THE DEVELOPMENT AND FINANCING OF THE NORTHEAST MASSACHUSETTS (NESWC) RESOURCE RECOVERY PROJECT: 
A Tale of Twenty-Two Cities and Towns

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ABSTRACT

After a tortuous decade-long planning process initiated by a voluntary association of municipalities, the “NESWC” project was financed in April 1983. More than twenty municipalities and eight commercial haulers will deliver refuse to the 1500 tons/day facility, now under construction, which will be privately owned and operated and sell power to a utility. This paper describes the institutional, contractual, and financial aspects of the project and events leading to its final structure and $197 million financing.

INTRODUCTION: INSTITUTIONAL CONTEXT AND PURPOSE

It is perhaps axiomatic that refuse-to-energy projects tend to be complex and difficult to implement, particularly where more than one political jurisdiction is involved. In the case of the Northeast Solid Waste Committee (NESWC) Project now under construction in the Town of North Andover, Massachusetts, a seemingly endless and insurmountable (to those involved at the time) series of obstacles had to be overcome to achieve financing. Key among these was securing sufficient waste supply guarantees from a large number of cities and towns. Even more critical and difficult, in fact, was maintaining these commitments in the face of events impacting on the project after many of the communities had already signed 20-year contracts.

Examples of such events are:
- federal tax law changes which reduced anticipated tax benefits
- a change in the tax treatment based on consultation with the IRS
- a substantial decline in energy prices
- the merger of Signal Companies (parent of UOP Inc., the full-service contractor on the project) and Wheelabrator-Frye, Inc.
- national news raising concerns in the bond market (“WPPSS” bonds)
- potential constraints imposed by taxable bond buyers and insurers

All major projects, particularly those involving industrial revenue bonds, must resolve the various legal, contractual, economic/financial, and technical issues that inevitably arise – despite careful planning by an experienced project team – in the final throes of putting together the financing package and “closing the deal”. The NESWC project in this sense is not that different from other major projects. However, the institutional, political, and competitive environment in which this project was developed added immensely to the difficulty of the effort. Indicative of this environment are the following:
- the New England Town Meeting form of government
- the strong “home rule” tradition
- the animosity of communities toward anything remotely resembling a regional authority
- the existence of other competing refuse disposal and resource recovery projects in the area
- the (negotiated) complexity of the NESWC Service Agreement with its risk and revenue sharing features compared with other simpler disposal contract alternatives
- the required uniformity of contract terms offered to all communities on NESWC versus the flexibility of competitors to make more (or less) favorable offers to certain communities
- the legal requirement to have the NESWC communities’ contracts “ratified” by town meeting or city council
votes on as many as three separate occasions for certain communities

- the passage of the property tax limitation bill known as Proposition 2-1/2

These factors combined to make the successful development and financing of the NESWC project an extraordinary process and perhaps a unique achievement.

This paper does not fully explore each item mentioned above, let alone all the daily twists and turns and "crises" faced by project participants. To do so adequately could fill a book, which in all likelihood would read like a melodrama. The purpose here is more limited; namely, to provide some sense of what this project entails and how its evolution has very much been a function of its institutional constraints.

**PROJECT DESCRIPTION**

**GENERAL**

The resource recovery facility will contain an enclosed tipping floor and pit and crane operation, two nominal 750 tons/day combustion units for burning as-received refuse, a grate system of the Martin design, a 40 MW turbine-generator, electrostatic precipitators, magnetic ferrous metals recovery, wet ash handling, and a closed-cycle evaporative type cooling system. Possibly the only unique technical feature is that cooling will be provided by secondary treatment effluent from the nearby Greater Lawrence Sanitary District wastewater treatment plant.

The facility will be privately designed and constructed by UOP Inc.* (Contractor), to be owned and operated by Massachusetts REFUSETECH, Inc. (MRI), a wholly-owned subsidiary of UOP. All of the project guarantees are backed by UOP, and in certain events by Signal. The facility is being constructed on a 14 acre industrially zoned site in North Andover, adjacent to the Town's existing landfill and also abutting two local industrial plant properties. The site is owned by the Commonwealth of Massachusetts (acquired specifically for this project) and leased to MRI. The Commonwealth has also provided six additional acres near the site for use by the contractor as a construction laydown and parking area. The northeastern portion of Massachusetts, in which North Andover is located, has a good network of interstate highways, to which the site has ready access by local and state roads.

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*As a consequence of the Signal/Wheelabrator-Frye merger, the Contractor responsibilities are being implemented by Signal RESCO, Inc., a newly formed entity.

**LANDFILL**

Backup landfill and residue disposal will be available at the City of Peabody's landfill site, located approximately 30 miles from North Andover. According to an agreement between the City of Peabody and the Commonwealth of Massachusetts, certain improvements will be made to permit expanded use of the existing landfill. During construction of the resource recovery facility, Peabody will, in addition to operating the landfill for disposal of municipal and commercial waste from the City itself, receive refuse from NESWC communities who need an interim disposal site. A capacity of up to 85,000 tons/year (TPY) has been reserved for this interim use purpose through a "put-or-pay" arrangement set at 50,000 TPY.

When the facility comes on-line, the Commonwealth will assume operating responsibility for the landfill, probably on a private contract basis. This landfill, including a future expansion area, contains 26 acres with approximately 2.45 million cubic yards of usable landfill volume. Should this prove to be inadequate, the Commonwealth has committed to provide the project with landfill capacity for residue and by-pass waste up to a cumulative amount of 3.14 million cubic yards. This volume is equivalent to two weeks per year refuse plus full residue disposal for a 20-year period.

A program to demonstrate and promote productive utilization of incinerator residue is currently underway in Massachusetts by state solid waste, regulatory, and public works agencies, and results to date are promising. It is expected that at least a portion of the residue will be applied in road construction, for example, thereby reducing the required landfill volume.

The net energy produced by the facility will be in the form of electric power sold to the New England Power Company (NEP) under a 20-year "take-or-pay" contract with MRI. The price paid will be based on 90 percent of the avoided fuel cost, with separate rates for peak and off-peak periods. While the incremental (avoided) fuel costs primarily reflect oil prices, they can also be affected by coal and hydro use and indirectly by nuclear. The utility has implemented a major coal conversion and is also active in promoting alternate energy sources. The contract with MRI allows the future diversion of up to 30 percent of the energy from the facility to be sold in the form of steam to potential industrial customers near the site.

**WASTE SUPPLY**

Refuse will be delivered to the facility by the 22 municipalities (contract communities) that have signed the Service Agreement with MRI for 20-year disposal, the eight commercial haulers that have signed private hauler agreements
CONSTRUCTION AGREEMENT

The communities do not incur any financial obligations until the facility passes performance tests as described in the construction agreement, a contract between MRI and the contractor but with rights of oversight, review, and concurrence by the consulting engineer (which is Roy F. Weston, Inc.) and the Contract Community Representative (CCR), a person who acts on behalf of the contract communities. Contract Communities are the "deep pocket" for the project during operations, in that they have an unconditional obligation to pay the debt service and certain other costs as specified in the contracts and as may be offset by MRI guarantees and revenues from operation of the facility.

The construction agreement requires the contractor to design, construct, startup, and acceptance-test the facility for a guaranteed fixed price, subject to agreed upon escalation indices, and within a guaranteed period of 36 months. Both the price and construction period may be adjusted due to circumstances beyond the control of the contractor, or for changes required by law or requested by the CCR and agreed to by the contractor.

If the facility is accepted before the end of the guaranteed construction period, the contractor receives an early completion bonus on a fixed dollars per day basis. On the other hand, the contractor pays delay damages covering debt service obligations and certain other costs in the event of late acceptance, up to an eighteen month period. After the eighteen months, the contractor is obligated to pay the outstanding debt if it still cannot pass the required tests.

A fairly comprehensive insurance package has been developed including broad business interruption and extra expense coverage, and a performance bond in the amount of approximately $200 million covering construction through the acceptance testing.

Performance guarantees to be demonstrated include the capability to:
- process at least 10,800 tons per 7-day week
- produce at least 475 kwh of electricity, net of in-plant use, per ton of waste of specified composition (4600 Btu/lb) at a throughput rate of 1500 TPD
- recover magnetic ferrous metal at an efficiency of at least 90 percent
- meet all pertinent federal, state, and local environmental regulations

There is also a "buy-down" provision whereby the facility can be accepted at less than 100 percent but at least 60 percent of its guaranteed weekly capacity, provided the contractor pays a proportion of the debt corresponding to the shortfall, and also (in effect) correspondingly reduces the operating and maintenance fee to be paid to MRI under the service agreement. It is interesting that the communities may actually be better off at a lower acceptance level, since this reduces their financial exposure to tonnage shortfalls during the operating period, while the buy-down provision means they will otherwise pay essentially the same net disposal fee per ton.

Similarly, there are damages for shortfalls in energy and ferrous recovery efficiencies; however, these damages are internal to the contractor/MRI. Such efficiency test shortfalls do not limit or adjust in any way the corresponding performance guarantees in the service agreement, on which the communities will rely instead.

SERVICE AGREEMENT

Each community that signs the service agreement with MRI contracts to deliver a guaranteed annual tonnage, which the community may adjust up or down from year to year within certain limitations. A penalty for refuse deliveries in excess of 110 percent of the guarantee provides an economic incentive for communities to guarantee approximately all the waste they estimate to be within their administrative control. Another penalty provision for deliveries short of 90 percent of the guaranteed amount protects other communities and, to a more limited extent, MRI from the loss of project revenues. This penalty is in addition to the more usual "put-or-pay" obligation, which also applies here below the guarantee. The penalty formulas are defined on an aggregate basis including all contract communities, and thus in effect shortfalls in some communities are offset by excess deliveries in other communities and by additional private hauler waste.
There are also penalties relating to seasonal variation, which allow some flexibility in delivery schedules while at the same time encouraging some coordination of peak weeks caused, for example, by spring cleanup campaigns in the different communities. Although there are certainly practical limitations, the intent here is to encourage efficient waste delivery to the facility. Certain of the penalty provisions have been waived for the initial year of operation.

The basic payment obligation of the communities, unobscured by the penalty payments, is to pay debt service, an operating and maintenance fee to MRI, landfill costs, a royalty fee in lieu of property taxes to North Andover as the host community, and certain other pass-through costs (e.g., for insurance and CCR administrative expenses). The community, in turn, receives certain credits proportional to its guaranteed annual tonnage: 89.5 percent of energy revenues, roughly 50 percent of materials revenues (actually a greater share for ferrous metal prices less than $30/ton), a special credit from MRI related indirectly to tax benefits, and a substantial portion of the private hauler fees.

The key risks assumed by the communities are:
- tonnage, since they cover the fixed costs of the project in the event of a shortfall
- changes in law
- uncontrollable circumstances that are uninsured (e.g., earthquakes, certain strikes, and war)
- shutdowns due to other than MRI's fault
- energy prices
- financing costs

MRI (hence UOP) is responsible for all events and costs within its control. In particular, the operating and maintenance fee is a guaranteed fixed base price which escalates according to the consumer price index for the Boston area. Additionally, if the facility is shutdown due to MRI's fault, MRI must provide alternative disposal for the communities at a cost no greater than the net fee they would have paid had the facility been operational.

MRI guarantees a 90 percent efficiency in recovery of magnetic ferrous metals and will pay the difference in community credits to the extent this guarantee is not met. Similarly, and more important, MRI guarantees a minimum credit of $11.78 times the current kilowatt-hour (kW·h) price divided by $0.03/kW·h, for refuse averaging at least 4450 Btu/lb and provided the energy is purchased by NEP. This is equivalent to a net electrical production guarantee of about 440 kW·h/ton, or greater than 90 percent of the expected net output of the facility.

As mentioned previously, each contract community signs the same uniform service agreement, except for the different guaranteed tonnages. Any party other than a contract community that disposes of refuse at the facility is considered a "private hauler", even a community that may have need for a short-term, interruptible disposal site.

PRIVATE HAULER AGREEMENTS

The existing contracts with commercial haulers are five-year put-or-pay contracts for specified annual waste quantities, with fixed base tipping fees set at $15 in 1982 and escalating at 50 percent of the change in CPI through the contract period. The contracts are renewable, but the pricing terms are subject to renegotiation.

If the private hauler delivers less than 90 percent of its specified annual tonnage, it must pay for the full 90 percent. If the hauler delivers greater than 110 percent of its specified tonnage, MRI may accept the additional waste at its option and will charge the "spot" rate for such additional tonnage. To the extent that these agreements are noninterruptible (i.e., the service must be provided and the waste cannot be turned away) the project's landfill is available as backup, if needed.

COMMUNITY ADVISORY BOARD

Although the reference to "NESWC" is still used, technically the former voluntary association known as the Northeast Solid Waste Committee was reconstituted into an advisory board, under by-laws found in the service agreement, when the contract communities represented a financeable tonnage commitment. Each community designates a member, and votes are weighted according to population. Semi-annual meetings are to be held, in April and October. From the advisory board, an 11 member executive committee is elected, which currently holds regular meetings approximately monthly. The host community has automatic membership on the executive committee; the remaining positions are allocated among large-, medium-, and small-community designations.

Under a special provision, the host community has a veto over proposed project changes that would have an adverse environmental impact on this community.

A Contract Community Representative (CCR) is selected by, and serves at the pleasure of, the advisory board and executive committee. The CCR is initially defined to be the director of the State Bureau of Solid Waste Disposal (BSWD), and this can be changed by a two-thirds vote of the advisory board. The BSWD Director, in effect, performed in this role even before the formation of the advisory board (i.e., served as the single focal point representing municipal interests in project deliberations and in negotiations with UOP).

Specific functions of the CCR, in reporting to the advisory board, listed in the By-Laws are:
- negotiations concerning unforeseen circumstances
• remedies for default
• termination and transfer of operators
• negotiations concerning alterations required by law
• negotiations concerning the right of first refusal
• recommendations regarding contract amendments

Additional duties deal with advising MRI on private hauler policies, interfacing with additional communities considering the project, and working to assure that the Commonwealth’s obligations on the project are met. These obligations relate primarily to providing landfill capacity, a construction laydown area, certain utilities to the battery limits of the site (including cooling water and sewer lines), and certain improvements in access roads.

TRANSPORTATION COST SHARING

One of the unique features of the project is an inter-community agreement by which communities near the facility site subsidize a portion of the transportation costs of those communities more distant. However, each community is responsible for its own means of transporting waste to the site, and for the cost of this transportation. The simplified sharing works as follows.

Each community pays into a kitty, three dollars per ton, escalating from 1985. The community, in turn, receives a rebate per ton as a function of the direct line distance from the City or Town hall and the facility site up to a maximum of 20 miles, and the total “ton-miles” represented by the mix of contract communities in a given year. With the current communities, for example, the rebate is approximately 20 cents/ton-mile, and communities within 15 miles pay a net amount for the transportation subsidy, while communities beyond 15 miles receive a subsidy.

FINANCING STRUCTURE AND FEATURES

The project financing structure has a number of unique features, including being among the first vendor-owned project to pass tax benefits directly back to participating communities, providing vendor purchase of debt obligations of the project to cover early operating deficits, and being the first privately-owned project without “up-front” equity.

FINANCING PLAN

The construction of financing for the Project included $160,000,000 of publicly sold tax-exempt industrial revenue bonds and $37,000,000 of privately-placed taxable bonds. Both bond issues are secured prorata by project revenues. The tax-exempt bonds finance the “qualifying” solid waste disposal part of the project, defined by the Internal Revenue Service to include all project facilities up to the first marketable product, steam. Since the balance of the Project cost, primarily turbine generator and switching gear costs, working capital, and vendor profit, does not qualify for tax-exempt financing, a companion taxable bond issue was necessary. During the operating phase of the project, UOP will contribute a yearly deferred equity amount to the project defined as a “special credit” to its operating and its maintenance fee. Since the payments of the communities cover all costs of the project minus revenues, the special credit directly lowers the community tipping fee obligation.

A community objective in the project was to have a forecast initial tipping fee less than the prevailing landfill cost at the time of project commencement. As a result of prevailing interest rates, lower forecast energy revenues, and an unsuccessful tax ruling which increased the amount of higher-cost taxable debt, the forecast tipping fee was in excess of the community objective. This problem was addressed by creating a special series of “Stabilization Bonds” to be used by the project trustee during the first several years of operation to raise additional money. The stabilization bonds are to be purchased by UOP in specified amounts for several years, covering forecast funds deficits. Thereafter, the bonds will be repaid out of project revenues, thereby increasing later community disposal costs over what they would otherwise have been.

SECURITY FEATURES

During the construction, project bondholders are secured by UOP’s obligation to complete the facility according to performance specifications at a fixed, escalated price and by a certain date. If completion does not occur at all, or is delayed as a result of any cause other than uncontrollable circumstances or changes of law, UOP bears the financial consequences, ranging from covering interest payments during the period of delay up to repaying the entire bond issue if the plant is not completed. Should the project be delayed as a result of uncontrollable circumstances or change of law, UOP is excused from damages. However, it continues to have an obligation to complete the facility. Funding for required changes and additional interest costs would be raised from additional bonds issued on parity with other project bonds. Such additional bonds must be issued without limit in order to complete the facilities. A hypothetical potential problem is a circumstance which cannot be cured by money. An example, however unimaginable, would be a new law which prohibits the operation of any waste-burning plants. Project consultants evaluated the probability of such an event as being extremely remote, and not a significant threat to bondholders.

During the operating period, the community service agreements provide an unconditional payment obligation
sufficient to cover debt service and certain other costs of the project. This payment obligation would continue regardless of operating status of the project or fault on anyone's part. The communities would, of course, have recourse against UOP or other parties, depending upon fault under shutdown situation.

While the community obligations under the service contracts are legally separate, they are “joint and several” to a limited extent. If one community defaults on its service payments, its default is subtracted from the energy revenues to be returned to other communities in the tipping fee formula, thereby requiring other communities to pick up the defaulting community’s share. This provision is limited to the available energy revenues in the project, and thus assumes that the project is operating. The payment obligation is strictly several if the project is not operating.

The unconditional community contract was required in order to finance the bonds, since the vendor, UOP, was unwilling to undertake any payment responsibility following the completion of the facility beyond operating the plant according to specifications. It is unlikely that community contracts in many privately-owned facilities in the future will have such unconditional provisions, since the trend in the resource recovery area is for vendors to take limited amounts of additional risks. Nevertheless, future contracts will likely require substantial community financial commitment as an important element of the financial feasibility of the project.

The financing was further secured by a lien upon the project facilities. While the salvage value of the facility in the event of nonoperation may provide some minor comfort to bondholders, the ultimate security of the project relies upon the continued operation of the plant, payment of disposal fees by communities, and energy payments by the New England Power Company.

PROBLEMATIC ASPECTS OF THE FINANCING PROCESS

A complicated project financing such as the one utilized in the NESWC project requires that all project security elements, including construction contract, service contract, electric power sales contract, guarantees, and so on, must be executed simultaneously prior to the raising of any project financing. In addition, all project financing sources, including taxable bonds, tax-exempt bonds, stabilization bonds and equity, must be sold (or committed in the case of stabilization bonds and equity) at the same time, making unnecessary additional foreseen financing requirements to complete the project.

The financing process produces dozens of parallel financing activities by lawyers, advisors, engineers, and bankers, as well as the marketing, sale, and exchange of money relating to project bonds. Concluding all of these activities at one time and one place is not unlike a space launch, for the failure of any one element destroys the entire undertaking. In the NESWC financing, termination of the project as a result of problems regarding one of its critical elements appeared virtually certain so regularly that great skepticism was found among many project participants as to the ultimate completion of the financing where the last community to sign the contract reneged at the last possible instant. In one case, advertising for the project bonds had already appeared in the local media.

Other problems included failure in the tax ruling, which was reported to be “in the typewriter” for a number of weeks. The tax ruling failure (which denied tax-exempt status to vendor profits) increased the cost of the project since additional taxable bonds had to be raised at a higher interest rate. After the tax-exempt bonds had been sold, termination of the project appeared likely. The taxable bond sale was jeopardized by the withdrawal of commitments by a number of purchasers of taxable bonds, following which the project underwriters underwrote the taxable bonds and resold them to other buyers. Immediately prior to the completion of the financing, the world-wide energy market change required that new economic projections for the communities be generated to make certain the disposal costs were still acceptable.

PROJECT HISTORY AND DEVELOPMENT

Table 1 presents selected milestones in the decade-long planning and project development process from a decision to pursue resource recovery by several northeastern Massachusetts municipalities in 1973 to the commencement of construction of the facility in May 1983.

Around 1973 the BSWD was given certain statutory powers, including the authority to purchase or acquire land for solid waste disposal, to lease the land to private firms for construction and operation of private solid waste disposal facilities, and to assist communities in implementing solutions to their solid waste problems. Although the BSWD as initially envisioned in the early statutes was actually a developer (including operation) of regional landfills and other solid waste facilities, the agency’s role clearly became one of serving as a catalyst to promote the development of private refuse-to-energy facilities. Also, since the agency has never had the authority to mandate regional groupings of communities nor to direct waste to any facility, the creation of any regional project in the State inevitably boils down to a complex process of political decisions by each city or town acting independently.

The Northeast Massachusetts communities were the first to approach the state for technical assistance, which was initiated and continued through the time of financing.
<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>1973</td>
<td>Regional Landfill Plan Recommended by Consultant, Rejected by Multicommunity Study Group</td>
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<tr>
<td></td>
<td>Legislative Initiatives; Bureau of Solid Waste Powers Established</td>
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<tr>
<td></td>
<td>State Approached for Technical Assistance</td>
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<tr>
<td>1974</td>
<td>Site Selected (Haverhill)</td>
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<td></td>
<td>Request for Qualifications/Request for Proposal Issued to Industry</td>
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<tr>
<td>1975</td>
<td>Competitively Negotiated Procurement; Six Qualified Proposers</td>
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<td></td>
<td>UOP Selected</td>
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<tr>
<td>1976</td>
<td>Host Community Rejects Project by Local Referendum</td>
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<tr>
<td></td>
<td>Negotiations with Contractor Suspended</td>
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<tr>
<td>1977</td>
<td>New Site Selected (North Andover)</td>
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<tr>
<td>1978</td>
<td>(Second) Environmental Impact Report Approved</td>
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<tr>
<td>1979</td>
<td>Service Agreement and Initial Financing Structure</td>
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<tr>
<td></td>
<td>• Anticipated Third Party Equity Ownership</td>
</tr>
<tr>
<td></td>
<td>• Assumed Prenegotiated Electric Power Purchase Agreement</td>
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<tr>
<td>1980</td>
<td>Electric Power Purchase Agreement Renegotiated</td>
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<tr>
<td></td>
<td>Financing and Ownership Changes</td>
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<tr>
<td></td>
<td>• UOP Ownership Required</td>
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<tr>
<td></td>
<td>• Project Economics Restructured</td>
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<tr>
<td>1981</td>
<td>Construction Agreement Negotiated</td>
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<td></td>
<td>Service Agreement Available, April</td>
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<tr>
<td></td>
<td>&quot;Marketing&quot; to Sign Up Contract Communities and Private Haulers</td>
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<tr>
<td>1982</td>
<td>Agreement (Service and Construction) Amendments and Other Changes</td>
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<tr>
<td></td>
<td>• Additional Contractor Risk Assumption (pay off bonds at less than 100 percent performance)</td>
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<tr>
<td></td>
<td>• Service Fee Reduction Obligation by Contractor (for shortfall in tonnage)</td>
</tr>
<tr>
<td></td>
<td>• Indemnification to Reflect the 1982 Tax Law (reduced depreciation benefits)</td>
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<tr>
<td></td>
<td>• Unfavorable IRS Ruling</td>
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<tr>
<td></td>
<td>• Contractor to Purchase Additional Bonds to Reduce Early Year Tipping Fees</td>
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<tr>
<td></td>
<td>• Indemnification by Contractor of Tonnage Commitments for Certain Communities</td>
</tr>
<tr>
<td>1983</td>
<td>Bond Closing, April</td>
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<tr>
<td></td>
<td>Construction Commencement, May</td>
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</tbody>
</table>

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However, the state officials and their consultants recognized the enormous difficulty of implementing a regional resource recovery project in this political/institutional setting and, in fact, serious questions were raised as to whether this was doable at all without additional state powers. It was decided, nevertheless, to proceed with this “experiment” – other approaches were considered politically unacceptable at the time, and might be possible, if at all, only if such an experiment were tried and failed.

Following site nominations from several communities, a proposed facility site in the City of Haverhill (adjacent to North Andover) was selected. A competitively negotiated procurement process followed in which 20 firms were prequalified and issued a Request for Proposal (RFP). This RFP was, to the best of our knowledge, the first in the Country to specify a full-service contractor concept with revenue sharing. From six proposals received, the UOP proposal was selected based on price and technology, among other criteria. In addition to NESWC members, staff, and their technical consultants, various state and federal air, water, and solid waste regulatory officials participated in both the siting and contractor evaluation processes.

An environmental impact report was prepared, as required by Massachusetts law, and the negotiation of project contracts was well underway when the host community rejected the project by a local referendum. Actually, this had been preceded by a series of city council actions which supported the site, then voted it down, then reversed the vote. The other participating communities initiated a second site nomination and selection process. At the same time negotiations with the contractor were suspended indefinitely.

In 1977 North Andover was selected as the new host community from sites nominated in six communities. A key factor in the selection was a near unanimous vote for the site by the town’s 400 or so member town meeting. A second environmental impact report was prepared and approved, and by this time contract negotiations had resumed. The financing envisioned at this stage was based on a leveraged lease with third party equity ownership. On separate fronts, the contractor sought to finalize the agreement for electric power sales on the basis of discussions held earlier in the project, and to work out the details of the financing arrangement. Major difficulties were experienced in both of these efforts, leading to further delays.

An important point here is that project delays seem to have a ripple effect that can result in renegotiation or modification of anything from the system design to the financing to the various contract terms and conditions. In this case, for example:

- The increasing activity (in 1980 vs 1976) in the development of competing resource recovery projects in the area was a key factor in the decision to scale down the size of the NESWC facility from 3,000 TPD to 1,500 TPD. (The RFP had requested alternate proposals for 1,000 TPD, 1,700 TPD, and 3,000 TPD, and the largest size was chosen based on the economics indicated in these proposals – again, despite the political problem of signing up a large number of communities).

- The position of the selected contractor in the resource recovery industry nationwide had matured, and its business requirements had evolved. This affected its risk posture in the project contracts, its view of the way the ownership and financing needed to be structured for its participation, and its (legitimate) renegotiation of price due to the significant changes in circumstances. The NESWC proposal had been its first such offer and entry into the resource recovery market.

A package containing the service agreement, energy agreement, and other informational materials was available to community decision-makers in April 1981. It took two full years and literally hundreds of meetings with municipal officials, boards, study committees, town counsels, and Town Meetings to secure the tonnage commitments required for financing. As indicated in Table 1, a number of Project changes occurred during this period which required financial structure modification and/or contract modifications.

Major changes in the agreements required ratification by each contract community through either a city council vote or a Town Meeting action. Indicative of the types of problems encountered in seeking such ratification are lack of a quorum at a specially called Town Meeting, and the opening up of the political decision process in certain communities to active consideration of alternative disposal options. Nonetheless, after several false starts in finalizing the financing package, bond closing finally occurred on April 27, 1983, and construction commenced 30 days later.

**CONCLUSION**

Salient features of the project worth highlighting are, in brief:

- A voluntary association of communities “sponsoring” a major resource recovery project
- The community “deep pocket” as security for the financing; and, in return, the significant revenue sharing features
- Construction and operating and maintenance cost, construction schedule, and performance guarantees by the contractor; with the contractor assuming the risk for events within its control
- A contract containing economic incentive provisions
to address intercommunity concerns, encourage realistic tonnage commitments, and promote efficient refuse delivery schedules; uniform long-term contract for all communities

- simplified transportation cost sharing mechanism which establishes some measure of equity between communities near and more distant from the facility site, yet retains local control over the means of transportation
- 100 percent debt financing, with a combination of privately-placed taxable bonds and tax-exempt industrial (solid waste) revenue bonds, a credit against community fees paid by the operator as an indirect reflection of tax benefits, and a separate series of stabilization bonds purchased in the early years of the project by the contractor
- royalty in lieu of property taxes to the host community
- commonwealth role as a catalyst, providing landfill, site, and technical support to communities

If the lesson of the NESWC financing is that excessive project complexity exponentially increases the difficulty of achieving a financing, participants in other resource recovery projects may justifiably be concerned. Except the few municipalities which intend to take all risk elements in a project, all resource recovery projects are complicated, creating financing difficulties. However, the NESWC Project represents a degree of complication which can be avoided in other projects. Unnecessary and complicating elements which should be avoided in future transactions include:

1. independent negotiation with a large number of unrelated solid waste suppliers;
2. creation of a disposal contract which may not be changed for any reason except by unanimous agreement by each community government; and
3. a tax structure which requires excessive reliance upon opinions from tax lawyers and the Internal Revenue Service.

While the example of NESWC should lead to simpler project structures in the future, the human tendency to underestimate long-term difficulties caused by short-term project objectives will continue to plague many resource recovery projects.

Key Words: Bonding • Financial • Full Service • Institution • Municipality • Planning