Restructuring of the electric utility industry has received much attention in the national media as higher electric rates have been experienced this year in major population centers such as San Diego, CA and Westchester County, NY. Further, the lack of adequate electric capacity (and/or the ability to transmit the electricity) has continued to plague major metropolitan areas such as Detroit, MI and Silicon Valley. What role does waste to energy have in helping solve these problems? This paper will discuss the real life experience of a waste to energy project (Bristol, CT Resource Recovery Facility) in the rapidly changing world of electric deregulation. When Connecticut passed its restructuring legislation in 1998 (Public Act 98-28), no one realized how much effort would have to be spent at the agency level to preserve and protect existing power purchase agreements, especially those with “above market” pricing structures. In a state such as Connecticut where the adopted legislation was considered very favorable to private power producers such as waste to energy, many surprises have occurred during the implementation of the legislation. Understanding how Connecticut’s electric restructuring legislation has been implemented will help those with interests in any waste to energy, landfill gas, biomass or other renewable power source be better prepared to manage similar state and federal legislative initiatives.

INTRODUCTION

Established in 1988, the Bristol Resource Recovery Facility Operating Committee (BRRFOC) administers an integrated solid waste disposal program for 14 Connecticut cities and towns with an estimated population of 300,000. The BRRFOC’s integrated waste management system includes: public education on source reduction; source separation, recycling and household hazardous waste collections through its sister agency, Tunxis Recycling; and a waste-to-energy facility in Bristol, Connecticut (owned by Ogden Martin Systems), which safely and efficiently burns approximately 650 tons of solid waste daily, reducing the volume of waste in member communities by 90% and producing enough electricity to serve about 15,000 homes. In addition, since our Board is comprised of Mayors, Selectmen and Town Managers, we also represent the direct interests of our taxpayers, both residential and commercial. Energy sales from the waste to energy facility comprise over 35% of the region’s revenues.
ELECTRIC RESTRUCTURING LEGISLATION

BRRFOC started working on electric restructuring initiatives in 1994. Activities continued through 1998 and included special meetings, appointments to statewide task forces, exploration of municipal aggregation opportunities and various lobbying activities related to a failed bill in 1997 and the final legislation adopted in 1998 (Public Act 98-28).

Favorable provisions (to the waste to energy community) of the enacted legislation included provisions related to the buy-out/buy-down of the above market portions of the electric purchase agreements, inclusion of waste to energy in the renewable portfolio standard, a fuel based generation performance standard, and the appointment of a statewide consumer education committee.

Prior to deregulation, there were 30 independent power producers in the state providing 500 MW of power (approximately 8% of the state's generating capacity). The independent power producers had electric purchase agreements which required the utility to purchase their power in the range of 2.2 to 18.4 cents per kilowatt-hour. The earliest independent power producer electric purchase agreement expiration date was 2008. Of the 30 independent power producers in existence prior to 1998, six are waste to energy facilities.

The following waste to energy facilities are located in Connecticut:

<table>
<thead>
<tr>
<th>Facility</th>
<th>Capacity (tdp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bristol</td>
<td>650</td>
</tr>
<tr>
<td>Wallingford</td>
<td>420</td>
</tr>
<tr>
<td>Preston</td>
<td>689</td>
</tr>
<tr>
<td>Lisbon</td>
<td>500</td>
</tr>
<tr>
<td>Mid-CT</td>
<td>2027</td>
</tr>
<tr>
<td>Bridgeport</td>
<td>2250</td>
</tr>
</tbody>
</table>

COMPETITIVE ENVIRONMENT

As a result of many factors, waste to energy facilities find themselves in a very competitive business environment. Consequently, tip fees (user fees) must be competitive. Figure 2 shows that tip fees at waste to energy facilities in the State have fluctuated significantly. Bristol's present rate ($61.00 per ton) is competitive, but a mere 10% increase will most likely result in significant waste diversion by private haulers. Concerns about remaining competitive have resulted in the BRRFOC looking at ways of increasing revenues; electric revenues being the obvious target.

![Figure 2: Comparison of Tip Fees at CT RRF Projects](image)

1 The ton per day (tpd) numbers listed represent the maximum permitted design capacity.
BRISTOL ELECTRIC CONTRACT

The Bristol electric contract has a "floor/formula" payment schedule with a minimum of 8.3 cents/kilowatt-hour up to the maximum expected hourly output of 13.2 MW. While this rate has been above market since the plant's inception, regional prices as quoted by ISO New England have been inching up as follows:

- MAY, 1999: 2.8 (cents per kilowatt hour)
- NOV, 2000: 4.9 (cents per kilowatt hour)
- JAN, 2000: 2.5-3.8 (cents per kilowatt hour)
- JAN, 2001: 4.0-7.3 (cents per kilowatt hour)

As Figure 3 demonstrates, similarly sized waste to energy facilities in Connecticut can receive substantially different electric revenues. It should be noted that this difference is primarily attributed to differing per kWh electric payments since the electric conversion efficiency and the higher heating values are similar. Further, over time, the Bristol project's electric revenues have started to lag substantially the electric revenues based on the 1985 projection of avoided costs:

![Figure 3: Projected Electric Revenues For Fiscal Year Beginning July, 2001](image1)

![Figure 4: Electric Revenues in $Millions](image2)
INCREASING ELECTRIC REVENUES

Bristol’s energy revenues lag substantially behind other similarly sized facilities in the state (Figure 3). Further, Bristol’s energy revenues are significantly less than expectations upon which the project was originally financed (Figure 4). Three main initiatives are being worked on to increase the Bristol project’s electric revenues:

“Green” Premium
Maintaining a “green” premium for waste to energy will help increase the demand for waste to energy power due to the state’s renewable portfolio requirements. Unfortunately, multiple state agencies as well as private concerns such as the Green-e board have influence on the green premium determination. Even though Connecticut statutes define waste to energy as a renewable energy source, preserving this benefit is a difficult task. The “green” premium may be worth 1-2 cents per kilowatt-hour.

Increase Production
Another way to increase electrical revenues is to increase production. To increase electrical production and efficiency, a number of capital improvements to the waste to energy facility have recently been undertaken including upgrades to the scrubbers and additional baghouse modules. Further, the vendor has been given additional incentives to increase electric production as their revenue share increases from 10% to 40% above a certain dollar threshold.

Buy Out/Buy Down
Finally, negotiations have taken place on a buy-out/buy-down with the utility and with the utility’s agent, JP Morgan. These negotiations have been very difficult as each party has their own risk threshold, cost of money, and a unique perspective on what the future avoided cost of energy will be.

CONCLUSION

The current and future business environment dictates that waste to energy facilities remain competitive. The two biggest revenue streams for the Bristol facility are electric revenues and tipping fees (user fees). With costs increasing, absent new sources of income, additional electric revenues are needed in order to keep tipping fees as low as possible. With electricity deregulation, opportunities exist for increasing electric revenues. However, implementing the right mix of opportunities requires timely involvement and sophisticated analyses.