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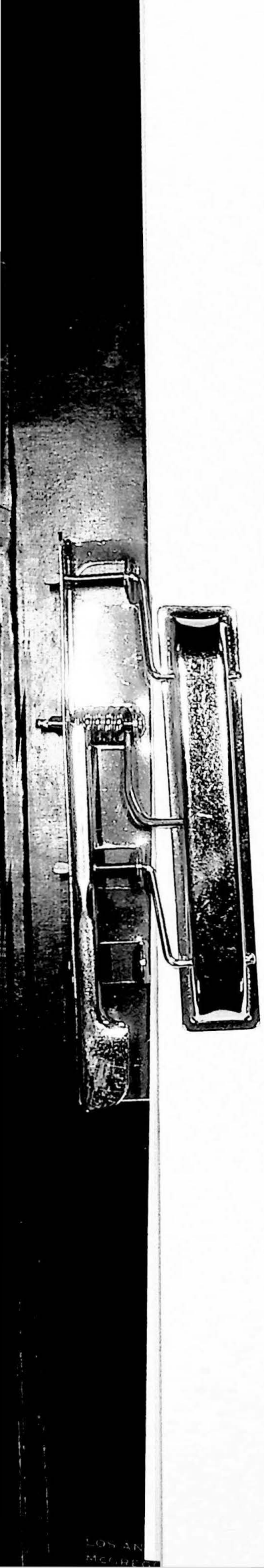

# A COMPARATIVE ANALYSIS OF FINANCING EQUIPMENT ACQUISITIONS BY MUNICIPAL GOVERNMENTS

by

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This Independent Study, submitted by Vernon A. Raile in ═rtial fulfillment of the requirements for the degree of Master Business Administration from the University of North Dakota, ═ hereby approved by the Faculty Advisor under whom the work has ⊖en done.

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(advisor)

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# INTRODUCTION

## Current Financing Problems of Local Governments

In recent years, state and local governments have come under increasing pressures to limit expenditures while at the same time having to provide adequate levels of services to their constituents. Budgetary constraints have become quite pronounced due, in large part, to taxpayer resistance to higher user fees and, especially, increased taxes. This resistance was demonstrated most visibly by California voters via the enactment of the now famous "Proposition 13," a constitutional measure approved which placed a limit on the amount of property taxes which could be levied by local governments. The notoriety of this taxpayer resistance movement spread rapidly to other states and similar measures were enacted by the voters in those states.

With the election of the Reagan Administration in 1980 and the subsequent implementation of a new economic policy entitled "Reaganomics", programs which had previously been funded by the federal government now became the responsibility of the state and local governments. This, coupled with taxpayer resistance to higher taxes, has played a key role in creating a fiscal crunch for these governments.

Shortages in revenues have forced local governments to increase their reliance on short-term borrowing in contrast to issuing long-term bonds. This has affected the risk factor of

these entities, thereby, resulting in substantially higher interest rates on all types of borrowing.[1]

Proliferation of tax-exempt industrial development bonds and pollution control bonds have reduced the value of the tax exemption with respect to investors. The use of these bonds has grown to approximately 20 percent of the tax-exempt securities market.[2] Recent federal income tax law changes have also contributed to the reduced value of the tax exemption of interest on municipal securities because of a reduction in the individual marginal tax brackets (from a top rate of 70 percent to 50 percent) and competition from Individual Retirement Accounts which permit deferral of federal income taxes on a limited amount of earned income.

In order to cope with tight budgets, local governments have been forced to develop innovative techniques for financing various programs and capital requirements. Since a significant portion of county and municipal budgets are designated for equipment acquisitions, and to the extent the acquisition costs can be reduced, any resulting savings can readily be used for other budgetary purposes.

## History of Leasing and Related Tax Aspects

The practice of leasing first gained popularity in the United States in the early 1900's. It began to flourish after the end of the Korean Conflict, which saw enactment by Congress of incentives in the form of accelerated tax depreciation and investment tax credits for qualifying investments.

The primary decision for leasing rather than purchasing a given asset is generally based on economics and the specific needs of the lessee. Tax considerations are one of the principal economic factors and, thus, the emphasis of this study will relate to the comparative economic advantages and disadvantages of leasing versus purchasing equipment by local governments.

## Types of Leases

There are various names within the leasing industry which distinguish lease arrangements and lease types. Some of the lease title designations are based on the duration and monetary value of the lease while others derive their name from the marketing and financial arrangements. Accordingly, there is a considerable degree of overlap, and the same type of lease may be known to interested parties by different names.

Several of the more commonly referred to types of leases and their characteristics are as follows:

Sale-Leaseback-This type of arrangement usually involves a transaction in which the owner of the property, such as buildings or equipment, sells the property to a potential buyer-lessor (most frequently a financial institution) and simultaneously executes an agreement to lease the property back.
This arrangement is beneficial to the lessee in that the assets are converted into cash while at the same time enabling the lessee to have use of the assets. The lease

payments are set up over the term of the lease so that the full purchase price of the asset is returned to the buyer-lessor in addition to a stated return on its investment.

Service Lease-This type of lease may include both financing and maintenance arrangements. Service leases are used most frequently in the leasing of cars, trucks, computers, paper copying machines, etc. Most frequently the lease terminates prior to full pay-out (i.e., the lease is written for an initial term that is less than the expected life of the leased equipment and, thus, prior to the time the equipment is fully paid for). Service leases may contain cancellation clauses.

Finance Lease (or Net Lease)-This type of arrangement permits the user (lessee) to acquire use of the asset for most of its useful life. Rentals are net to the lessor and, thus, the lessee is responsible for maintenance, taxes, and insurance. The lease is not cancelable and the rental payments over the life of the lease are sufficient to enable the lessor to recover the cost of the equipment plus a return on its investment. Net finance leases are similar to sale-leasebacks except that the leased equipment is usually new and the lessor buys it from the manufacturer or distributor rather than from the user-lessee.

Leveraged Lease-This type of lease is similar to a financial lease in that is is a noncancelable, full-payout lease. However, this transaction usually involves four or five parties, whereas in a financial lease there are only two--the lessor and the lessee. The leveraged lease represents a very complex transaction involving several parties and a number of agreements. It is for this reason that this type of lease is generally utilized only for very large dollar transactions.

Pseudo Lease-This type arrangement is not a true lease; rather, it is a conditional sale or credit arrangement. The lessee finances the possession of an asset by borrowing from the lessor, using the asset to secure the loan. Formal ownership of the asset may revert to the lessee for a nominal price at the end of the lease term.

There are numerous other types of leases, many of which have varying features of the above types.

## General Tax Aspects of Leasing

As indicated earlier, one of the primary economic considerations in the lease versus purchase decision is the federal income tax consequences resulting from either choice. Prior to 1981, leases were classified for tax purposes as either "true" or "pseudo" leases.

To the extent a lease is classified as a true lease, the lease payments by the lessee constitute deductible rental payments for the use of the property and concurrent rental income to the lessor. The lessor, as the owner of the property, is entitled to a deduction for depreciation expense and, possibly, the investment tax credit.

On the other hand, if the lease agreement constitutes a pseudo lease or conditional sales contract, the lessee would be deemed the owner of the property for tax purposes and, thus, entitled to the depreciation expense deduction and, possibly, the investment tax credit. In addition, a portion of the lessee's payment to the lessor would be construed to be nondeductible principal payments and, the balance, imputed interest expense. The lessor would be construed to have received interest income and proceeds from the sale of the property.

## Current Tax Laws as Applied to Leasing in General and Leasing by Municipalities in Specific

### Current Tax Laws Generally Applicable to Leasing

Section 162(a)(3) of the Internal Revenue Code limits the deduction for rental payments to those on "property to which the taxpayer has not taken or is not taking title or in which he has no equity."

#### Revenue Ruling 55-540

In 1955, the Internal Revenue Service (IRS) issued an administrative pronouncement on leasing transactions in the form

of Revenue Ruling 55-540. The ruling did not contain guidelines for determining the existence of a lease; rather, the ruling specified those factors which were indicative of a conditional sales contract (i.e., a purchase by the lessee). Several of the factors contained in the ruling which indicate a conditional sales contract are as follows:

(1) Title will be acquired by the lessee after a stated amount of rentals.

(2) A portion of the rental payments are applicable to the purchase price.

(3) The lease payments significantly exceed the fair rental value.

(4) A purchase option is contained within the agreement that is nominal in relation to the fair market value of the property at the time the option is exercised.

(5) A portion of the lease payment is specifically designated as interest or, in substance, constitutes interest.

(6) The lease payments plus the option price approximate the purchase price (including interest charges) at which the asset could have been purchased when entering the agreement.

(7) The lease payments plus the option price approximate the purchase price and provide for renewal of the lease at nominal amounts.

Accordingly, it is important that these guidelines be carefully reviewed to ensure that the transaction is afforded the intended tax treatment.

Leveraged Leases

In the typical leveraged leasing transaction, a lessor borrows money, frequently on a nonrecourse basis, from a third party to purchase an asset and then leases that asset to a

lessee. Revenue Procedure 75-21[4] was issued by the IRS in order to provide guidance to taxpayers in structuring leveraged lease transactions. These guidelines are also applicable to sale-leaseback transactions.

The guidelines set forth the conditions under which the taxpayer may obtain an advance ruling from the IRS. In substance, this revenue procedure requires that, in order for an arrangement to constitute a true lease, the transaction must have economic substance independent of any tax benefits. Because of the size of leveraged leasing transactions, in general, and the financial consequences to the parties if such lease were ultimately held to be a conditional sale for tax purposes, it is usually prudent, and often required by lenders, that an advance ruling be obtained from the IRS.

Safe-Harbor Leases

As a result of enactment of the Economic Recovery Tax Act of 1981 (ERTA), the taxation of leasing transactions was substantially changed. A new Section 168(f)(8) was codified to assist those businesses which were struggling and unable to utilize the tax benefits associated with the purchase of new machinery and equipment. These new provisions effectively enabled businesses to sell the tax benefits (i.e., tax depreciation and investment tax credits) associated with the purchase of these assets, thereby, receiving an infusion of badly needed cash.

The safe-harbor rules effectively removed the nontax economic substance requirements of the old guidelines. Only two

significant limitations remained: (1) restrictions were imposed on the life of the lease and (2) the investor's minimum investment had to be at least 10 percent. A particular type of safe-harbor lease known as a "tax benefit transfer" was structured so that the only cash changing hands was the initial down payment from the lessor to the lessee for the purchase of the tax benefits. All other rental, interest, and principal payments were structured so that payments between the lessor and the lessee would net out to zero. The lessor's or investor's return on the transaction was a function of three variables--the size of the down payment, the interest rate on the installment note, and the length of the lease.[5]

The safe-harbor transactions mushroomed in popularity shortly after the provisions were enacted. The lessors were able to generate very attractive rates of return and lessees were in a position where some cash flow from the sale of the tax benefits was viewed as better than the possibility that the tax benefits associated with the purchase of an asset might expire unused. Because of this popularity, considerable criticism was leveled at the safe-harbor leasing provisions by politicians who alleged that the primary benefactors were the large, profitable corporations that didn't need any added incentives for capital investment and those perpetual loss corporations which probably didn't deserve to be kept afloat. The most compelling factor, however, was the severe drain on the federal treasury at a time when the country was incurring significant deficits.

As a result of the turmoil caused by the 1981 leasing

provisions, Congress enacted modifications which represented a compromise between preserving the tax incentives to engage in these type transactions and the pre-1981 guidelines.[6] Thus, for safe-harbor leases entered into between July 1, 1982 and December 31, 1983, substantial limitations were placed on the amounts of tax liability that the lessor could offset against its liability with respect to purchased tax benefits. In addition, the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) modifications to the safe-harbor leasing provisions significantly reduced the value of the purchased tax benefits by (1) extending the ACRS recovery periods and (2) spreading the available investment tax credits equally over a period of five future years. This had the effect of substantially reducing the rate of return that the lessor could realize from engaging in safe-harbor leasing transactions.[7]

Finally, TEFRA amended Section 168(f)(8) of the Code to repeal the modified safe-harbor leasing provisions for tax years beginning after 1983 and substituting a new set of "finance lease" provisions. These lease provisions contain elements of both the safe-harbor provisions and the pre-1981 lease guidelines. As a result of recent legislation, however, the new finance lease provisions have been delayed generally to tax years beginning after 1987.[8]

## Tax-Exempt Entity Leasing

In addition to the liberalization of the leasing provisions in 1981 by ERTA, a major factor in the rapid expansion of

Concurrent enactment

(ACRS). Adoption of ACRS resulted in the abandonment for tax purposes of the "useful life" concept for depreciating business assets. Substituted was a system which permitted recovery in such assets over a much shorter life period. ACRS categorizes virtually all depreciable assets into five recovery classes as follows:[9]

3-year property - Cars, light duty trucks, research and experimentation equipment, and certain other short-lived property.

5-year property - All property not in the 3-year, 10-year, or 15-year class. This class includes the bulk of all depreciable property.

10-year property - Medium-lived public utility property, railroad tank cars, and certain manufactured residential houses.

15-year property - Long-lived public utility property.

15-year real property

The recovery percentages for each of the first four classes approximate 150 percent of the straight-line depreciation rate on a declining balance basis over the recovery period. The recovery percentages specified in the Code assume a half-year's depreciation in the initial year irrespective of when the property is actually placed in service.

Shortly after TEFRA curtailed the benefits of the safe-harbor leasing provisions, many cities turned to traditional leasing arrangements. One such arrangement included "sale-leasebacks" that passed along depreciation write-offs to syndications of high-income, private investors or other taxable

shelters had been used in the past to a limited extent by cities. However, because of the much shorter period in which asset recovery was now permitted under ACRS, the tax benefits from private ownership had increased substantially. The city of Baltimore, for example, planned to raise $1.5 million for capital improvements through the sale and leaseback of a city-run culinary arts school. To further sweeten the deal, the city also planned to issue tax-exempt industrial revenue bonds to enable the prospective purchaser to minimize his investment cost.[10] Other large cities were looking into leasing deals involving items such as convention centers, hospitals, school buildings, fire trucks, hospital equipment, and various other kinds of equipment.

Once again, the Congress perceived an abuse of the tax laws in that tax-exempt entities were benefiting substantially from tax incentives which had been enacted to stimulate investment by the private sector. Furthermore, the sale of these tax shelters were again costing the Federal Treasury huge amounts of foregone tax dollars. Thus, the Congress, as part of the Tax Reform Act of 1984 (TRA), placed substantial limitations on ACRS deductions for property leased to tax-exempt entities such as governments. For personal property leased to tax-exempt entities, the lessor is generally required to compute the ACRS deduction on a straight-line basis. Furthermore, the ACRS recovery period can generally be no shorter than 125 percent of the life of the lease. The leasing of certain "qualified

technological equipment" such as computers and high technology medical equipment are excluded from the more restrictive provisions to the extent such equipment was not financed with tax-exempt obligations.[11]

Other restrictions imposed by the TRA were in the area of service contracts with tax-exempt entities and the Investment Tax Credit (ITC). Section 48(a) of the Code has, since its inception in 1962, generally disallowed the ITC for property used by a tax-exempt entity. However, a court recently held that, where property provided to a governmental entity constituted a service contract rather than a lease, the owner of the equipment was entitled to the ITC.[12] Thus, the TRA raised the threshhold under which equipment leased to governmental entities might otherwise qualify for the ITC under a service contract.

## OBJECTIVE

The stated objective of this study is: To compare the cost-benefits of leasing versus buying equipment by municipal governments in North Dakota. Thus, this study will attempt to determine whether any savings might be realized by a municipality, and possibly other local governments, in leasing equipment (both "true" and "pseudo" leases) rather than purchasing this equipment outright. This will be accomplished by comparing the net costs of acquiring the use of the equipment under alternative approaches using several illustrative examples. These examples will give consideration to the limitations imposed by the recently enacted TRA as well as practical limitations relating to costs of entering various transactions.

questionnaire[14] was developed and sent to the counties in which these same cities were located.[15] It was felt that, because of the larger populations served by these local governments, the equipment expenditures of these entities would be relatively larger than than those of the smaller units of government in the state. Furthermore, with larger dollar amounts of expenditures at stake, these governments would be more likely to engage in leasing transactions, if thought to be beneficial, than the more traditional purchase arrangements.

Of the seven cities which responded to the survey, four were presently leasing vehicles and/or maintenance equipment. One other city had leased in the past while two cities had not leased in the current or past. Of the leases engaged in by the four cities, all were installment purchase arrangements. Equipment expenditures by the cities for their latest budget year ranged from approximately $15,000 to nearly $700,000.

Only three responses were received from the eight surveys which had been sent to the counties. However, the limited response revealed that leasing practices were quite similar to those of the cities. According to the responses received, two counties were currently leasing while all three had leased at some time in the past. The type of equipment leased consisted generally of trucks and other road maintenance equipment. Again, the leases were of the installment purchase type.

Information was also solicited regarding the interest cost on loans or other borrowed money as well as interest which might have been earned on excess funds. Interest cost percentages

varied widely and, thus, no meaningful comparison could be drawn. It was assumed that these wide variances were due to differences in methods of financing, risk factors, length of loans and, most importantly, the specific point in time during which the financing was consumated. It is well known that interest rates for both private and public entities have varied widely in recent years. Thus, it was determined that for purposes of any financial analysis, other appropriate interest indices would be used.

None of the responding entities were aware of any legal or other restrictions which might prohibit them from leasing equipment. One county did note, however, that it was restricted by law from entering into an agreement for more than one year. Thus, lease contracts must contain annual renewal clauses. This restriction is not unique to local governments in North Dakota but is generally applicable to governments throughout the United States. The limitation gives recognition to the fact that, while governmental units generally have the power to enter into leases, their power to incur indebtedness is almost universally limited.[16]

## Other Sources of Information

Much has been written on the subject of the economics of leasing versus buying in the private sector. However, those factors which affect the lease-purchase decisions have changed significantly in recent years so as to require constant analysis with respect to differing sets of circumstances. Changes in tax

laws with respect to the ITC and depreciation, widely fluctuating interest rates, and other changing economic conditions have all impacted on the lease-buy decision.

In the public sector, it was generally assumed that, because the ITC was not available to the lessor where the equipment was leased to a tax-exempt entity, the economics would always be tilted in favor of a local government purchasing rather than leasing equipment. Despite this widespread assumption, several authors have developed models for evaluating the lease-purchase decision in the public sector. These authors have concluded that, under a given set of circumstances, true leasing may be economically advantageous.[17]

Other authors have generally dismissed any tax benefits which might be associated with true leasing for municipalities and have espoused the benefits of pseudo leasing (lease-purchasing).[18] One of the principal advantages of this type arrangement is the lower interest cost to the municipality because of the tax-exemption advantage associated with the interest.

## CONCLUSION AND RECOMMENDATIONS

### True Leasing Arrangements

As stated earlier in this study, the Tax Reform Act of 1984 (TRA) significantly modified and reduced the tax benefits available to a lessor where the equipment or other tangible personal property is leased to a tax-exempt entity (e.g., a municipal or county government). Thus, for a better understanding of the effects of this change, analyses will be made under both pre-Reform Act and post-Reform Act tax law.

### Pre-1984 Tax Reform Act

In order to illustrate the economics of leasing, table 1 sets forth an analysis of the ownership benefits to a lessor given a certain set of assumptions. The ownership benefits are calculated under the tax laws as they generally existed prior to the 1984 Act. The assumptions are that the property leased to the municipality is maintenance equipment which the lessor acquires at a purchase price of $100,000. The lessor finances 80 percent of the cost with mid-term tax-exempt financing bearing an interest rate of 10 percent.[19] The equipment qualifies as 5-year recovery property under ACRS with no investment tax credits (ITC) available due to the denial of the credit by Code section 48(a). The equipment has a remaining salvage value of 5 percent at the end of the 10 year lease period. The lessor's marginal tax rate

TABLE 1

OWNERSHIP BENEFITS TO LESSOR

| Year (1) | Loan Payment: Principal (2) | Loan Payment: Interest (3) | Loan Payment: Total (4) | Salvage (5) | Tax Depreciation (6) | Pre-Rent: Tax Benefits (C.3-5+6) (7) | Pre-Rent: Tax Cash Flows @50% (8) | Pre-Rent: Cash Flows (C.5-4+8) (9) | NPV Of Cash Flows @10% (10) |
|---|---|---|---|---|---|---|---|---|---|
| 19X1 | $ 5,020 | $ 8,000 | $13,020 | $ | $15,000 | $23,000 | $11,500 | ( 1,520) | ( 1,382) |
| 19X2 | 5,522 | 7,498 | 13,020 | | 22,000 | 29,498 | 14,749 | 1,729 | 1,429 |
| 19X3 | 6,074 | 6,946 | 13,020 | | 21,000 | 27,946 | 13,973 | 953 | 716 |
| 19X4 | 6,682 | 6,338 | 13,020 | | 21,000 | 27,338 | 13,669 | 649 | 443 |
| 19X5 | 7,350 | 5,670 | 13,020 | | 21,000 | 26,670 | 13,335 | 315 | 196 |
| 19X6 | 8,085 | 4,935 | 13,020 | | | 4,935 | 2,468 | (10,552) | ( 5,956) |
| 19X7 | 8,893 | 4,127 | 13,020 | | | 4,127 | 2,064 | (10,956) | ( 5,622) |
| 19X8 | 9,783 | 3,237 | 13,020 | | | 3,237 | 1,619 | (11,401) | ( 5,319) |
| 19X9 | 10,761 | 2,259 | 13,020 | | | 2,259 | 1,130 | (11,890) | ( 5,043) |
| 19Y0 | 11,830 | 1,183 | 13,013 | 5,000 | | ( 3,817) | ( 1,908) | ( 9,921) | ( 3,825) |
| | | | | | | | | | (24,363) |
| | | | | | | | | Initial Down Payment- | (20,000) |
| | | | | | | | | PV of Investment to be Recovered- | ($44,363) |

is 50 percent and his required after-tax rate of return is 10 percent.[20] Finally, it is assumed that the lease satisfies all other criteria set forth in Revenue Ruling 55-540 so as to constitute a true lease for income tax purposes.

As table 1 illustrates, cash inflows to the lessor, exclusive of the required rental receipts, consist of the tax benefits associated with the deductibility of the annual interest paid on the 80 percent loan and the allowable ACRS deductions. Another cash inflow consists of the salvage proceeds at the end of the 10 year lease. The cash outflows consist of the initial 20 percent down payment on the purchase of the equipment, the repayment of both principal and interest on the loan, and the income taxes on the salvage proceeds.

In this illustration, as well as in most leases, both leveraged and non-leveraged, there is an initial outlay of funds followed by a series of payments (cash flows) which represent recovery of principal and return. In a leveraged lease transaction, however, it is possible to recover all the initial investment and the entire amount of return long before the final lease payments are received. Thus, the lease goes through its "negative investment phase," accumulating cash and then repaying it as negative cash flows are encountered later in the lease. Accordingly, lessors are required to attribute a separate reinvestment rate to the cash provided employing a method of calculation (such as the Sinking Fund Method) which deals with both positive and negative cash flows. The return on the positive cash flows is then added to cash flows to provide an

overall yield.[21]

Several authors have been critical of the Sinking Fund Approach and the application of a separate reinvestment rate. Their disagreement stems from the fact that few, if any, lessors actually set aside specific assets to handle specific sinking funds on specific leases. In general practice, the positive cash flows are comingled with the general investments or funds of the lessor without specific identification. These authors further suggest that valuing funds provided by a lease in its negative investment phase at a marginal Cost of Funds Rate makes sense.[22]

The illustration in table 1 contains a simplifying assumption for purposes of calculating the net present value of the cash flows on the lease. The assumption is that the positive cash flows in year 19X2 through 19X5 can be reinvested in mid-term tax-exempt securities or some other investment so as to produce a 10 percent after-tax rate of return.

Column (10) depicts that the present value of the loan repayment, net of the tax benefits and salvage value, results in a negative balance of $24,363. This amount, when added to the initial down payment of $20,000, results in a negative net present value of $44,363 which needs to be recovered by the lessor in the form of rental payments in order to earn a 10 percent return on the initial investment. The calculation further demonstrates that more than 50 percent of the lessor's required return has been generated by tax benefits attributable to ACRS and interest deductions.

In order to determine the annual after-tax lease payments

needed in order to recover the lessor's remaining investment along with his required profit, the following formula can be utilized:

$$(1)\ L_{at} = NC \Big/ \sum_{t=0}^{n-1} (1 + R)^{-t}$$

where $L_{at}$ denotes the required after-tax proceeds, NC is the remaining net cost to be recovered (in this example, $44,363), n is the life of the lease (10 years), and R is the lessor's required after-tax rate of return (10 percent). The equation assumes level lease payments made at the beginning of each year.[23]

By using equation (1) above, one can determine the proceeds required by the lessor as follows:

$$L_{at} = \$44,363 / 6.7591 = \$6,564$$

Inasmuch as the $6,564 represents the after-tax proceeds required by the lessor, and given that the lessor's marginal tax rate is 50 percent, the gross lease proceeds required can simply be calculated in the following manner:

$$L = \$6,564 / .50 = \$13,128$$

Receipt of an annual lease payment of $13,128 at the beginning of each lease year will enable the lessor to recoup his investment in the equipment in addition to earning a profit on the lease arrangement equivalent to an after-tax rate of return on his investment of 10 percent.

From the point of the lessee, the evaluation procedure for a municipality is similar to that employed by corporations with the exception that income tax considerations are irrelevant. A municipal lease decision evaluation encompasses basically three items: the annual lease payments to be made by the municipality over the term of the lease (L); the estimated salvage value of the equipment to be realized at the end of the term of the lease ($SV_n$); and the initial cost of the equipment to be leased (C).[24]

While a lease can be evaluated by calculating the internal rate of return of the lease and comparing it with the after-tax cost of debt or cost of capital financing, the method employed here will compare the net present value of the cash outflows under both the leasing and borrowing alternatives.[25]

A formula for calculating the present value cost of a lease option is specified as follows:

$$(2)\quad PVC = L \sum_{t=0}^{n-1} (1 + i)^{-t} + SV_n(1+i)^{-n}$$

where i equals the discount rate and with the other symbols having been indentified above.[26]

Prior to calculating the lease value to the municipality, a discount rate must be selected which is appropriate for a public entity. Much has been written on the use of social rates of discount for public entities. However, the derivation of these rates is highly theoretical and of questionable practical value. A more appropriate rate would seem to be the government's before-tax cost of debt with the same maturity as the lease

contract.[27]

A 10 percent discount rate has been selected on the basis that this approximates the municipality's borrowing rate had it purchased the maintenance equipment. Accordingly, the present value cost of the lease is calculated as follows:

$$PVC = \$13,128 + \$13,128(5.7590) + \$13,128(.3855) = \$93,793$$

The PVC of the lease is less than $100,000, thereby, demonstrating that significant savings would have resulted to the municipality by entering into this lease. This also demonstrates why tax-exempt entity leasing attained its popularity in recent years.

One of the lease factors not previously addressed relates to the evaluation of risk from the point of the lessee. One of the primary risk factors present in evaluating a decision to lease or purchase is the residual or salvage value of the asset at the end of the lease period. To the extent the residual value of the asset is greater than anticipated, the lease decision is negatively affected from the point of the lessee. This is due to the fact that any increase in residual value over that originally anticipated accrues to the benefit of the lessor as the owner of the property. Conversely, a decrease in the actual residual value enhances the leasee's lease decision to the detriment of the lessor.

While beyond the scope of this discussion, there are methods which can be utilized by the lessee to evaluate the extent of residual value exposure. This exposure can be deter-

mined by calculating the change in residual value necessary to reverse the decision.[28] Furthermore, both the lessee and lessor could insulate themselves to some degree from substantial fluctuations in the estimated versus actual residual value through the use of put and call options.[29]

## Post-1984 Tax Reform Act

The 1984 Reform Act generally reduced the asset cost recovery benefits to the lessor with respect to "tax-exempt use property" placed in service or leased after May 23, 1983.[30] In order to illustrate these reduced benefits, table 2 assumes the same set of facts as those contained in table 1. One exception to these facts is that the asset cost recovery allowances must be calculated on a straight-line basis over 125 percent of the lease period or, in this case, 12 1/2 years. In addition, since the assumption was made that the asset is disposed of at the end of the lease, any remaining tax basis at the end of the 10 year lease period can be deducted for tax purposes as a loss, net of any salvage proceeds.

Column (10) of table 2 illustrates that the present value of the loan repayment, net of the tax benefits and salvage value, results in a negative balance of $34,465. Adding to this amount the initial down payment on the purchase of the maintenance equipment would result in a present value investment to be recovered by the lessor of $54,465.

Formula (1) can again be utilized to calculate the annual after-tax lease payments needed by the lessor in order to recover

TABLE 2

OWNERSHIP BENEFITS TO LESSOR

| Year (1) | Loan Payment: Principal (2) | Loan Payment: Interest (3) | Loan Payment: Total (4) | Salvage (5) | Pre-Rent: Tax Depreciation (6) | Pre-Rent: Tax Benefits (C.3-5+6) (7) | Pre-Rent: Tax Cash Flows @50% (8) | Pre-Rent: Cash Flows (C.5-4+8) (9) | NPV Of Cash Flows @10% (10) |
|---|---|---|---|---|---|---|---|---|---|
| 19X1 | $ 5,020 | $ 8,000 | $13,020 | $ | $ 4,000 | $12,000 | $ 6,000 | ( 7,020) | ( 6,382) |
| 19X2 | 5,522 | 7,498 | 13,020 | | 8,000 | 15,498 | 7,749 | ( 5,271) | ( 4,356) |
| 19X3 | 6,074 | 6,946 | 13,020 | | 8,000 | 14,946 | 7,473 | ( 5,547) | ( 4,168) |
| 19X4 | 6,682 | 6,338 | 13,020 | | 8,000 | 14,338 | 7,169 | ( 5,851) | ( 3,996) |
| 19X5 | 7,350 | 5,670 | 13,020 | | 8,000 | 13,670 | 6,835 | ( 6,185) | ( 3,840) |
| 19X6 | 8,085 | 4,935 | 13,020 | | 8,000 | 12,935 | 6,468 | ( 6,552) | ( 3,698) |
| 19X7 | 8,893 | 4,127 | 13,020 | | 8,000 | 12,127 | 6,064 | ( 6,956) | ( 3,570) |
| 19X8 | 9,783 | 3,237 | 13,020 | | 8,000 | 11,237 | 5,619 | ( 7,401) | ( 3,453) |
| 19X9 | 10,726 | 2,259 | 13,020 | | 8,000 | 10,259 | 5,130 | ( 7,890) | ( 3,346) |
| 19Y0 | 11,830 | 1,183 | 13,013 | 5,000 | 32,000 | 28,183 | 14,092 | 6,079 | 2,344 |
| | | | | | | | | | (34,465) |
| | | | | | | | | Initial Down Payment- | (20,000) |
| | | | | | | | | PV of Investment to be Recovered- | ($54,465) |

the remaining investment plus the desired profit. This calculation yields the following:

$$L_{at} = \$54,465 / 6.7591 = \$8,058$$

Dividing $L_{at}$ by .5 (the net percentage remaining after taxes) results in the required pre-tax annual lease rental of $16,116. As is apparent, this annual rental amount is significantly higher than the $13,128 required by the lessor in the earlier example in order for the lessor to earn a 10 percent rate of return on his investment.

In analyzing the revised lease payment from the point of the lessee, one can again employ the use of formula (2) as follows:

$$PVC = \$16,116 + \$16,116(5.7590) + \$16,116(.3855) = \$115,141$$

This calculation demonstrates that the lease option, with a present value of $115,141, would be significantly more costly than an outright purchase of the same equipment for $100,000.

The above further illustrates that, by way of substantially reducing the tax depreciation benefits available to taxable investors, the Congress has clearly achieved its purpose of discouraging tax-exempt entity leasing. Based on this analysis, one can generally state that true leasing would be at an economic disadvantage when compared to a similar purchase by a tax-exempt entity.

## Lease-Purchase Arrangement

An alternative method for financing equipment acquisitions by municipal governments is the pseudo lease or lease-purchase arrangement. The important distinction in this type lease is that the lessee (purchaser) accrues an equity interest in the property during the lease term and acquires ownership of the property at the end of the lease term, often for as little as one dollar. This is contrasted with a true lease in which the lessor retains ownership of the leased property at the end of the lease term.

In a lease-purchase arrangement, the lease term is usually structured around the estimated life of the property or the lessee's ability to pay, if shorter. The lease payments contain an interest factor similar to that charged on an installment purchase. An important consideration, however, is the fact that the interest portion of the lease payment generally constitutes non-taxable income to the lessor (seller) similar to interest on municipal bonds. In order to qualify for this exemption, the lease must be structured to give consideration to the following points:

(1) the lease must represent an obligation of the governmental unit;

(2) a portion of the periodic lease payment is interest;

(3) the government must assume certain ownership responsibilities (e.g., insurance, maintenance, and taxes);

(4) the lease must contain a provision for accumulation of equity from the lease payments;

(5) it must contain a provision allowing for the acquisition of the equipment upon the payment of the unpaid portion of the purchase price (option price); and

(6) the government unit has the right of full use of the equipment.

To the extent the above guidelines are met, the lessor achieves the benefit of tax-exemption for the interest portion of the lease. Because of this benefit to the lessor, the lessee should be able to negotiate an overall lower lease payment when compared to a conventional installment purchase.[31]

In order to illustrate the economics of lease-purchase transactions, reference will again be made to the true leasing example used for table 1. The municipality leases from the lessor, the equipment which could otherwise be purchased for $100,000. The useful life of the equipment is 10 years. Depreciation is ignored since the municipality derives no tax benefit from the ACRS deductions which would otherwise be allowable to a taxable entity. Residual value is likewise irrelevant since the municipality is expected to be the owner of the equipment at the end of the lease at no additional cost.

An additional assumption is necessary regarding the interest rate to be charged by the lessor for purposes of determining the amount of the lease payments. If the interest normally charged a customer by the seller (or lessor, in this case) is 14 percent, and the seller's marginal tax rate is 50 percent, one would expect the interest rate on the lease to be 7

percent. However, because of the presence of a "fiscal-funding clause" in virtually all lease-purchase agreements whereby governments are the lessee, the lease becomes a one-year contract with automatic renewal unless the government notifies the lessor that funds are not available for a renewal period. The effect of this clause is significant for two reasons: (1) the lease does not apply to the debt ceiling, thus voter approval is not required; and (2) the risk of cancellation increases the lease interest rate.[32] Accordingly, an arbitrarily determined risk premium of 2 percent has been added to the 7 percent interest rate (i.e., for a total of 9 percent) which is included as part of the lease payments in this example.

Table 3 illustrates a present value analysis which compares the cost of a lease-purchase arrangement with that of an outright purchase by a municipality (i.e., the municipality has sufficient funds without engaging in borrowing). To the extent the municipality could earn 12 percent in some investment with respect to excess funds it has available, the 12 percent discount factor utilized in table 3 represents the opportunity cost of funds and is sometimes referred to as the "lending rate".

A similar comparison could be made between lease-purchasing and issuing bonds. However, even if one were to assume that the interest cost for a lease-purchase contract and a bond issue were identical, there are a number of additional costs associated with a bond issue which may not be present in a lease-purchase arrangement. Examples of several of these costs are: bond referendums, legal, financial advice, printing, etc.

TABLE 3

PURCHASE VERSUS LEASE FINANCING

| | Purchase | | Lease | |
|---|---|---|---|---|
| Year | Equipment Cost | NPV of Cash Flow | Annual Lease Payment (a) | NPV of Cash Flows @12% (b) |
| 19X0 | $100,000 | $100,000 | $ 14,298 | $14,298 |
| 19X1 | | -- | 14,295 | 12,763 |
| 19X2 | | -- | 14,295 | 11,396 |
| 19X3 | | -- | 14,295 | 10,175 |
| 19X4 | | -- | 14,295 | 9,085 |
| 19X5 | | -- | 14,295 | 8,111 |
| 19X6 | | -- | 14,295 | 7,242 |
| 19X7 | | -- | 14,295 | 6,466 |
| 19X8 | | -- | 14,295 | 5,773 |
| 19X9 | | -- | 14,295 | 5,155 |
| Total | $100,000 | $100,000 | $142,953 | $90,464 |

(a) Equal annual lease payments required by the lessor to recover the $100,000 equipment cost plus 9 percent interest.

(b) Discount rate of 12 percent represents foregone interest on funds which could otherwise be invested at same rate.

While some legal costs may be incurred in a lease-purchase contract, these would usually be minimal inasmuch as standardized lease-purchase forms are frequently used.[33]

Other advantages of financing with lease-purchasing rather than issuing bonds include:

(a) Leasing minimizes the total interest paid by establishing the length of the lease to approximate the equipment life. This may not be possible with respect to a bond, especially where shorter life equipment is purchased.[34]

(b) A lease, to the extent it contains a "fiscal funding clause," does not constitute debt and, therefore, (1) the debt limit is not affected; (2) a referendum is not required; and (3) the lease is only an annual commitment.

(c) Referendums, which are required by many states with respect to bond issues, are not necessary for leasing. Thus no time delays are encountered in lease-purchasing, a factor which often increases bond issue costs.

(d) Leasing provides purchasing capacity by small governments which have limited access to the capital markets.

(e) Leasing is able to finance relatively small capital needs that are too large to be funded from current revenues, yet too small to be considered for bond financing.

(f) The lease-purchase agreement usually does not contain any prepayment penalties which generally is not the case with respect to a bond issue.

While a number of advantages exist for lease-purchase financing, there are certain considerations which must be addressed prior to executing a contract. Several of these considerations are set forth in Appendix E.

In summary, the foregoing analysis suggests that, while the economic benefits to municipalities from true leasing have generally been eliminated, lease-purchasing offers a number of distinct economic benefits over other forms of financing equipment acquisitions. Thus, lease purchasing should be given serious consideration by local governments when contemplating equipment purchases.

[2]J. Chester Johnson, "Current Financial Condition and Capital Financing Options for State and Local Governments," Governmental Finance 11 (September 1982):54.

[3]1955-2 Internal Revenue Cumulative Bulletin 39.

[4]1975-1 Internal Revenue Cumulative Bulletin 715. See also, Revenue Procedure 75-28, 1975-1 C.B. 752.

[5]John O. Everett and Gary Porter, "Safe-Harbor Leasing-Unraveling the Tax Implications," Journal of Accounting, Auditing & Finance 7 (Spring 1984):249.

[6]Tax Equity and Fiscal Responsibility Act of 1982, Pub. L. 97-248, 97th Cong., 2d sess., (September 3, 1982). Amending 26 U.S. Code, sec. 168(f)(8).

[7]Everett and Porter, p. 253.

[8]Tax Reform Act of 1984, Pub. L. 98-369, 98th Cong., 2d sess. (July 18, 1984). Amending 26 U.S. Code, sec. 168(f)(8).

[9]26 U.S. Code, sec. 168(b) (1981). The 15-year life for real property was extended to 18 years by the Tax Reform Act of 1984 for most property placed in service after March 15, 1984.

[10]New York Times, 10 April 1983, p. E9.

[11]26 U.S. Code, sec. 168(j) (1984). Applies generally with respect to property placed in service after May 23, 1983.

[12]See Xerox v. United States, 1980-2 U.S.T.C., para. 9530 (Ct. Cl. Trial Div.) which allowed investment tax credits for copying machines placed on government premises under service contracts.

[13]See Appendix A for a copy of the questionnaire sent to the municipalities.

[14]See Appendix B for a copy of the questionnaire sent to the counties.

[15]See Appendix C for a copy of the cover letter enclosed with the questionnaires in Appendices A and B.

[16]F. Glenn Nichols, "Debt Limitations and the Bona Fide Long-Term Lease with an Option to Purchase: Another Look at Lord Coke," The Urban Lawyer 9 (Spring 1977):403.

[17]Edward A. Dyl and Michael D. Joehnk, "Leasing as a Municipal Finance Alternative," Public Administration Review, (November/December 1978), pp. 557-562; J. Callahan, "The Lease versus Purchase Decision in the Public Sector," National Tax Journal 34 (June 1981):235-40; Merton H. Miller and Charles Upton, "Leasing, Buying, and the Cost of Capital Services," The Journal of Finance, June 1976, pp. 782-783; and Mark A. Willis, "Leasing--A Financial Option for States and Localities," Federal Reserve Bank of New York Quarterly Review 6 (Winter 1981-82):42-46.

[18]Peter W. Schellenback and James S. Weber, "Leasing: An Alternative Approach to Providing Governmental Services and Facilities," Governmental Finance 7 (November 1978):24; and Rhett D. Harrell, Jr., "Governmental Leasing Techniques," Governmental Finance 9 (March 1980):15-18.

[19]Represents the approximate interest rate on 10-15 year Aa rated municipal bonds at December 31, 1984. Prospects for the Credit Markets, (New York: Bankers Trust Company, January 4, 1985).

[20]One author has argued that the discount rate used to evaluate the after-tax lease payments and the tax shields from depreciation and interest from additional debt is the government's before-tax cost of debt with the same maturity as the lease contract. The basis is that each of the cash flows has the same risk characteristics as interest payments made by the government. Callahan, "The Lease Versus Purchase Decision in the Public Sector," p. 236.

[21]C. Rogers Childs, Jr. and William G. Gridley, Jr., "Leveraged Leasing and the Reinvestment Rate Fallacy," The Bankers Magazine 156 (Winter 1973):53.

[22]Ibid., p. 60.

[23]Dyl and Joehnk, "Leasing as a Municipal Finance Alternative," p. 559.

[24]Ibid., p. 560.

[25]Eugene F. Brigham, Financial Management Theory and Practice, 3d ed., (Chicago: The Dryden Press, 1982), pp. 786-791.

[26]Dyl and Joehnke, "Leasing as a Municipal Finance Alternative," p. 560.

[27]Callahan, "The Lease Versus Purchase Decision in the Public Sector," p. 236.

[28]Dyl and Joehnke, "Leasing as a Municipal Finance Alternative," p. 561.

[29]Wayne Y. Lee, John D. Martin, and Andrew J. Senchack, "The Case for Using Options to Evaluate Salvage Values in Financial Leases," Financial Management 11 (Autumn 1982):33-41.

[30]26 U.S. Code, sec. 168(j) (1984).

[31]Rhett D. Harrell, "The Municipal Leasing Alternative," Waste Age, November 1980, p. 47. It should be noted that point (1) reflects the requirements of Internal Revenue Code section 103(a)(1), and points (2) through (6) the basic requirements of Revenue Ruling 55-540 (i.e., in order for the lease to constitute an installment purchase as distinguished from a true lease).

[32]Harrell, "Governmental Leasing Techniques," p. 16.

[33]Refer to Appendix D for a sample copy of an actual lease-purchase agreement.

[34]Weber has provided a Breakeven Chart which compares lease-purchase financing costs with bond financing costs. In most cases, the more rapid payback on the shorter term lease results in lower total cash expenditures to retire the lease obligation than the bond, even if there were no underwriting costs associated with the bond. Peter W. Schellenback and James S. Weber, "Leasing: An Alternative Approach to Providing Governmental Services and Facilities," Governmental Finance 7 (November 1978):25.

# APPENDICES

# APPENDIX A

## THE QUESTIONNAIRE (MUNICIPALITIES)

QUESTIONNAIRE

(1) Do you currently lease any vehicles or any street maintenance or other service equipment (do not consider any office equipment)? YES_____ NO_____

(2) If you answered YES to Question (1), does the lease of such equipment represent an installment purchase in which, at the end of the lease or rental period, the city government owns the piece of equipment? YES_____ NO_____

(3) If you answered YES to Question (1), please indicate the type or types of equipment being leased:

Vehicles (autos and light trucks) _____

Large trucks and busses _____

Street maintenance or other service equipment _____

Other - (please specify nature) _____

(4) If you answered NO to Question (1), have you in past years leased any vehicles or street maintenance or other service equipment? YES_____ NO_____

(5) Please indicate the amount of expenditures during your latest complete budget year for purchasing or leasing the following (please round your answers to the nearest thousand dollars) and indicate the estimated useful life (i.e., number of years) for each type of equipment:

| | Amount | Estimated Useful Life |
|---|---|---|
| Vehicles (autos and light trucks | _____ | _____ |
| Large trucks and busses | _____ | _____ |
| Street maintenance and other service equipment | _____ | _____ |

(6) If you answered NO to Question (1), have you in past years considered leasing any vehicles or street maintenance or other service type equipment? YES_____ NO_____

(7) If you answered YES to Question (6), please indicate when leasing was considered and why it was decided not to lease instead of purchase this equipment?

(8) Please indicate how you finance the acquisition (purchase) of vehicles or street maintenance or other service equipment?

Taxes or other type of service revenues_____.

Loans or bonds_____.

Other (please specify)_____.

(9) For your answer to Item (7) please indicate your current interest cost with respect to loans used to finance equipment purchases or interest income foregone when using excess funds for equipment purchases which might otherwise be temporarily invested.

| | Percentage |
|---|---|
| Interest cost (rate or percentage) on loans or other borrowed money. | _____ |
| Interest foregone (rate or percentage) on excess temporary or other type of funds. | _____ |

(10) Are you aware of any legal or other restrictions which might prohibit you from leasing equipment instead of purchasing such equipment? YES_____ NO_____

If you answered YES, please elaborate_____

_____

(11) Please indicate any other comments or observations you may have regarding leasing versus buying vehicles or equipment in providing governmental services. In addition, if you currently lease some equipment, a sample copy of an existing lease would be appreciated.

# APPENDIX B

## THE QUESTIONNAIRE (COUNTIES)

QUESTIONNAIRE

(1) Do you currently lease any vehicles or any road maintenance or other service equipment (do not consider any office equipment)? YES_____ NO_____

(2) If you answered YES to Question (1), does the lease of such equipment represent an installment purchase in which, at the end of the lease or rental period, the county owns the piece of equipment? YES_____ NO_____

(3) If you answered YES to Question (1), please indicate the type or types of equipment being leased:

Vehicles (autos and light trucks) _____

Large trucks _____

Road maintenance or other service equipment _____

Other - (please specify nature) _____

(4) If you answered NO to Question (1), have you in past years leased any vehicles or road maintenance or other service equipment? YES_____ NO_____

(5) Please indicate the amount of expenditures during your latest complete budget year for purchasing or leasing the following (please round your answers to the nearest thousand dollars) and indicate the estimated useful life (i.e., number of years) of each type of equipment:

| | Amount | Estimated Useful Life |
|---|---|---|
| Vehicles (autos and light trucks) | _____ | _____ |
| Large trucks | _____ | _____ |
| Road maintenance and other service equipment | _____ | _____ |

(6) If you answered NO to Question (1), have you in past years considered leasing any vehicles or road maintenance or other service type equipment? YES_____ NO_____

(7) If you answered YES to Question (6), please indicate when leasing was considered and why it was decided not to lease instead of purchase this equipment?

(8) Please indicate how you finance the acquisition (purchase) of vehicles or road maintenance or other service equipment?

Taxes or other types of service revenues_____

Loans or bonds_____

Other (please specify)_____

(9) For your answer to Item (7) please indicate your current interest cost with respect to loans used to finance equipment purchases or interest income foregone when using excess funds for equipment purchases which might otherwise be temporarily invested.

| | Percentage |
|---|---|
| Interest cost (rate or percentage on loans or other borrowed money. | _____ |
| Interest foregone (rate or percentage) on excess temporary or other types of funds. | _____ |

(10) Are you aware of any legal or other restrictions which might prohibit you from leasing equipment instead of purchasing such equipment? YES_____ NO_____

If you answered YES, please elaborate_____

_____

(11) Please indicate any other comments or observations you may have regarding leasing versus buying vehicles or equipment in providing governmental services. In addition, if you currently lease some equipment, a sample copy of an existing lease would be appreciated.

(7) If you answered YES to Question (6), please indicate when leasing was considered and why it was decided not to lease instead of purchase this equipment?

(8) Please indicate how you finance the acquisition (purchase) of vehicles or road maintenance or other service equipment?

Taxes or other types of service revenues_____

Loans or bonds_____

Other (please specify)_____

(9) For your answer to Item (7) please indicate your current interest cost with respect to loans used to finance equipment purchases or interest income foregone when using excess funds for equipment purchases which might otherwise be temporarily invested.

| | Percentage |
|---|---|
| Interest cost (rate or percentage on loans or other borrowed money. | _____ |
| Interest foregone (rate or percentage) on excess temporary or other types of funds. | _____ |

(10) Are you aware of any legal or other restrictions which might prohibit you from leasing equipment instead of purchasing such equipment? YES_____ NO_____

If you answered YES, please elaborate_____

_____

(11) Please indicate any other comments or observations you may have regarding leasing versus buying vehicles or equipment in providing governmental services. In addition, if you currently lease some equipment, a sample copy of an existing lease would be appreciated.

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