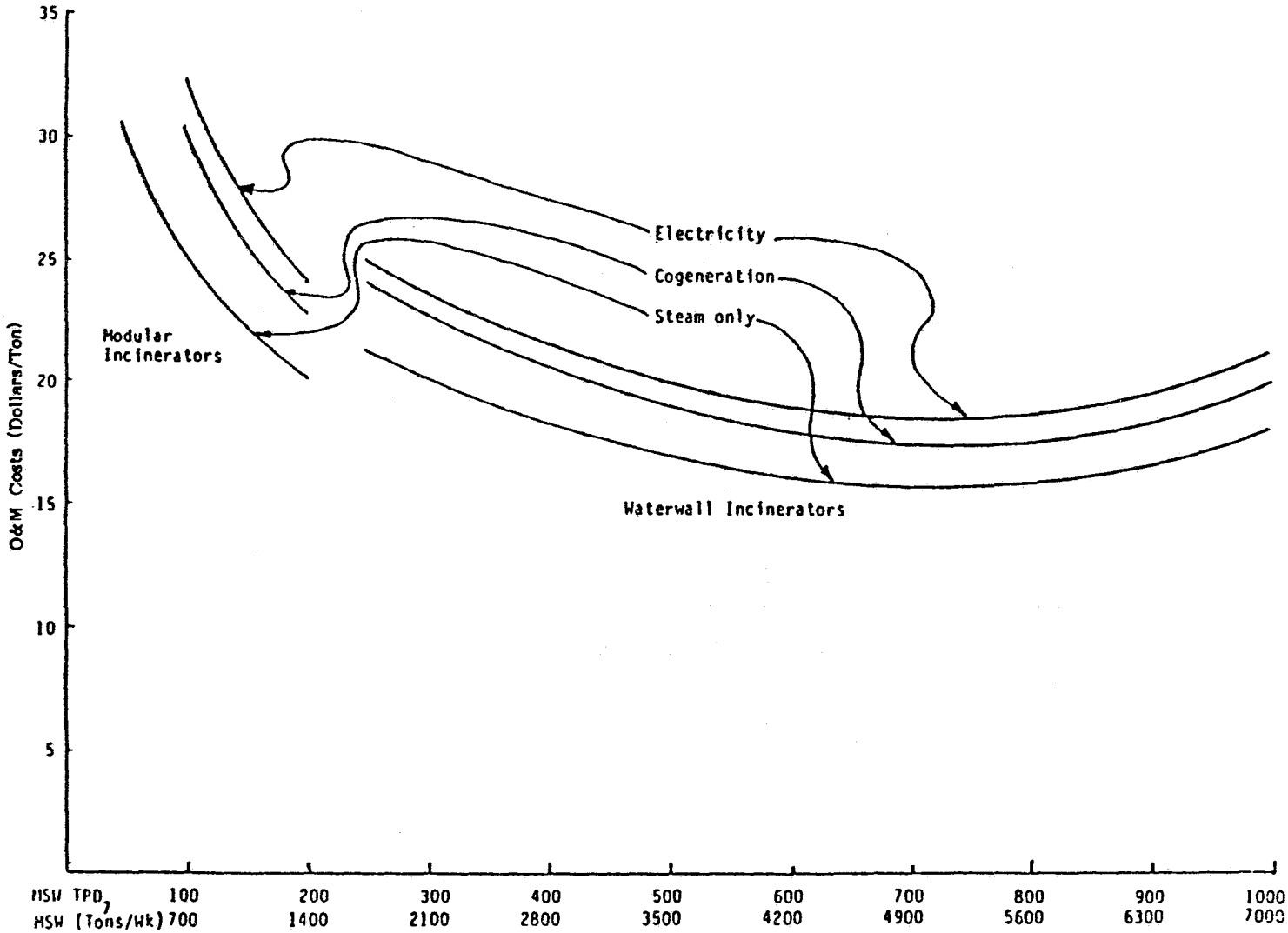
POSSIBLE ADDITIONS TO O&M COSTS

- Special Fees and/or Taxes
  - Host Community Fee(s)
  - Payment(s) in lieu of taxes
  - Management/Operating Fees
  - Letter of Credit Fees
  - Inspection Fees
  - Fees for special bonding/insurance (i.e., "suspense fund")
  - Trustee Fees
- Residue Processing
- Recovered Materials Transport
- Administrative
- Legal/Engineering/Other due to change in laws

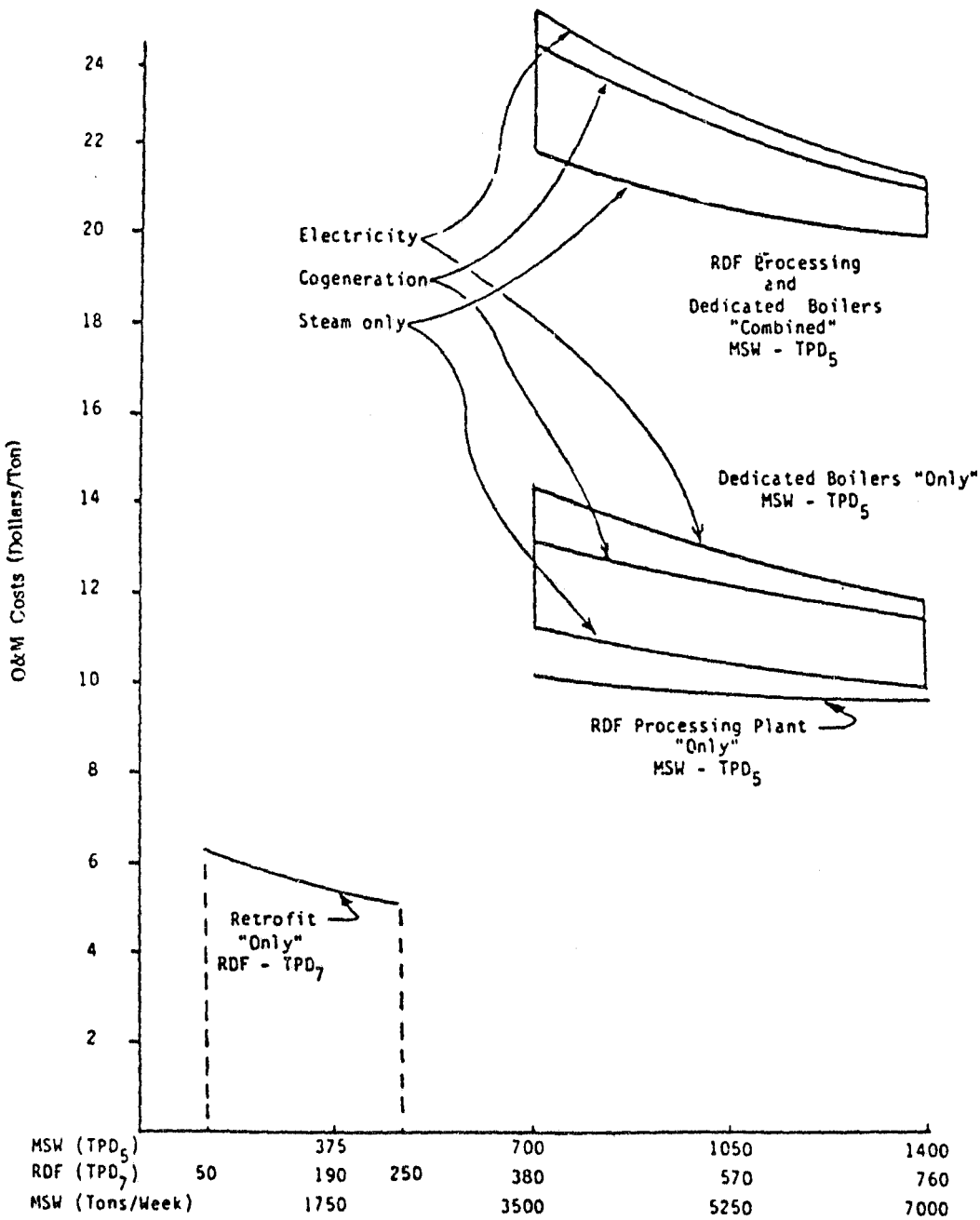
TYPICAL PASS THROUGH COSTS

- Residue Transport and Disposal
- Host Community Fees
- Site Rental
- Insurance and Bonds
- Certain utilities and special services
  - Water/sewer up to limit
- State/Local taxes
- Legal/other associated with change in law

O&M COSTS DIRECT COMBUSTION SYSTEMS
($ 1984)



O&M COSTS RDF DEDICATED BOILER SYSTEMS ($ 1984)



FINANCING COSTS

- Capitalized Interest
- Debt Service Reserve
- Costs of Issuance
  - Legal
  - Printing
  - Rating Agency Fees
  - Miscellaneous
- Underwriters Discount

POSSIBLE ADDITIONS TO FINANCING COSTS

- Additional Reserves/Contingency Funds
- Letter of Credit Fees
- Equity Placement Fees

SOURCES OF REVENUES

- **Energy Sales**
- **Materials Sales**
- **Interest Income on Reserves**
- **Damages, Penalties or Insurance Receipts**

CURRENT METRO ELECTRIC PRICES FROM PGE
NON-LEVELIZED 35 YEAR CONTRACT
BEGINNING IN 1990

Year	Capacity	Fixed Cost Energy	Variable Cost Energy	Total
1990	0	0	2.65	2.65
1991	0	0	2.9	2.9
2	0	0	3.05	3.05
3	0	0	3.2	3.2
4	0	0	3.2	3.2
5	0	0	3.25	3.25
6	0	0	3.7	3.7
7	0	0	3.7	3.7
8	0	0	4.35	4.35
1999	1.52	5.72	6.3	13.54
2000	1.52	5.72	6.5	13.74
2001	1.52	5.72	6.9	14.14
2002	1.52	5.72	7.2	14.44
2003	1.52	5.72	7.6	14.84
2004	1.52	5.72	7.9	15.14
2005	1.52	5.72		$7.24 + 7.9\ (1+CPI)^m$
2006	1.52	5.72		
2007	1.52	5.72	Escalating	m = no of yrs.
2008	1.52	5.72	@ CPI	
2009	1.52	5.72	from	
2010	1.52	5.72	2004 on	

CURRENT METRO ELECTRIC PRICES FROM PGE
LEVELIZED 35 YEAR CONTRACT
BEGINNING IN 1990

Year	Capacity	Fixed Cost Energy	Energy	Variable Cost Total
1990	0.845	3.18	2.65	6.675
1991	0.845	3.18	2.9	6.925
1992	0.845	3.18	3.05	7.075
1993	0.845	3.18	3.2	7.225
1994	0.845	3.18	3.2	7.225
1995	0.845	3.18	3.25	7.275
1996	0.845	3.18	3.7	7.725
1997	0.845	3.18	3.7	7.725
1998	0.845	3.18	4.35	8.375
1999	0.845	3.18	6.3	10.325
2000	0.845	3.18	6.5	10.525
2001	0.845	3.18	6.9	10.925
2002	0.845	3.18	7.2	11.225
2003	0.845	3.18	7.6	11.625
2004	0.845	3.18	7.9	11.925
2005	0.845	3.18		$4.025 + 7.9\ (1+CPI)^m$
2006	0.845	3.18	Escalating	m = no of years
2007	0.845	3.18	@ CPI	
2008	0.845	3.18	from	
2009	0.845	3.18	2004 on	
2010	0.845	3.18		

RELATIVE COSTS OF FUELS

Fuel Costs		Fuel ($/MM Btu's)	Fuel Value 1 ($/1000 lbs. of saturated steam)
Fuel Oil			
No. 2 ($0.98/gal)	April 84	7.00	8.75
No. 6 ($0.48/gal)	April 86	3.07	3.84
Coal $40/ton	April 84	1.75	2.19
$20/ton	April 86	0.88	1.10

1. Based on 80 percent boiler efficiency of existing facilities.

FUEL AND PRODUCT VALUES BY FUEL DISPLACED (STEAM ONLY)

Fuel Displaced	Average Fuel Value ($/1000 lbs. of saturated steam	Average Product Value 1 ($/Ton of MSW)
Oil (No. 2)	3.84	14.69
Coal	1.10	4.21

1. Based on 4,500 lbs. of steam per ton of MSW and a 15 percent market discount.

ENERGY AND PRODUCT VALUE FOR ELECTRICAL PRODUCTION

Energy Form Displaced	Average Energy Value (6/k Wh)	Product Value 1 ($/Ton of MSW)
Electricity	6.0	29.40

1. Based on 490 kWh per ton of MSW.

TOTAL REVENUES FOR "COGENERATION" SYSTEM ($/TON)

	1984
Additional Electricity Value (100 kWh/ton @ 6¢/kWh)	6.00
Total:	
- No. 2 Oil/Electricity	20.69
- Coal/Electricity	10.21

Statesman-Journal, Salem, Oregon
Section C
Sunday, April 27, 1986 ★

Ideas

Plant set for another trial by fire

Stories by Adelle Altizer
of the Statesman-Journal

BROOKS — On Monday a spit-shined garbage truck will pull onto a scale inside the gates of the garbage burning plant owned and operated by Ogden-Martin Systems of Marion Inc.

Capable of burning 550 tons of garbage a day, it is the first resource-to-energy plant of its size on the West Coast.

A brief ceremony will be held for company and county officials and the press. Then the truck will drive through a door leading into the massive brown-and-tan garbage burning plant, back up to the rim of a spotless 33-foot-deep concrete pit and dump its load.

After the fanfare, more trucks will make the same trip. A week later, a huge orange-peel-colored grapple will lift its first load of trash into one of the plant's two furnaces for test firings of the boiler system.

Because the plant's two furnaces and boilers need to be seasoned much like a new cast-iron skillet, it will be accepting only commercial trash with a high paper content until September, when Brown's Island landfill is scheduled to close.

Although the plant won't swing into commercial operation until next March, the ceremonial opening is still significant to county officials who worked for more than a decade to find a solution to the county's solid waste problem.

Much like the plant's boilers, which will incinerate garbage at 1,800 degrees Farenheit, the officials have had their test seasoning by fire.

The heat came during jam-packed public hearings, attended by citizens with legitimate concerns about the new technology and where the plant would be built.

The plant probably could not have been constructed without fierce commitment and deft salesmanship by public officials.

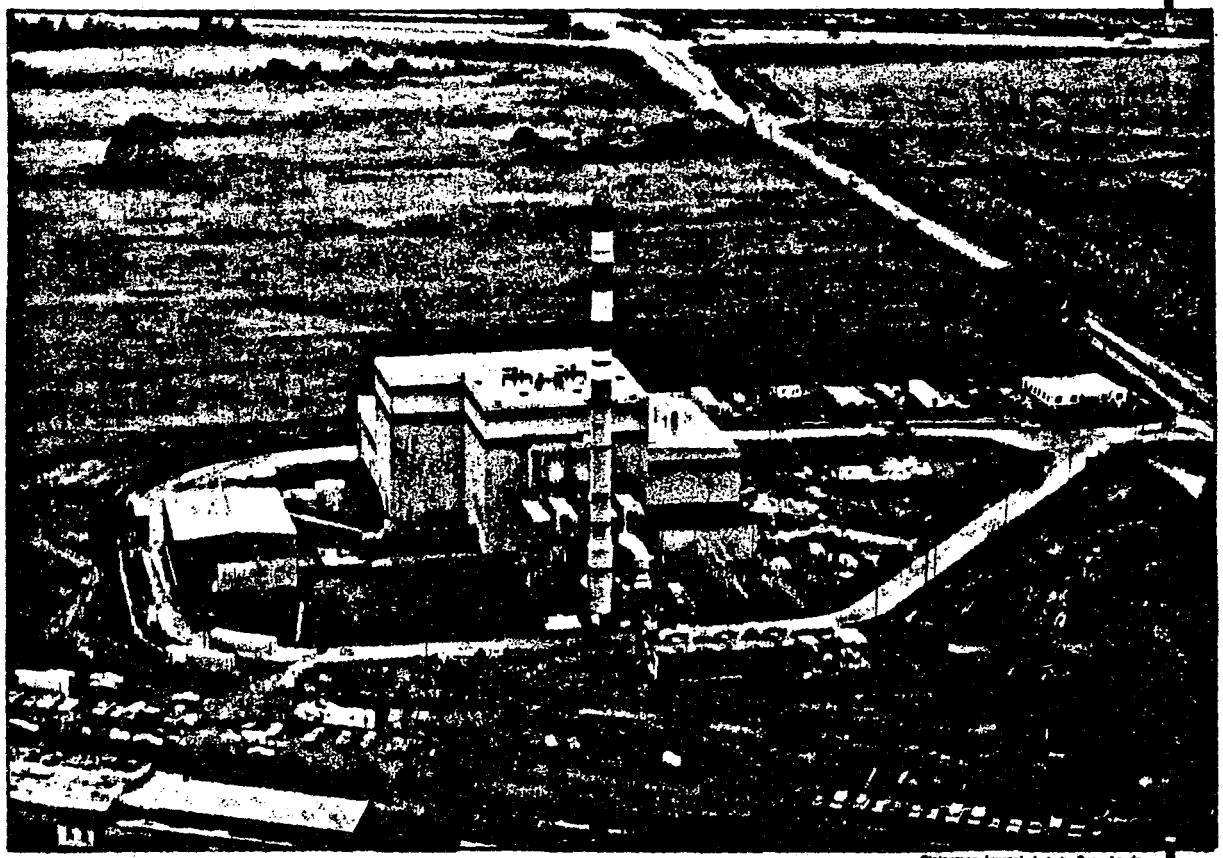
"There is no way this would have been possible without political unity," said Marion County Commissioner Randy Franke, who spearheaded the effort. "If one of the commissioners had any reservations about the project, it could have never gotten off the ground."

Franke said he plans to christen the plant with a bottle of groundwater collected from Brown's Island landfill in 1974.

The bottle — now filled with a murky green growth — was Franke's prop during the heated battle to find a place to build the garbage burning facility.

In countless public appearances, Franke offered to sniff the discharge from the smokestack of any garbage burning plant in the nation if someone would take a drink from the bottle. He didn't get any takers.

Turn to **Garbage,** Page 4C



Statesman-Journal photo by Barry Lewis

The garbage-burning plant near Brooks, shown in an aerial view, will start limited burning of trash this week.

Garbage

Continued from Page 1C.

It was in 1974 that the state Department of Environmental Quality issued its first closure order for Brown's Island.

The county's main landfill was aging, leaky and far from sanitary. It did not meet state and federal standards and presented a contamination threat to the nearby Willamette River.

The idea of burning garbage to create electricity — called "resource recovery" by solid waste experts — was still a long way off, however.

Instead, officials started a search for alternative landfill sites. By 1977, the county had identified 30 potential sites and later pared that list to three.

The location finally selected was a 467-acre site just east of Interstate 5 near the Jefferson interchange.

That was when county officials encountered a potent phenomenon known across the nation as "NIMBY," an acronym that translates into "not in my backyard."

By 1979, county officials decided to get citizens to share the heat of the decision-making. The county's Solid Waste Advisory Council (SWAC) studied the issue for two years.

In the spring of 1980, the county contracted with Trans Energy Systems Inc., of Bellevue, Wash., to conduct a feasibility study on converting garbage to energy in this area.

Based on the results of that study, the SWAC issued a recommendation that the county build an energy recovery plant to turn waste into fuel pellets — a concept that since has been labeled both unsafe and unprofitable by industry experts — or seek alternative landfill sites.

During the same time period, two pieces of legislation were passed that ultimately paved the way for the Brooks garbage burning plant:

- In 1980, the Federal Energy Act was passed. This required utilities to purchase electricity other than that generated by themselves, creating an instant market for waste-to-energy plants.
- In 1981, Gov. Vic Atiyeh signed Senate Bill 479, which placed authority for disposal of municipal waste within county jurisdiction and permitted long-term energy sale contracting.

Late that same year, the county issued a request for proposals for design, financing, construction and operation of a waste-to-energy facility.

Seven companies replied and their proposals were analyzed by financial experts and engineering firms.

In January 1983, the county picked Trans Energy Systems to build a $30-million facility. Wary because of the county's fiscal crisis three years earlier, officials worked out a complex financing scheme that reduced the profits the private firm could expect to about 10 percent.

The company agreed because it hoped to use the plant as a showcase to generate additional business with other local governments.

The biggest battle was yet to come — finding a place to build the facility.

As expected, the voices of NIMBY opponents were loud. Just as no one wanted a landfill in their neighborhood, few residents were enamored with having a garbage burning plant nearby.

Some citizens, who weren't threatened by proximity, had other concerns about the plant: How much would it cost? Would it pollute the air? Would it hamper efforts to increase recycling? Would it drive garbage rates so high that residents would surreptitiously dump waste where it shouldn't go?

The first site selected was on Chemawa Road NE.

County officials were expecting resistance from citizen groups, but were stunned when the Salem City Council refused to support the project, spurring more public opposition.

A citizen's group, Families for Responsible Government (FRG), appealed the Chemawa Road site to the state Land Use Board of Appeals. When that appeal was lost, the citizens' group immediately appealed to the state Supreme Court.

In the meantime, the county was eyeing another location between Brooks and Interstate 5.

Although the Chemawa site remained the county's first choice, it appeared the land-use case could be tied up in court for years. So while opponents thought they had the potential of halting the project, county officials quietly negotiated for the alternative site.

The fight didn't end there.

On Dec., 1, 1983, opponents filed an initiative petition seeking to ban garbage burning plants "within three miles of any schools, hospitals, nursing homes, retirement homes, child day-care centers, athletic or convention centers or public parks."

If the measure passed, it would have made siting the garbage burning plant impossible.

The initiative was placed on the March 27, 1984, ballot. In the 100-plus days before the election, the public was bombarded with information — both facts and myths — from both sides.

Trans Energy contributed nearly $25,000 to the citizen's group lobbying for the plant and against the ballot measure. The group hired a public relations firm to conduct a direct-mail campaign.

The opponents were less affluent but more visible on the surface. Their appeals focused on the potential of air pollution from the plant.

When election day rolled around, voters defeated the measure by 4,000 votes.

Turnout was about 33 percent, unusually high for a March election. The only precincts where the measure passed were near the Brooks and Chemawa Road sites.

Some last-ditch challenges were launched prior to the plant's construction. A Brooks iris grower unsuccessfully appealed to LUBA to have the pollution control permits issued by the Department of Environmental Quality revoked.

A second appeal challenged DEQ's administrative modification allowing the plant's stack height to be increased from 235 to 255 feet. That also failed.

The final obstacle, however, didn't come from the public.

Trans Energy — which had been involved in the project for more than three years and had spent more than $4 million planning the facility — did not have enough collateral to borrow money at an interest rate acceptable to the county.

Trans Energy found a buyer for the project — Ogden Corporation of Paramus, N.J. — on Aug. 2, 1984.

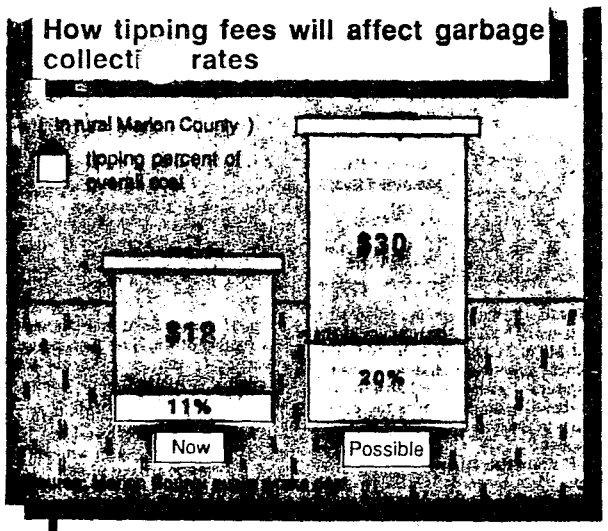
Ogden was able to offer $12.6 million of equity as collateral for the project.

In turn, the county agreed to sell $57 million in industrial revenue bonds. That money was lent to Ogden, and it is the private corporation's responsibility to pay it back.

Ground was broken at the Brooks site Sept. 24, 1984.

TOTAL REVENUES FOR "COGENERATION" SYSTEM ($/TON)

	1984
Additional Electricity Value (100 kWh/ton @ 6¢/kWh)	6.00
Total:	
- No. 2 Oil/Electricity	20.69
- Coal/Electricity	10.21



Financing facility is no cheap matter

The equation for financing the construction and operations of a $47.5-million garbage burning plant could baffle most people:

It reads:

SF = DS + OM + PT - EC - MC.

Ignoring the acronyms, the equation can be understood by anyone who can balance a checkbook:

The income from electricity sales and the fees paid by garbage haulers to dump waste (called "tipping fees" because in England landfills are called "tips") must equal the cost of operating the plant and repaying the bonds for its financing.

The plant is owned and will be operated by Ogden-Martin of Marion Inc., a subsidiary of Ogden-Martin Corp. of Paramus, N.J.

County taxpayers are not directly responsible for repaying the debts. They will, however, pay higher garbage bills.

The tipping fees — now at about $12 a ton, representing about 10 percent of garbage haulers' expenses — are the variables that will affect the consumers who generate garbage.

That amount probably will double next March when the plant enters commercial operation.

Tipping fees probably will average between $24 and $30 a ton with different rates for haulers serving residential and commer-

Turn to **Finances,** Page 4C.

Burner technology unfolds

An estimated 120 garbage trucks a day will be rolling over the scales of the garbage burn plant starting in September.

After they are weighed, the trucks will back up to the pit area, where they will dump their loads.

The only wastes that will not be dumped into the pit are those that are obviously not burnable, such as old refrigerators and tree stumps too large to go through the 3-foot-wide hopper throats.

The county is negotiating to have those unburnable items taken to Brown's Island, which would become a "demolition site" for trash that does not pose a risk of leaching pollutants into groundwater.

From the pit, the garbage will be lifted by overhead cranes into hoppers and fed into two waterwall furnaces, each capable of burning 275 tons of waste per day. The furnaces will operate independently, to allow for periodic maintenance.

It's inside the furnaces, hidden from view, that the Martin technology owned by Ogden Corp. unfolds. The burning takes place on specially designed inclined grates with moving bars that continually stir the waste.

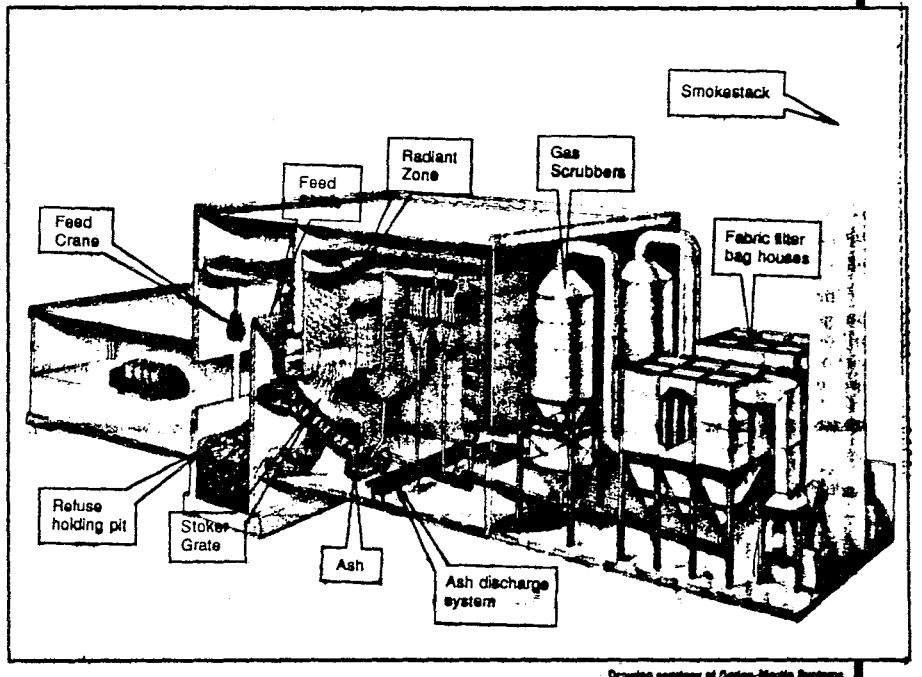
Burning is monitored from a sophisticated control panel and can take from a few seconds to 30 minutes.

Of the 350 garbage burning plants worldwide, about one-third utilize the Martin technology developed in Germany. Ogden has the license to use the technology in the United States and the Caribbean.

At the same time, the air above the waste pit is sucked into the furnaces to cool the grate bars and intensify the flame turbulence.

As the hot gases move through the boiler sections of each furnace, water is heated to generate steam. The steam is directed to a turbine-generator to produce electricity.

The plant is capable of generating 61,000 megawatts of electricity a year, enough to heat 5,200 homes.



Drawing courtesy of Ogden-Martin Systems

Drawing is a cutaway of a typical Martin garbage-burning plant.

After leaving the steam generators, the combustion gases pass through gas scrubbers and Fiberglas-fabric filters to remove contaminates prior to discharge through the 259-foot-high smokestack.

A state permit will allow the plant to discharge up to 61 tons of smoke, dust and other solids a year. That is about the same amount of smoke 830 wood stoves would generate in the same time period.

The high temperature of the burning is expected to limit emissions of tetrachlorinated dioxins — which could be formed by burning discarded pesticide containers — to about 4.5 grams per year.

The county has contracted with Oregon State University to test the air at 12 sites surrounding the plant.

The tests, which will continue for three years after the plant starts burning garbage, will cost about $25,000 each year. Ogden-Martin will foot the bill.

The garbage, in the meantime, has been reduced to a sterile ash that is only 5 percent of the original volume.

Much of the ash contains scrap metal. In other regions of the United States and in other countries, most of this scrap metal is sold to recycling firms. However, no market has yet been found for the metal in Oregon.

DEQ has plans to closely monitor the content of the ash to make sure toxic substances such as heavy metals cannot be leached into groundwater surrounding the Woodburn landfill. If such substances are found, the county will be required to line the landfill pit where ash will be stored.

Continued from Page 1C.

cial customers, according to county Public Works Director Bob Hansen. The fee that is set next March is expected to remain stable for at least three years.

Hansen predicts residential customers will see an increase from $1 to $1.50 per can of garbage, or from $12 to $18 a year.

The actual price hinges on settlement of a dispute between the county and garbage haulers about the weight of the garbage in a typical residential can.

The county has done a study that shows one garbage can contains about 27 pounds of refuse; haulers maintain there usually are 36 pounds of trash in one can.

Commercial customers using drop boxes face a bigger price hike, Hansen said. He said their costs will likely go from $33 a month to $44 a month.

The cost of having a garbage hauler pick up a "single-service" drop box used at construction sites will jump from $170 to about $200, Hansen said.

He said the new rates have been calculated assuming that tax increment financing is used to finance a $4-million sewer system for the Brooks area.

That would mean Ogden, like other property owners within the various taxing district areas, would have a higher property tax rate.

Residents there recently have proposed that instead of freezing the assessed value of the area, the county consider hiking tipping fees. They believe other county residents should pay a price for not having the facility located near their homes and businesses.

That issue currently is under consideration by the board of commissioners.

Hansen said no matter which way the Brooks sewer is financed, there will be little difference for consumers.

During the next 20 years, however, county residents can expect to pay increasing amounts for garbage disposal — a price that is unavoidable if the environment is to be protected, Hansen said.

Long-range plans call for tipping fees to gradually increase over a 20-year period, possibly to as high as $60 per ton. After that, the tipping fees could drop to as low as $15 a ton.

Hansen stressed the increases are based on an estimate of inflation that may not occur. The county, Ogden and financial experts are trying to even out those rates, he said.

Hansen said it probably would take at least $5 million to construct a landfill to today's standards. Such a landfill could be used for only about five years without generating any additional revenues and then the search for a new solution would start all over again.

Some garbage haulers have expressed concerns that consumers won't pay the higher fees and that more garbage will be dumped along roadways.

Hansen admits that might be a possibility, but noted cost-conscious consumers can cut their garbage bill by taking advantage of recycling services available countywide.

For example, garbage customers who now pay for two cans of garbage a week could easily reduce that volume to one can by recycling glass, cans and newspapers.

If more garbage is dumped along roadways, the county probably will increase enforcement efforts. An ordinance allows for fines up to $500 if a person is caught littering, he said.

The proposed rate hikes probably will hurt some consumers, but look minute when compared to the figures necessary to describe the plant's financing.

Marion County used its governmental authority to sell $57 million worth of industrial development revenue bonds to build the plant. The county, in turn, loaned the money to Ogden.

More bonds were sold than needed to construct the plant to allow Ogden to use a common practice called arbitrage, in which debtors re-invest what they borrow to earn more interest than what they are paying.

The federal government allows the sellers of industrial development revenue bonds to re-invest up to 15 percent of the bonds sold.

Ogden has taken advantage of this loophole, earning about 11 percent on four reserve funds totaling $8.5 million, while paying interest that ranges from about 5 to 8¼ percent.

Those funds, which also serve as a sort of insurance to bond holders, will earn more than $1 million each year for the county.

Operating costs at the plant will start at $3.6 million a year, but could climb to more than $10 million by the year 2009 based on the predicted inflation rate.

Interest payments on the bonds will average $4 million annually for the first three years of operation.

Annual payments for the remaining 20 years of the bond issue will be more than $5 million, after Ogden begins paying off the principal in 1990.

Earnings at the plant must top $9 million the first operating year and increase to nearly $18 million over the next 20 years if Ogden is to stay in the black.

About half of the plant's income will come from selling electricity to Portland General Electric.

That income is larger than other local governments eyeing the same type of plant could expect to get today.

The utility firm agreed to pay an average of about 6½ cents per megawatt hour for the plant's electricity — making the power from the Brooks plant more expensive than hydroelectric power or nuclear power from the Trojan plant.

Electricity sales are expected to bring in $4.5 million the first year and increase to about $8 million during the next 20 years.

Dick Dyer, PGE's vice president for power supply said the rate was determined by federal law. That law says the utility has to pay municipal governments "avoided cost," or what the company won't have to pay to develop a similar power-generating facility.

"At the time we signed the contract, we had energy deficits and thought we would have had to build in the early 1990s," Dyer said. "Today our view is that we wouldn't need to add another power plant until the end of the century."

Dyer said PGE would probably only pay an average of 3½ cents per megawatt hour to an outside producer now.

The only way PGE could renegotiate the contract is if Ogden fails to meet certain performance requirements, Dyer said.

However, based on Ogden's record with other facilities, that's a slim possibility he said.

Dyer said the high price of the garbage-generated electricity could affect the rate PGE customers pay.

"The project is fairly small, so it wouldn't be a big difference," Dyer said. "But certainly the cost is very significant. These things all add up."

If Ogden had to rely solely on electricity sales and tipping fees to balance revenues, garbage collection fees — and the price to consumers — would climb sharply.

To prevent that, the contract calls for the interest earned on the reserve funds to help balance the revenues.

All the financing figures are based on the assumption that the plant will burn 160,000 tons of garbage a year.

If the county increases that to 170,000 tons — the amount for which the state Department of Environmental Quality has issued permits — the whole financing picture is altered to benefit county residents.

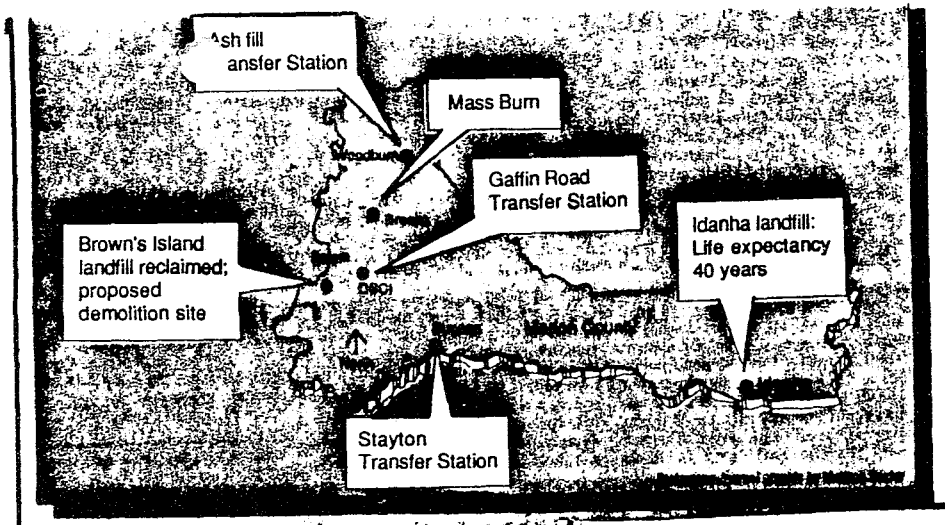
Both Ogden and county officials are hoping the DEQ will increase that limit after two or three years of environmentally safe operation.

The facility was designed with three water-walled burning chambers, but only two will be used initially.

If expansion is permitted, the financing scheme could shift drastically. The more garbage burned, the greater revenues from both electricity sales and tipping fees.

That fact has some people concerned that the county might go into the business of importing garbage from other areas suffering landfill problems.

Officials, however, say that if current trends continue Marion County will be producing enough garbage to push the plant to capacity within four years.



Where to dump trash

Come September, Marion County residents used to dumping their garbage at Brown's Island Landfill will need to change their habits.

Instead of driving to the landfill southeast of Salem, they will go to a new transfer station on Gaffin Drive SE, just east of Oregon State Correctional Institution and south of Highway 22.

The new transfer station will be owned and operated by Brown's Island Inc. The site was previously a landfill and has been used as a reload facility by Brown's Island for several years.

The cost of dumping garbage will remain the same — 2 cents a pound for the first 300 pounds, with a minimum charge of $6 a load.

That adds up to $40 a ton, of which the county will pay the private firm $11.35 to transfer the garbage to the Brooks burn plant.

The facility will handle as much as 220 tons of trash daily, but only about 25,000 tons on an annual basis because garbage disposal is larger in some seasons than others.

A second transfer station will be built by the county at the Woodburn landfill at 17827 Whitney Lane NE, which will accept only ash waste unless there are mechanical problems at the Brooks facility that necessitate taking waste elsewhere.

Residents in the Stayton area and in east Marion County won't have to change the location at which they dump their garbage.

A transfer station has been in existence at Stayton Sanitary Service, 1203 N 1st St., for a number of years.

Residents in the Detroit-Idanha area can use an existing landfill in Idanha, which has a life expectancy of 40 years.

COMMITTEE MEETING TITLE: SWPAC

Date: 5-12-86

NAME	AFFILIATION
Dick Howard	Mult. Co
George Hubel	Rate Review
KEN SPIEGLE	CLACKAMAS COUNTY
Michael Oswald	Multnomah County
Bob Harris	Clackamas Co.
Ruth Selid	City of Portland
Bruce Rawls	Washington County
Mike Sandberg	Washington City
GARY NEWBORE	LANDFILLS
Shirley Coffin	Wash. Co. public
Pete D'Amico	Collection Industry
DG Altmeyer	Metro
Doug Drennen	Metro.
Teresa M DeLorenzo	Mult Co
Kathy Cunniffe	Collection Indust.
DANIEL F. DURIG	METRO SOLID WASTE
BOB BROWN	D.E.Q
Chuck Sundborg	St Vincent de Paul
JIM KIRKSEY	Goodwill IND
Karen DeVoll	Goodwill Industries
Doug Flamboleck (Roy NSA)	Rate Review
[illegible]	Metro
[illegible]	"
Steve Rapp	Metro
Becky Crockett	Metro
Dennis Mulvihill	Metro
Bud McCaughey	