

# LEGISLATIVE CONSIDERATIONS IN FINANCING OF RESOURCE RECOVERY PROJECTS

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## INTRODUCTION

Resource recovery projects can be financed in a variety of ways. The project can be totally owned by a municipality and financed through either general obligation bonds or tax-exempt revenue bonds. At the opposite end of the spectrum, a project could be entirely owned by a private entity and financed solely from that sponsor's equity. Between the two extremes, the combination of equity and debt (taxable and/or tax-exempt) utilized is largely dependent upon ownership of the facility. Other factors, such as production of electricity or steam, sponsor's creditworthiness, project economics and sponsor's preference in financing, may also enter into the financing analysis.

Due to the size of the typical resource recovery project, many of these projects are financed as non-recourse or limited-recourse project financings. In such financings, the cash flow and net worth of project sponsors are not pledged to the repayment of debt and, consequently, the economic success of the project is dependent solely upon revenues generated by the project to repay debt.

As of September 1985, tax-exempt Industrial Development Bond ("IDB") financing was available for the debt portion of resource recovery projects pursuant to Section 103(b)(4)(E) of the Internal Revenue Code. However, the Internal Revenue Service ("IRS") has

held that in order for the solid waste IDB tax exemption to apply, the solid waste must be "valueless." Consequently, tax-exempt financing is available for facilities needed to dispose of solid waste up to the point where a useful or valuable product is produced. Generally speaking, this is the point that steam is produced in a solid waste boiler. Typically, the exit valve of a boiler is the point at which tax-exempt qualification ends. Equipment, facilities and land associated with the utilization of the steam (i.e., heat distribution systems or electric generating equipment) do not normally qualify under the solid waste IDB tax exemption.

As a result, the typical resource recovery project is financed with both tax-exempt and taxable debt or equity. On a typical project about 80% of the facility cost can be funded using tax-exempt debt. However, where the user of the "back half" of the project, i.e., the energy user, is also a tax-exempt entity, tax-exempt debt may be used to finance the entire facility, since both "halves" of the project are qualified for tax-exempt debt. Typical tax-exempt users of energy include, among others, municipal electric systems, waste water treatment facilities, municipal district heating and cooling systems and local or state institutions.

Since the greater portion of financing for a resource recovery project is typically debt, the interest rates for such debt directly affect the economic viability of the project. Because interest rates for taxable debt are

typically 200–300 basis points (2–3%) higher than interest rates for tax-exempt debt, the inability to use tax-exempt debt in a resource recovery project financing can severely impact the viability of the project. The spread between taxable and tax-exempt interest rates can add as much as \$21/ton to the tip fees of a typical waste to energy plant. Other tax law factors, such as availability of tax benefits, immediate accessibility to tax-exempt IDB volume cap allocation (see below) and IRS treatment of municipal leases can also impact a project's ability to progress on an expeditious schedule.

Consequently, municipal and private sponsors of resource recovery projects must maintain continuous surveillance of tax law changes and assess the impact that those changes might have on their project.

### CHANGES IN TAX LAW IN 1984

The availability of tax-exempt financing was detrimentally affected by the enactment of the Deficit Reduction Act of 1984 (the "1984 Act"). Pursuant to the 1984 Act, all private activity IDBs, including resource recovery financings, are subject to state volume cap limitations. The state volume cap limitation for any given year is predicated on \$150 per capita or 200 million dollars, whichever is greater. After 1986 the per capita allowance decreases to \$100. This volume cap, absent state legislation to the contrary, is further allocated equally between state level and county and municipal level governments based upon population. Accordingly, the ability of any one county or municipality to issue sufficient tax-exempt IDB financing in any given year for a capital intensive resource recovery financing becomes a source of great concern. This concern is somewhat alleviated by the ability of project sponsors to seek allocation of state-level volume cap and by the ability to have certain projects designated to use the carry forward of unused volume cap allocation for up to 3 years. Carry forward allocations are derived from unused state volume cap and are determined pursuant to state law, consistent with the relevant sections of the 1984 Act.

The second major change affecting resource recovery financings was the disallowance of arbitrage (the ability to reinvest proceeds from bond issues at rates higher than the rate on the bonds) during the so-called "temporary period" (generally speaking, the construction period). As a result of this change, revenue from reinvestment of unspent bond proceeds in the construction and capitalized interest accounts at yields higher than the bonds cannot be used to lower the principal amount of the bonds. The elimination of arbitrage therefore

increases the size of the bond issue, which results in higher debt service for the project.

A third tax law change in 1984 was the loss of Accelerated Cost Recovery System ("ACRS") depreciation over appropriate ACRS periods. ACRS depreciation permitted project sponsors to accelerate the depreciation of capital assets thereby capturing more tax benefits earlier in the life of a project. However, the effect of that loss was probably not significant to resource recovery facilities since straight line depreciation over appropriate ACRS periods, which still resulted in relatively fast depreciation of an asset, continued to be allowed.

### CURRENT PROPOSALS TO CHANGE THE TAX LAW (AS OF DECEMBER 1985)

#### President's Proposal

The Administration's proposed changes to the tax laws (the "President's Proposal") will have significant impact on both the manner in which resource recovery projects are financed and the ultimate cost to the user of such facilities. The following proposals are contained in the President's Proposal:

- (a) elimination of tax-exempt private activity industrial development bonds;
- (b) elimination of the 10% investment tax credit ("ITC");
- (c) replacement of Accelerated Cost Recovery System periods with the so-called Capital Cost Recovery System ("CCRS");
- (d) change in the maximum corporate tax rate; and
- (e) loss of interest deductions by commercial banks purchasing tax-exempt securities.

#### Loss of Tax-Exempt Bond Financing

The effect of the President's Proposal must be examined from two perspectives. The first perspective is that of a private sponsor. In this case, the private sponsor "leverages" his equity with tax-exempt debt in financing the project. In doing so, the private sponsor can be compared to homeowners who "leverage" their downpayment (equity) with a mortgage (debt). If the private owner/operator is denied tax-exempt bond financing, the cost of services may have to increase by as much as \$4–\$7/ton for each percentage increase in interest rate, depending upon such factors as project size, debt/equity ratios and the spread between the rates for tax-exempt securities and comparable taxable securities. The private owner/operator would be expected to continue to look toward the sponsoring municipality to raise debt. Investment banks are currently

attempting to examine the taxable industrial development bond market compared to the present taxable debt markets. Because taxable markets currently deal with shorter term securities than those normally issued for resource recovery projects in the tax-exempt market (10 years versus 25 years), significant changes in sponsor expectations of return may be required.

The second perspective is that of a municipality wishing to own its resource recovery project. Excluding for the moment the ramifications of the municipal leasing rules as they apply to operator contracts, the simple act of municipally-owning the facility will not insulate the project from the proposed changes in the President's Proposal. The reason for this is found in current Internal Revenue Service ("IRS") policies relating to "underlying arrangements". Under these policies, the IRS treats any financing in which more than 25% of the revenues are derived from "private users" as a private activity IDB. A "private user" is defined as one whose payments of the project are greater than 3% of that project's annual average debt service. The policies regarding underlying arrangements are applicable irrespective of the original nature of the financing. Therefore, if a municipality used general obligation debt to finance the resource recovery project but sold the energy from the project to private users in excess of the 25% limit, the financing would be held to be a private activity IDB and under the proposed law would be taxable. A typical energy purchaser would be the local investor-owned electric utility buying power pursuant to the Public Utilities Regulatory Policies Act of 1978 ("PURPA"). The President's Proposal would change the 25% rule to a one per cent rule. It remains silent as to what constitutes a "private user". The only situation wherein the underlying arrangement would not be a factor is one where the energy user is itself a tax-exempt entity.

#### **Loss of Investment Tax Credit and ACRS Depreciation Periods, Changes in Maximum Corporate Tax Rate and Loss of Interest Rate Deductions**

These proposed changes can be discussed together only as they affect the privately sponsored project. Under the present law a private owner/operator can use both ITC and depreciation over appropriate ACRS periods as deductions for tax income purposes. In fact, the use of both ITC and ACRS depreciation periods results in substantial tax savings, thereby making project economics much more favorable. These savings are passed on to the municipality in the form of reduced tip fees. Although the Act eliminated ACRS depreciation, it still permits straight line depreciation over the appropriate ACRS period. The President's Pro-

posal would eliminate the use of ACRS periods and would replace them with CCRS rules, thereby stretching out the period over which depreciation must be taken. Industry studies suggest that the loss of both ITC and ACRS periods may result in increases in the tip fee of as much as \$6-\$8/ton.

Changes in the maximum corporate tax rate can also affect the value of ITC and depreciation deductions. Other changes are proposed such as losses in interest deductions by commercial banks purchasing tax-exempt issues. As a result of interest deduction losses, banks, who are a major purchaser of tax-exempt securities may demand a higher coupon rate of securities purchased. Therefore, these proposed changes must also be examined from the standpoint of how they might affect resource recovery projects. Industry studies suggest that these changes may result in another increase in tip fees of \$8/ton.

The need for resource recovery projects is driven by factors other than tax benefits. While it is clear that tax advantages encourage private industry to sponsor such projects, factors such as environmental regulations and groundwater problems create the need for such projects. The overwhelming impact of the President's Proposal will be to make the projects cost significantly more expensive. A typical resource recovery project today might cost about \$25-\$35/ton in tip fees. If all of the changes included in the President's Proposal were enacted, the same project may cost \$50-\$60/ton or more in tip fees. Since most resource recovery projects are cost sensitive, the immediate effect of the President's Proposal may be delays in project implementation as project sponsors re-educate the public as to the necessity of the project, despite the higher costs.

#### **Ways and Means Committee Staff Report**

On September 26, 1985, the House Ways and Means Staff issued its report on tax reform ("Staff Report"). Many of the provisions contained in the Staff Report were similar to the President's Proposal; the discussion contained herein addresses only the differences and how those differing provisions can affect resource recovery financings. The following changes are contained in the Staff Report:

- (a) elimination of tax-exempt IDB's for privately owned resource recovery projects;
- (b) provision for tax-exempt financing of resource recovery projects that are municipally owned and where no private person benefits more than 5% of the project cost or 5 million dollars, whichever is less;

(c) if a municipally owned resource recovery project benefits any private person by more than 5% or 5 million dollars, then any municipal security issued for that project would be subject to an alternative minimum tax of 25% on any interest paid thereon;

(d) elimination of ITC;

(e) change the ACRS periods;

(f) change the maximum corporate tax rate; and

(g) loss of interest deductions by commercial banks purchasing tax-exempt bonds.

### House Ways and Means Committee Proposal

On October 25, 1985, the Committee on Ways and Means, U.S. House of Representatives took action on certain aspects of the tax reform act. ("Ways and Means Proposal"). The actions concerning tax-exempt bonds were described in a press release issued October 30, 1985. The Ways and Means Proposal was completed in mid-December 1985 and is awaiting action by the U.S. House of Representatives. In terms of tax-exempt bonds, the Ways and Means Proposal is the most liberal of the three proposals, (the President's Proposal, the Staff Proposal, and the Ways and Means Proposal) currently being considered. Despite its relatively favorable position on the use of tax-exempt bonds for resource recovery projects, the Ways and Means Proposal is expected ultimately to continue to propose the elimination of ITC and extension of ACRS periods. The following are proposed in the Ways and Means Proposal:

(a) There shall be preservation of tax-exempt financing for resource recovery projects in which private users do not benefit more than 10% of the facility cost or \$10 million dollars, whichever is less

(b) Tax-exempt IDB's would be available for resource recovery projects exceeding the 10% or 10 million dollar rule, whether municipally or privately owned. These bonds would also be subject to the 25% alternative minimum tax described earlier.

(c) Tax-exempt IDB's issued for resource recovery projects would be subject each year to a volume cap of \$75 per capita in each state, except where the state receives the alternative cap allocation of \$200 million. Resource recovery projects must compete with other projects for this cap. (The \$175 per capita cap in the Ways and Means Proposal only permits \$75 per capita for IDB's.)

(d) Eliminate the ITC.

(e) Extend the ACRS depreciation periods.

(f) Change the maximum corporate tax rate.

(g) There will be a loss of interest deductions by commercial banks purchasing tax-exempt securities.

(h) There will be an elimination of the insubstantial portion (10% rule) which heretofore permitted the inclusion of some nonqualifying costs in determining bond size.

### Comparison of the Various Proposals

The Staff Proposal is more liberal than the President's Proposal, but only in minor ways. The Ways and Means Proposal is the most liberal of all as far as tax-exempt debt is concerned. The President's Proposal would eliminate projects that are wholly municipally owned but who sell their energy to private users (such as investor owned utilities) where the benefit to those users exceeds one per cent.

The Staff Proposal extends the one per cent rule in the President's Proposal to a 5% or 5 million dollar rule. In addition, the Staff Proposal would permit the issuance of municipal securities for projects exceeding the rule that less than 5% or 5 million dollars can benefit private parties, but interest on those securities would be subject to a 25% tax.

The Ways and Means Proposal changes the one per cent rule in the President's Proposal to a 10% or 10 million dollar rule. The alternative minimum tax would apply to the interest earned on such bonds, however. More importantly, the Ways and Means Proposal would continue to permit the use of tax-exempt IDB financing for all resource recovery projects subject to a state volume cap limitation.

All three proposals would eliminate ITC. Little hope is left that this very important incentive will survive.

The Staff Proposal would also extend the ACRS period for most resource recovery property from 5 years to 7 years, with straight line depreciation. Although the Ways and Means Committee has yet to act, it is generally assumed that the Committee will further lengthen the ACRS periods beyond that proposed in the Staff Proposal, perhaps as long as 11 years (Class IV property).

Both the Staff Proposal and the Ways and Means Proposal contain a "grandfathering" clause. This clause states that projects for which an executed contract for more than 10% of the facility cost existed prior to September 26, 1985 would not be subject to an effective date of December 31, 1985.

### PLANNING FOR LEGISLATIVE CHANGE

The complexity normally encountered in resource recovery financings is exacerbated by proposed changes in tax laws, as was witnessed in the past two years.



Project sponsors should examine all tax law proposals or changes and plan in advance of their enactment in order to finance the project in the most advantageous manner. For example, in the late fall and early winter of 1984, more than 3.4 billion dollars in tax-exempt debt was issued by various municipalities to be held in escrow for resource recovery projects to be developed in the near future. Normally debt is not issued until a project is ready to start construction. However, because of the tax law changes then anticipated to take place at the end of 1984, project sponsors issued tax-exempt debt substantially before the start of construction as a means of grandfathering their projects from being subject to new tax laws. This is an example of how issuers planned for tax law changes.

Resource recovery project proponents have essentially three options when faced with changing tax law: expedite the project schedule, find municipal owners and energy purchasers, or close the resource recovery facility financing in escrow, i.e., finance the project before the money is actually needed.

#### **Expedite Schedule**

Ideally, the preferred option for dealing with proposed tax law changes would be to expedite the project schedule and commence construction. This option, however, may not be feasible given factors such as permitting and environmental review of the project.

#### **Municipal Energy Purchasers**

This option is only available if the project owner is a municipality. Recalling the discussion in the introduction of this paper about the "front half" versus the "back half" of a facility, a municipal owner of a resource recovery facility, selling the energy generated from the facility to a municipal user, can finance the entire project using tax-exempt debt, even under the proposed tax law changes (September 1985) because the tax-exempt bonds would not be considered IDBs.

This option requires the municipal owner to find a municipal energy user, such as a municipal utility, public power agency, waste water treatment plant, public facility or municipally owned district heating and/or cooling system. Curiously, sale of energy generated by a resource recovery facility to a federal user, such as a Navy shipyard, does not qualify as sale to a tax-exempt user under current IRS rules.

When using this option, municipal users must be cognizant of the so-called "municipal leasing" rules promulgated under the 1984 Tax Act. Pursuant to these rules, a municipality may not enter into a long term operating contract with a private operator, or the operating contract may be construed as a municipal lease. Such a determination could render the debt is-

sued for the project taxable. Current wisdom states that the operating contract be terminable on a yearly basis to avoid this problem.

#### **Closing in Escrow**

The third method of protecting a resource recovery project from tax law changes is to close in escrow in anticipation of a start of construction after the implementation of tax law changes. Closings in escrow are more fully discussed in the following section.

### **ESCROW CLOSINGS**

An escrow financing, also known as an escrow closing, is an interim financing method in which the net proceeds of a tax-exempt bond issue are reinvested in high credit quality taxable or tax-exempt securities and placed in an "escrow" account. The escrow period will be for a predetermined maximum time period, and specific conditions must be met in order to break the escrow and release the invested securities.

#### **Why Escrow Closings are Used**

Escrow closings of municipal issues have been employed in the past to enable issuers to qualify facilities for tax-exempt financing prior to the effective dates of tax law changes. Escrow closings are increasingly common in long lead time projects involving private purpose tax-exempt financing (e.g., solid waste and pollution control projects) where final negotiations of various contracts and arrangements for permanent financing cannot be completed prior to the effective date of tax law changes. Contracts and permanent financing arrangements are generally finalized during the escrow period.

#### **Procedure for Escrow Closings**

Tax-exempt bonds are issued and the net proceeds of the bonds will be held in escrow for a predetermined period of time (the "Escrow Period"), at or before the expiration of which it is anticipated that all conditions necessary to establish satisfactory credit support for the permanent financing of the project (the "Conditions") will have been satisfied. The duration of the Escrow Period will be determined by factors such as the status of the project at the time of the closing of the interim financing and the time period anticipated to be required to develop and negotiate the contractual arrangements required to support the permanent financing. Periodic payments from the escrow fund will be made in order to satisfy interest payments and other obligations on the bonds, such as annual trustee fees, liquidity support fees and remarketing fees, during the Escrow Period.

The net proceeds of the bond issue will be reinvested in high credit quality taxable or tax-exempt securities. The yield on the escrowed securities will, for all practical purposes, be limited to the yield on the bonds by provisions in the 1984 Deficit Reduction Act. These provisions effectively preclude any arbitrage earnings on the proceeds of Industrial Development Bonds.

The escrowed securities and interest thereon will be pledged as security for the bond issue during the Escrow Period. An additional source of funds must be available to provide for debt service payments in the event that the escrowed securities and/or the investment earnings thereon are insufficient. Moreover, if the Conditions to break escrow are not met by the conclusion of the Escrow Period, the bonds must be redeemed. An alternative source of funds must be pledged to provide for the redemption of the "non-asset" bonds, e.g., the bonds for which the proceeds were not escrowed but rather were used to pay direct issuance expenses and financing costs. The issuer of the bonds or the project user (hereinafter, the "Municipality") will ultimately be responsible for funding any debt service payment shortfalls and redemption of non-asset bonds. For a solid waste project involving a solid waste vendor who will construct, own and operate the project, it may be possible for the Municipality to negotiate a sharing of the non-asset bond risk. In the worst case, however, the Municipality should expect to be responsible for the full amount of the non-asset bonds.

Depending upon the Municipality's preference and/or creditworthiness, it may be desirable or necessary to secure credit enhancement for the bonds. The merits and/or necessity of credit enhancement must be examined on a case by case basis for each transaction. Credit enhancement will ensure an investment grade rating on the bonds and typically takes the form of either a municipal bond insurance policy or a commercial bank letter of credit. Typically speaking, letters of credit can cost between 0.5% and 1.0% (or more) of the outstanding principal owing on the bonds per year and bond insurance can cost 1 or more percent of the total principal and interest payments on a one-time basis. The Municipality will be obligated to reimburse any funds advanced by the provider of credit enhancement.

At the expiration of the Escrow Period, the net proceeds of the bonds will be released to pay the costs of construction of the project if the Conditions have been satisfied. A minimum credit rating on the bonds will be established as one of the Conditions. Even if credit enhancement is not required during the Escrow Period, it is quite likely to be necessary when the

escrow breaks and the bonds are no longer collateralized by the escrowed securities. The provider of credit support will require satisfactory long-term contractual arrangements for the project and the economic and technological viability of the project. If credit enhancement is used during the Escrow Period, the provider of such credit enhancement may continue to provide credit enhancement for the permanent financing. However, the credit enhancement provider will demand the right to reevaluate its commitment based upon the ultimate project credit structure.

#### **Requirements for an Escrow Financing**

The unqualified tax opinion of nationally recognized bond counsel will be necessary to ensure the successful marketing of the bonds. Although the specific requirements for such an opinion may vary for each bond counsel firm, the general "test" requirement will be a substantial commitment on the part of the borrower to proceed with the underlying project. Substantial commitment may be measured by: (a) the degree of financial involvement in the project (completed feasibility studies, site acquisition, etc.); (b) the execution of the underlying contracts for the project (service agreement, energy sales contract, solid waste contract, construction agreement, etc.); and (c) the status of required approvals and permits (environmental permits, regulatory rate setting approvals if necessary, etc.).

Escrow closings may be more difficult since the Internal Revenue Service (the "IRS") issued a Revenue Procedure effective May 6, 1985 stating that it will not rule whether interest on state and local government obligations is excludable from gross income under applicable IRS regulations if proceeds are placed in escrow or otherwise not expended for an extended period of time. This Revenue Procedure was issued under a previous Revenue Procedure which set forth areas in which advance rules or determination letters will not ordinarily be issued by the IRS. The municipal bond community feels the IRS issued these Revenue Procedures in response to the large number of escrow closings which occurred at the end of 1984. Many of these transactions were viewed as abusive because there was not a substantial commitment on the part of the Municipality to proceed with the underlying project. Obviously, the more concrete the project, the easier the escrow financing will be. The lowest risk approach to an escrow closing would be to provide for termination of the project on a future date if certain conditions are not met that are beyond the control of the issuer, such as obtaining environmental permits. For most solid waste/resource recovery projects, an

executed service agreement with a solid waste vendor should be viewed as the minimum requirement for an escrow closing. The Municipality should also make sure all procedures necessary to qualify or "grandfather" the project under current tax laws are completed with the escrow closing.

#### **Requirements for Breaking Escrow**

In order to break escrow, the project must be economically and technically feasible. All long-term contractual arrangements and permits and approvals for the project must be in place. Sufficient funds must be available to complete construction and pay interest on the bonds and other bond obligations, such as annual trustee fees, remarketing fees and liquidity support fees, during construction. Bond counsel will most likely be required to render an opinion that the breaking of the escrow will not jeopardize the tax-exempt status of the bonds. An investment grade rating for the bonds will be required which may entail the use of credit enhancement, either municipal bond insurance or a letter of credit from a commercial bank. In addition, conditions specific to each transaction will have to be met.

#### **Risks Involved in an Escrow Financing**

As mentioned earlier, the Municipality will be obligated during the Escrow Period to provide for any debt service payment shortage due to insufficient investment income or investment security principal shortfalls. In addition, if the Conditions to break escrow are not met by the conclusion of the Escrow Period, the bonds must be redeemed and the Municipality will be responsible for funding the redemption of the non-asset bonds. The direct issuance expenses and financing costs which give rise to non-asset bonds are discussed in further detail later in this paper. It should be noted that prior to the effective date of the 1984 Deficit Reduction Act, arbitrage earnings on the escrowed securities were available to offset non-asset bonds. Due to the elimination of arbitrage earnings, the Municipality will be required to pledge an alternative source of revenues to cover the redemption of non-asset bonds in the event the Conditions to break escrow are not met. Due to the existence of non-asset bonds and investment yield restrictions on the escrowed securities, there is, in effect, negative arbitrage during the Escrow Period, i.e., more bonds bear interest than escrowed securities earn interest. This has a compounding effect on the non-asset bonds, and, as a result, the amount of non-asset bonds will increase each year during the Escrow Period.

Other risks of an escrow financing include the following:

#### **Insufficient Bond Proceeds**

Escrow financings should be carefully sized to provide the maximum funds expected to be required. However, unforeseen circumstances may occur which result in an increased construction price. If insufficient funds are available for construction, additional sources of funds, such as additional bonds, private equity contributions or transfers from the Municipality's general fund, will be necessary. Events subsequent to the escrow closing, such as tax law changes, may radically affect the availability and cost of such additional funds. In turn, the economics of the project may be dramatically affected. Overissuance of bonds at the escrow closing should not present a problem as excess funds can be used to redeem bonds at the breaking of the escrow. For this reason, even if private sources of funds are anticipated, tax-exempt bonds are typically issued for the entire qualifying costs of the project. Any private equity contributions are used to redeem bonds at the escrow breaking.

#### **Remarketing Risk**

The Municipality is subject to remarketing risk if long-term fixed rate bonds are issued at the escrow closing with the expectation of a secondary public offering of the fixed rate bonds at the breaking of the escrow. A secondary offering of the bonds would typically occur if the bonds were privately placed with investors at the escrow closing. A secondary offering at the escrow closing may also be necessary for other reasons, such as a change in the underlying security to the bondholders. This remarketing risk would be realized if market interest rates at the breaking of the escrow were higher than the fixed interest rates borne by the bonds. The bonds would need to be reoffered to the public at a discount from par value, resulting in a shortfall of proceeds to the original bondholder, who would expect to be made whole by the Municipality.

#### **Floating Rate Investment Risk**

If floating rate bonds are issued for an escrow financing, care must be taken to match the maturity of the investment securities to the interest rate adjustment period in order to avoid investment income shortfalls due to rising bond interest rates. This problem may be overcome through the use of a floating rate investment agreement with a commercial bank or investment banking firm.

#### **Investment Security Credit Risk**

To minimize the risk of a default on an investment security, bond proceeds are typically invested in the highest credit quality securities.

### **Loss of Flexibility**

Depending upon the degree of specificity required to complete the escrow financing, the Municipality may subsequently be constrained from making major changes to the project. For example, for a solid waste/resource recovery project, bond counsel may require an executed service agreement between the Municipality and the owner/operator of the project. This may preclude changes in project technology, size, location, etc.

### **Legislative Risks**

If the escrow financing is being completed to avoid tax law changes, it should be carefully structured to avoid all unnecessary legislative risks. For example, a new bond issue should not be required at the breaking of the escrow. Floating rate bond issues should be structured to minimize "reissuance" concerns.

### **Expenses Associated With Escrow Closings**

As with any type of financing, expenses associated with the issuance of bonds will be incurred. Although expense projections for a particular transaction must be prepared on an individual basis, the financing expenses can be divided into two categories: direct expenses, which are paid directly by the issuer from net bond proceeds, and the underwriter's discount, which is deducted from the gross bond proceeds. Both types of expenses will vary from transaction to transaction depending upon the complexity of the issue and the issue size. Exhibit A provides a list of typical direct expense items.

As shown in Exhibit B, the Underwriter's discount, or "gross spread," is comprised of four components: the management fee, underwriting fee, takedown and concession, and expenses. It is typically determined when the bond issue is sold, and will vary according to the complexity of the transaction, issue size and debt structure employed. The selling component (takedown and concession fees) of the gross spread will increase as the maturity of the debt instrument or repricing period for variable rate debt is lengthened. The gross spread will also increase for lower credit rated bonds.

Depending upon the individual transaction, it may be possible to escrow a portion of the underwriting fees until the successful breaking of the escrow. At that time, the escrowed fees would be paid to the underwriter. For example, it may be possible to privately place the bonds during the Escrow Period, reducing the takedown and concession fees paid at the escrow closing. Additional takedown and concession fees for a public offering would be escrowed until the

successful breaking of the escrow. At that time, the bonds would be reoffered to the public and the escrowed takedown and concession fees paid to the underwriters. While this example would result in greater fees than those in a non-escrow financing, the issuer of the bonds will have incurred less expense if the project fails and the bonds are redeemed rather than reoffered to the public.

An escrow financing is more expensive than a non-escrow financing because additional direct issuance expenses and financing expenses, such as counsel fees and selling expenses, may be incurred at a successful escrow breaking. These expenses may be capitalized from the escrow bond proceeds to ensure the availability of tax-exempt monies. The capitalization of: (a) expenses associated with escrow breaking; and (b) interest during the Escrow Period results in a larger bond issue size and hence higher debt service payments vis-a-vis a non-escrow bond issue. In addition, because escrow financings are typically used to qualify projects with long lead times for tax-exempt financing, an escrow closing usually results in an acceleration of the project schedule. There may be some expenses associated with an accelerated schedule which would otherwise not occur. However, most of the expenses incurred on the accelerated schedule would be incurred at a later date on the "normal" project schedule. The Municipality should compare the project costs under an escrow financing with current tax law application to the project costs under a non-escrow financing which occurs subsequent to tax law changes in order to determine the relative advantage of completing an escrow financing. Given the unusual nature of escrow closings and the breaking of such escrows, it is difficult to assign a relative cost differential between escrowed and non-escrowed projects. Each project is cost specific.

## **EXHIBIT A**

### **Estimated Direct Issuance Expenses**

- Consulting Engineer Feasibility Report
- Bond Counsel
- Bond Counsel Expenses
- Issuer Expenses (if not City)
- Issuer Counsel Expenses
- Special Antitrust or Tax Counsel<sup>1</sup>
- Printing—Preliminary and Final Official Statement
- Bond Engraving

<sup>1</sup> If applicable.



Rating Agencies (S&P and Moody's)  
 Bond Trustee (including Counsel Fees)  
 Independent Accountants  
 City Expenses  
     Counsel  
     Accountants<sup>1</sup>  
     Out-of-Pocket Expenses  
 Blue Sky/Legality Memorandums  
 Miscellaneous  
 Bond Insurance Premium<sup>1</sup>  
 Liquidity Facility Commitment Fees<sup>1</sup>

**EXHIBIT B**

**Components of Underwriter's Discount**

Management Fee  
 Underwriting Fee  
 Takedown and Concession  
 Underwriter's Expenses:  
     Underwriter's Counsel (unless paid separately by  
         City)  
     Computer  
     Clearance  
     MSRB/PSA fees  
     Printing of financing documents  
     Advertising  
     Syndicate  
     Federal Funds Loan  
     Communication & Postage  
     Direct Expenses  
     Miscellaneous

**ABSTRACT**

The paper reviews the state of the art of processing equipment for biomass recovery processing and related peripheral topics involved in process design. The peripheral issues include the use of waste characterization data during the early stages of process design, pollution and characterization of recovered materials and energy flows (e.g., BLM), health and safety problems, and potential environmental consequences of finished processing of waste prior to its introduction in thermal conversion facilities.

**INTRODUCTION**

The past decade and a half of solid waste management practice has witnessed a marked proliferation of systems, each of which was firmly believed by its initial proponents to being not only the solution to the solid waste management problem, but also in providing in part to alleviate a perceived energy shortage. The proliferation was characterized by a widespread, legitimate perception that available resources associated with the waste up to the various from laboratory through pilot to field scale. The situation usually stemmed not only from isolated observations of single systems, but also from the suggestion associated with them and their applications.

Around the world, among the more successful (or recently) systems have been direct combustion and gasification. Among the less successful have been the pyrolysis and thermal gasification, and among the least successful, gasification of the catalytic fraction for vitreous production. Likewise, the refinery-waste package has evolved with direct combustion and gasification. An interesting point about most of these systems is that when operational and refurbished in the past decade and a half, they were offered as novel systems, whereas in reality they can be traced, when in more developed form, to the 1930's and early 1960's (e.g., vitreous, thermal gasification, bi-gasification, waste and electrical generation).

With the exception of incineration and one or two other systems, all of the systems are designed to deal with processed municipal waste. Each may upon a final stock prepared by processing raw MRF, such that it acquires properties and characteristics that are compatible with the operation of the subsequent conversion system. Appropriately, this processing has taken on the designation "pre-treatment," and its function is to prepare and beneficiate the raw waste for treatment and conversion by an system of choice. Descriptions, logically and spatially, the systems of choice come after pre-treatment. It is termed "back-end system." In short, with the above-mentioned exceptions, all modern recovery technologies generally involve a pre-treatment