AN APPROACH TO DETERMINING THE ECONOMIC FeasIBILITY OF REFUSE-DERIVED FUEL AND MATERIALS RECOVERY PROCESSING

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DISCUSSION by David N. Poole, Detroit Edison Company, Detroit, Michigan

1. Is capital cost amortization included in the "processing," "operating cost" items shown on page 5?
2. If so, what rate was used?
3. What life expectancy?

Answers given orally by Mr. Gershman
1. Yes.
2. 7 percent (bond interest).
3. 10 years.

Additional comments: Property is government land — no other capital charges such as property tax, income tax, or profit is included.

DISCUSSION by A. R. Nollet, President, Henco, Inc.

There was a discussion of profit or contingency. Regardless of the method of financing, the private sector will shoot for 30 percent ROI, and the public sector would be well-advised to allow for operational contingencies of 30 percent per year of capital invested.

This amounts to $3,000,000 per year pre-tax profit (or contingency). At Harvey's 200,000 tons per year, this amounts to an additional charge of $15.00/ton which has to come from somewhere — presuming, of course, that Harvey's other incomes can, in fact, be achieved.

DISCUSSION by Timothy J. Bratten, Chief, Recovery Section, Dept. of Environmental Resources, Harrisburg, Pennsylvania

The "Indifference Value" approach offers advantages in that:
1. It can be applied to other resource recovery system alternatives, in addition to RDSF options, where revenue needs, particularly from energy products, must be determined.
2. It is a good planning tool once certain revenue commitments from other products are established.
3. It can be used in determining other revenue needs in addition to the fuel products.

There are admonitions, however, that should be recognized in utilizing I.V. approach in determining the economic feasibility of a project.
1. The approach assumes that the land disposal site and the resource recovery facility being compared are adjacent or approximately the same haul distance from the waste generator(s).

If this is not the case, the haul costs to each facility must be compared and taken into consideration in determining the "total systems" cost for each alternative.

In many cases, the land disposal alternative being compared will not be adjacent to the proposed recovery facility or equidistant from the waste generator(s).

Too, in assessing haul costs, distance will not be the only factor to consider.
2. Although the report contains a caveat, it should be stressed that the approach assumes certain waste composition and processing equipment efficiency and availability in securing advance
DISCUSSION by Dennis Bates, Director of Department of Health and Environmental Protection, Washington Metropolitan Council of Governments, Washington, D.C.

I would like to address my initial comments on Mr. Gershman's paper to the utility of the use of the "Indifference Value" approach from the perspective of an agency who has applied it in formulating a decision on the economic feasibility of a 650 ton per day resource recovery facility. I should point out that the coincidence of the 650 ton per day figure with Mr. Gershman's figure was not the result of luck but the result of the fact that NCRR developed the analytical technique under contract for the Metropolitan Washington Waste Management Agency which I represent.

One of the major difficulties public officials face in making decisions about major capital improvement programs is the lack of a critical understanding of the net economic trade off one makes in choosing between alternatives. This is particularly true of a full scope resource recovery facility at a time when any increases in capital expenditures are scrutinized or even discouraged by elected representatives because of their desire to keep the budgets down. However, the benefits of a resource recovery program — reuse of resources, energy recovery, decreased residuals for disposal and increased landfill life to mention the major points — accompanied with a net economic gain can induce elected representatives to support a large capital resource recovery program. The calculation of RDF "Indifference Values" does provide an excellent method of gauging the economic feasibility of such a processing program. A couple of comments about the analysis approach.

The acceptance of the analysis of 650 ton per day initial facility of a regional program by cooperating Washington, D.C. metropolitan jurisdictions (called the I-95 Project) clearly indicates that the use of the Indifference Value approach has great merit. Both the technical staff and policy level members of the I-95 effort were able to grasp and utilize the analysis results. In fact, the indifference value approach helped sell the project to those participating.

As with most economic analyses, a greater effort should be made to make the results more readily understandable to the lay person; however, this is a matter of presentation rather than of concern about substance. A suggestion I would make to reinforce Mr. Gershman's comment on forecasting marginal costs for not landfilling, is that it would aid the economic analysis if some estimate were made of the costs and benefits of extending landfill life. In most metropolitan areas of the country it is becoming increasingly difficult to fill landfill sites. There are numerous environmental, political and economic barriers being placed in the way of such efforts to acquire and operate a landfill which make it a worthwhile activity to consider costs and benefits of extending existing landfill life. Unrelated to the analysis technique, but worthy of consideration, is the dollar value assigned to refuse diverted from landfill operations. To assist in the development of future landfill sites, I would recommend a marginal increase in that dollar figure (established as $4.00 in the paper) to be set aside in a sinking fund to be used for future site acquisition.

With respect to the analysis results, there is a need to establish what the relative values of $0.46 per-million Btu's and $1.25 per-million Btu's means as an indifference value. The price of coal, per-million Btu, shortly before December 2, 1974, was $1.65 per-million Btu's. As one can see, even at the exchange price level at that time, the "bargain" was favorable to a utility to purchase RDF and therefore worth the consideration of the participating jurisdictions to proceed with the project. I can only emphasize that a utility or prospective purchase of the RDF will seek the most favorable fuel — economically and otherwise — which means that the indifference value must be below the cost per-million Btu of the alternate fossil fuel. The additional costs of changing to an RDF system must be taken into account, thereby discounting those actual alternative fuel costs somewhat. There-
fore, as Mr. Gershman states, the closer one can come to materials floor price indifference value, the more enticing the RDF bargain.

In summary, it has been our experience in the metropolitan Washington, D.C. area that the use of the Indifference Value approach has been of substantial assistance in aiding appointed officials and technical staffs with the decisions on moving forward on a resource recovery program. I would recommend that consideration be given to including an estimate of the costs and benefits of extending landfill life and increasing the dollar value established for diverting refuse from the landfill to establish a sinking fund for future landfill site acquisition.

COMMENTS by William L. Young, Manager of Marketing, Americology Division, American Can Company, Greenwich, Connecticut

General Impression

This paper presents a useful method for municipal officials and others seeking to appraise the overall gross economic feasibility of resource recovery systems as an approach to solving the problem of solid waste disposal. This approach aids in focusing thinking during an evaluation process of a potential project. The use of the National Centers Dry Process System concepts illustrated the kind of analytical thought process which can be applied as well to other technologies and processes. This analysis method enables one to quickly determine the net refuse derived fuel cost that must be obtained under the worst contractual or economic conditions to meet the expected processing and marketing costs.

Specific Comments

(1) The proposed "Indifference Method" would be more useful to evaluators and would provide greater confidence in its use if the sensitivities of each equation factor that effect the ultimate refuse derived fuel target revenue value were taken into account. Examples would be the effect of variation in nonfixed cost revenue items, such as, the range in expected product recovery percentages, fluctuation in product sales price, transportation costs to distant markets, etc.

(2) I agree with Harvey's statement that commitments for use of refuse derived fuel as a supplemental boiler fuel have generally been open and not on a guarantee take or pay basis. The question is not whether a coal fired utility would accept the concept of burning refuse derived fuel in their boilers with proper engineering to insure adequate feeding and combustion control but rather their concern for long term potentially damaging effects on their equipment from firing refuse derived fuel. This is the so called "impairment of their prime responsibility to generate electric power on demand" clause. Recent reports from the EPA, St. Louis demonstration indicates minimum risks of this type in similar coal fired boilers operating under similar conditions. The applicability of refuse derived fuel to oil fired utility boilers has not been demonstrated to my knowledge on a pilot or long term test basis. Adequate pollution abatement control with pre-existing boiler equipment is the key question with fairly capital intensive additions of new equipment as the only other reasonable alternative.

AUTHOR'S REPLIES

In Reply to Mr. Poole

1. Yes.
2. 7 percent General Obligation Bonds.
3. 10 year life for plant and equipment and 5 year life for rolling stock.

In response to Mr. Nollet

No comment.