

WHEN THE TRASH GETS GOING, THE GOING GETS TOUGH... BUT THE TOUGH GET GOING

Christopher W. Skaggs
Northeast Maryland Waste Disposal Authority
Baltimore, Maryland

Robin B. Davidov
Northeast Maryland Waste Disposal Authority
Baltimore, Maryland

ABSTRACT

As waste continues to flee municipal waste combustors ("MWCs") to lower cost landfills, the manager must make the most of revenues other than tipping fees. What are the other sources of revenue? Are you doing your best to keep the remaining revenues healthy?

This paper examines the traditional and non-traditional sources of revenues for MWC. Here are some examples of topics discussed:

- Under the new federal electricity deregulation laws, energy and/or capacity can be sold outside of the host utility. At one of our facilities, energy was sold to the host utility while capacity was sold to an out of state utility.
- Expanding the source of waste has become quite popular. This paper presents some surprising non-typical waste streams.
- Alternate fuels: One person's waste is another person's fuel. For example, utilities are busy stripping carbon out of their fly ash to produce a marketable aggregate. Where will all this carbon go?
- In the next few years, coal based utilities will have to clean up their air pollution act...or buy offsets. Can MWC be one stop shopping for air pollution credits?
- Did you know that all abandoned underground tanks must be cleaned out and filled by the year 2000? Many industries are converting from oil to gas, leaving plenty of these containers behind. Why not use ash residue instead of dirt?

INTRODUCTION

The Supreme Court in 1994 struck a decisive blow to the waste-to-energy industry in their decision to uphold the Carbonne waste exportation case. This decision clearly stated that non-economic flow control of waste was not legal when it concerned transporting of waste across state lines. This decision started a massive revision of the waste disposal market. The creation of mega-landfills, a dizzying pace of mergers and acquisitions within the hauling and disposal sector of the industry and the advent of wholesale waste exportation began.

These factors caused concern throughout the waste-to-energy industry, which had based the financing of its

facilities on stable waste markets and in many cases controlled waste streams. It is in this post Carbonne era that the waste-to-energy industry is and must continue to optimize revenues. This paper will discuss ways in which to increase revenue streams and to reduce costs.

TYPES OF REVENUE SOURCES ELECTRICITY REVENUES

Deregulation of Electric Utility Industry

As the electricity industry enters the era of deregulation, there are many opportunities emerging to increase energy and capacity revenues.

Energy Sales: Many state deregulation initiatives include some type of preference system for renewable energy. Currently, waste-to-energy is defined as a renewable resource by the federal government. Although not all state deregulation initiatives include waste-to-energy as a renewable, industry groups such as IWSA and MWMA are actively lobbying for such efforts. A renewable portfolio can help in two ways. First, if there is a minimum amount of energy available that is considered renewable, the prices paid for the energy should increase above that of non-renewable sources. A second reason for the increase in revenue is the potential that consumers will pay an increased energy rate for electricity produced by a renewable source.

Self Wheeling: The deregulation efforts are also making it easier for local governments to aggregate their energy users. Once the local government's many different users are aggregated, the local government can shop for an electricity provider. Selling electricity produced at the MWC to the local government is a chance for savings on the purchase of the electricity and guaranteeing a customer for the MWC. For example, the energy generated by a large MWC could provide electricity to the wastewater treatment plant, or other governmental facility.

Capacity Sales: If the electricity sales contract does not provide for the sale of capacity, the facility owner can sell the capacity, either through a power broker or directly. Recently, the Authority developed two separate capacity sales contracts for the power from the Montgomery County MWC. The facility, which sells energy to PEPCO, is not entitled to capacity payments. The Authority convinced PEPCO to buy the capacity and in turn sell it to the PJM grid. The first of the two agreements is for sale of 32 MW. The Authority is paid \$2.34 per MWh sold to PEPCO as long as the output is 32 MW or below. This agreement generates nearly \$500,000 additional revenue per year. Building on this successful venture, the Authority entered into another capacity sales agreement with PEPCO for an additional 18 MW of capacity. This agreement, unlike the first agreement, pays the Authority a set fee per month to be on stand-by for PEPCO. PEPCO has sold this capacity to an entity in Pennsylvania and will call on the capacity if needed. The Authority is paid \$62.25 per MW day and is reimbursed for operating expenses. This agreement should increase revenues for the project by over \$400,000 this year. So the total increase in revenues due to the capacity sales is estimated to be between \$800,000 to \$900,000 or 15%. Under both of these arrangements, PEPCO guarantees the capacity to the purchaser. Having this assurance from a large utility means that the facility did not have to

purchase a backup source of capacity in case of unscheduled downtime.

Operate more like a Utility

Many of the electricity sales contracts provide for different levels of pricing with on-peak, off-peak and intermediate pricing within the summer and winter months. If your facility does not have enough waste to operate the boilers at 100% capacity the whole time, track operations with the changes in the pricing structure to maximize revenues.

METALS RECOVERY REVENUES

Quantity and Quality of Metals

Many MWCs include removal of ferrous metals. Although this is not as large a revenue stream as electricity sales, it can reduce tipping fees by up to a dollar per ton. The first and most obvious way to increase revenues from the sale of ferrous metal is to recover more from the residue stream. One of the first things that should be done is a fairly simple test to find out how much metal is being shipped out as ash residue. The test can be as simple as taking a front-end loader full of ash that has already gone through the ferrous separation system, spread the ash onto the tip floor and move a magnet over the material. Based on the amount of ferrous metal recovered, the operator can then adjust the recovery system. Adjustments may include adjusting the height of the material on the feed conveyor, adjusting the height of the magnet, and removal of large materials both metal and non-metal to allow the magnet to work properly.

One key component is that the operator of the facility should be given incentives to recover more ferrous metals. If the operator has incentive to remove metals, the operator will spend the time to improve the system.

Another operational way to improve the quality of the ferrous recovery system is to sort the oversized metals. Many facilities do not segregate the oversize materials and place all of the oversize materials into a container/truck for sale to the scrap company. It has been shown that having a laborer separating large ferrous items from other large items such as tree stumps will improve the value of the large ferrous metals stream to a point that the cost of the laborer is more than covered.

Metal Recovery Sales

Most local governments are unfamiliar with marketing commodities, and it is important to understand the cyclical nature of prices. Metals recovered from MWC are contaminated with ash and debris, and therefore are of low value in the scrap market. When the market weakens, due

to global pricing, the price drops, but worse, there may be no market for the recovered material. MWC's have two options: (1) find a place to store your metals until the market improves or (2) look at the economic benefits of processing ash. While the cost of ash processing/recycling may appear to be high, the values of the metals are much higher (because the metal is cleaner) and less subject to price fluctuations at the lower end of the scrap market.

Within the industry, there have been several attempts to remove non-ferrous metals from the ash stream. These efforts have met with mixed results for a variety of reasons. Removal of the non-ferrous component of the ash residue stream requires additional equipment and additional operators. These costs vary according to the amount of cleaning of the metal and segregation of the different types of non-ferrous metals (i.e., brass, aluminum, coins). These additional costs for the non-ferrous system are somewhat offset by the increase in revenues from the sale of the material. On a national basis, only Wheelabrator has non-ferrous recovery system at their facilities. Non-ferrous recovery is enhanced during the process of ash recycling (see below).

One method for improving ferrous revenues that does not include "technical" fixes is to solicit bids. As a result of a bidding type process that Ogden undertook in Montgomery County, Maryland, the net price per ton for recovered ferrous nearly doubled from the previous year. This dramatic increase happened although the market value of steel has not improved dramatically.

EXPANDING WASTE STREAMS

An obvious way to increase the revenues of a facility is to maximize its throughput. One of the most obvious ways to do this is to lower your tip fee. This may not be practical for many facilities, so following are some examples of ways to increase the waste flow without harming the existing revenue source.

Be as flexible as possible when considering the source and type of waste. You may find the loss of revenue due to lower price tonnage will be more than offset by increased energy revenues.

Non-Traditional Waste Streams

Another way to increase waste flow to a facility is to allow the acceptance of non-traditional waste streams. Examples of these non-traditional waste streams are telephone poles, pallets or other wood products, off-spec pharmaceuticals, classified documents (paper and microfiche) and carbon removed from coal ash. These waste streams are not typically disposed of at landfills because they have special properties or special disposal needs. Telephone poles or

utility poles are treated with creosote in order to help withstand the forces of nature. This treatment causes the poles to be less than desirable in many landfills but make an excellent fuel. The poles can be chipped and added to the waste stream. The tipping fee received for the poles can often be higher than the standard solid waste tip fee, giving increased revenue from electricity and from the gate.

In many parts of the country there is an abundance of pallets or other wood materials that are disposed of every day in landfills. A discounted rate may be offered to bring the wood waste to the facility in order to gain from the energy in the wood waste.

Coal fired utilities have also been seeking to reduce their operating costs. One way they have found is to recycle their fly ash into an aggregate product. In order to make a useable aggregate, the fly ash must have the unburned carbon removed. The carbon has no value to the utility which must dispose of it. A MWC can burn this carbon and increase energy output.

Medical Waste

Although a long time in preparation, the Clean Air Amendments of 1990 will sooner or later be finalized for small MWC's, including hospital incinerators. In all likelihood, many hospitals will not be able to afford a retrofit, and will look at alternate disposal methods. While the combustion conditions at most MWC's are adequate to ensure destruction of all pathogens, the unique handling requirements have discouraged many MWC's from taking on this particular waste stream. However, many hospitals now wrap medical waste in plastic bags, which are then inserted into cardboard boxes. These boxes can be easily unloaded at the MWC onto conveyors destined for feed chutes.

Off-spec pharmaceuticals include plastic bottles that are mislabeled and products whose shelf life has expired. The pharmaceutical companies need to ensure the destruction of these materials. Although burning of these materials may require permit modifications and or review by regulators and may require some special handling, they often times command a higher tipping fee because of the assured destruction.

Similar to the off-spec pharmaceuticals, classified documents from the government or even tax returns from public accounts require assured disposal. These materials typically do not require prior approval and may require less special handling than the off-spec pharmaceuticals, but they too can often command higher tipping fees.

Carbon from Coal Fired Power Plants

Many coal fired power plants pulverize the coal that they receive prior to burning the coal in their boilers. In the pulverizing process there is a waste byproduct that is generated. This byproduct has too low of a heating value for the coal industry and the utility must dispose of this byproduct. In order to avoid disposal costs and long-term disposal liability, the utility may pay for disposal within a MWC, providing additional fuel and another revenue source.

Light Industrial and Special Wastes

Many facilities have turned to processing light industrial wastes or special wastes. These waste streams include items such as oil-contaminated debris and pesticides. Typically, these waste streams cannot be disposed of at a Subtitle D landfill. This brings the opportunity for increased revenues from a waste stream that may traditionally have a higher disposal cost. These materials bring certain concerns that must be addressed before accepting them.

Apart from the environmental concerns with the material, there may be special handling and tracking requirements. It is important to check the material that is accepted and handle it in accordance with safety and regulatory requirements. The first mistake made with the regulators can be harmful from a public relations standpoint. One recent incident involved a minor violation that received a multi-part article in a major newspaper.

Capturing Waste Stream through Long-term Contracts

Taking a queue from private sector, some facilities have entered into long-term contracts with haulers that ensure that the waste collected by the hauler continues to be tipped at the MWC. This type of arrangement can help in two ways. First the waste stream and tip fees are stabilized and second the long term contracts will help in securing a good bond rating allowing for issuance of new debt for retrofits or for refinancing of the existing debt.

Emissions Trading

With the implementation of the Clean Air Act Amendments of 1990, the possibility of trading emission credits for SO₂, NO_x and CO₂ is possible. In order to trade emission credits the MWC needs to opt-in to the particular trading program. In the case of SO₂, the EPA set allowance figures based on 1985 through 1987 emission rates. The allowances for the NO_x programs are determined on a state-by-state basis. And the CO₂ rules are still developing. Each of the programs has specific rules that must be followed, so a detailed study will be necessary to determine applicability.

Once it has been determined that the facility has the ability to become part of the program, the facility's permit will have to be modified to reduce the amount of the emissions that are allowed. This will free up emissions for trading. SO₂ credits have been recently auctioned at an average price of \$117 per annual ton. A recent NO_x credit transaction brought a price of \$225 per annual ton.

ASH RECYCLING

One major cost component of any MWC is the cost of ash disposal. The ash recycling industry has been gaining momentum since EPA has published guidelines for ash characterization. Many pilot projects, as well as at least one new facility, has been started in the last few years. As state legislatures and regulatory agencies are educated on the merits of ash recycling, they are slowly starting to put in place the mechanisms needed to start ash recycling on a larger scale.

The Northeast Authority has been working with ash recycling vendors on several pilot projects. The costs to date of ash recycling can be competitive with landfilling in the Mid-Atlantic region of the United States. Given that the landfill costs in the Northeastern United States are higher than the Mid-Atlantic, ash recycling should increase.

Types of Ash Recycling

Recycled ash has been used in aggregate type applications for years in both Europe and the United States. The technology has been shown to work and to be dependable and is now starting to make inroads into ash recycling in the United States.

Other technologies or processes for ash recycling include ceramic tile manufacturing, acid mine drainage abatement and the potential for filling in underground storage tanks.

The technology for the manufacturing of ceramic tiles from ash has been shown to work on a pilot scale. To date there have been no large-scale applications of the technology to find its true cost, however there is promise that this technology will mature to help give a viable alternative to using the recycled ash as aggregate.

Another recycling process that holds some promise, is the use of ash residue to help control acid mine drainage. The ash residue can be processed and conditioned and then placed within an old coal mine to partially fill in part of the mine. The ash also helps contain runoff from the mine site.

An unexplored application for ash re-use is for filling in underground storage tanks and abandoned pipelines. Currently throughout the United States, many underground storage tanks from gas stations are replaced with newer tanks. Because it is not economical for all gas stations to remove and replace their tanks, many of the tanks are filled and left in place. Also, when businesses convert from oil to gas, the underground oil tanks are often filled and left in place. In order to safely leave these tanks in place; they are being filled with dirt or sand. Ash can be used instead of the dirt or sand in these types of applications. Abandoned water and sewer pipelines also present similar possibilities.

RENEGOTIATING OPERATIONS CONTRACT

There are many aspects of an operating contract that can be renegotiated in order to reduce costs to the local government. A few are discussed below.

Change of Risk Position

When operating contracts are signed between the local government and the vendor community, the risk positions of the parties are clearly defined in the contract. The risk that the vendor takes in operation effects the cost to the local government. Ideas for changing the risk allocation include: adjustment of termination for convenience clauses, fixing revenue share amounts and passing through of cost of consumables such as lime and energy costs.

"Privatizing" the Facility

The Union County, New Jersey facility was recently sold to the operator under the theory that a private owner can respond more quickly to changes in the disposal market and adjust tipping fees to respond.

Contract Extension and Refinancing

With interest rates low, refinancing debt should be examined. The Authority reviews our outstanding debt at least once a year for opportunities. Advanced refunding and forward swaps are some tools that can lower debt service payment. One consideration when refinancing is extension of the current operating contract.

CONCLUSION

In order for the waste-to-energy industry to compete in the current market place for solid waste disposal, the industry, both the public and private components must work towards maximizing efficiency, creatively finding new ideas for cost savings and diligently pursuing a stable lower total cost for waste disposal.

