TOTAL COST EQUIPMENT PURCHASING

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SUMMARY

The South Carolina Department of Transportation's Supply and Equipment Office was asked to review the purchasing of equipment using the Total Cost Method and to compare the results to the Department's Low Bid Method for a motor grader. An analysis of both methods using actual costs shows that the Department's method is the more economical of the two buying procedures.

TOTAL COST STUDY

Project. Evaluate the feasibility of utilizing the Total Cost Method (TCM) of purchasing equipment.

Background. The TCM was developed to assist buyers in determining the total costs incurred during the life of a piece of equipment. The TCM is promoted by several manufacturers in the construction equipment industry. While frequently used in the private sector, the TCM poses problems in the public sector where low initial or bid cost based on specifications is required for equipment acquisition.

Total Cost Method. The TCM consists of three parts. These are:

- Purchase cost of new equipment.
- A guarantee by the vendor to repurchase the equipment for a given amount at a specific future date.
- An optional guarantee that repair costs will not exceed a specific amount during a specific period

The TCM is based on the concept that the lowest cost to the purchaser is the cost of the first item less the cost of the second item. This concept is potentially valid. However, depending on several factors, use of this purchase concept may not be the most economical method to purchase equipment. At the end of the contract period, the user sells the equipment back to the vendor at the price quoted when the equipment was purchased. The user may then purchase a new piece of equipment. It should be noted that the manufacturer does not guarantee that this buy back will occur. Manufacturers do not bid the equipment themselves but rely on their dealers to do the bidding and make all guarantees. Any TCM should be used with a bonded dealer to insure payment.

PURCHASE METHOD COMPARISON

Table I contains a comparison of the two methods over five, 10, 15 and 20 year periods. It should be noted that the comparison does not include maintenance costs.

The major differences between the two methods are that the TCM does not account for time value of money and for opportunity costs. The time value of money suggests that money received today is worth something different than money received in the future. Although future inflation is not known, an estimate should be included to determine the future value of money. Opportunity costs, the second adjustment, represents the potential interest that could have been earned on the excess money spent. For example, the difference in price for the units in this case study is $69, 271. If this amount were invested at 8% annual interest, a compounded total of approximately $30,000 would be earned in five years. Viewed another way, the $5,540 earned in interest (8% of $69,271) each year could be used for equipment maintenance—while still retaining the $69,271 principal. This would apply through all twenty years of the study.

ADVANTAGES AND DISADVANTAGES OF USING THE TOTAL COST METHOD

Advantages

- Predetermined ownership cost for budgeting purposes. Depreciation is known in advance.
- Predetermined residual value (resale value) of equipment.
- Maximum repair costs are guaranteed for a specified period by a fixed ceiling on costs (optional bid item).
- Monthly or annual maintenance and repair costs are known (optional bid item).
- Forced preventive maintenance schedule.

TABLE 1 PURCHASING METHOD COMPARISON*

Example Equipment	Total Cost Method Caterpillar 12G	Low Bid Method Champion 710A
Unit Sold in 5 Years		
Cash Price	$ 132,000	$ 73,361
Sales Tax	6,300	3,668
Buy Back	(73,000)	0
Total Cost	65,300	77,029
** Future Value (Single Payment)	0	(30,013)
Net Owning Cost (5 Years)	**$ 65,300**	**$ 47,016**
Unit Sold in 10 Years		
New Owning Cost (5 Years)	$ 59,300	$ 77,029
Cash Price Replacement (Incl. 7.5% est. incr.)	148,672	0
Buy back (est.)	(78,475)	0
Total Cost	125,672	77,029
** Future Value (Single Payment)	0	(74,728)
Net Owning Cost (10 Years)	**$ 129,497**	**$ 2,682**
Unit Sold in 15 Years		
Net Owning Cost (10 Years)	$ 129,497	$ 77,029
Cash Price Replacement (Incl. 15% est. incr.)	159,045	0
Buy back (est.)	(83,950)	0
Total Cost	204,592	77,029
** Future Value (Single Payment)	0	$ (141,347)
Net Owning Cost (15 Years)	**$ 204,592**	**$ (64,318)**
Unit Sold in 20 Years		
Net Owning Cost (15 Years)	$ 204,592	$ 77,029
Cash Price Replacement (Incl. 22.5% est. incr.)	169,417	0
Buy Back (est.)	(89,425)	(2,923)
Total Cost		
** Future Value (Single Payment)	0	(240,599)
Net Owing Cost (20 Years)	**$ 284,584**	**$ (166,493)**

* The Total Cost/Low Bid Comparison does not include maintenance costs.

** Future value of a single present payment program computed using 8% interest.

- Includes penalty clauses for parts delays or delays in service completion dates.
- Reduced downtime based on the theory that equipment will be replaced on a more frequent basis.

Disadvantages

- No allowance for cycles of Agency budget allocations (surplus or deficit) and availability of funding. In today's economy there is no guarantee money will be available to replace buy back equipment when contract ends.

- The TCM does not take into account the future value of a single present payment. For an Agency, the present value represents the difference in the purchase cost between the TCM and the LBM.
- "Locked in" on a set replacement schedule to secure the guaranteed resale price.
- Favors large firms over small, disadvantaged, or minority-owned businesses due to large amount of capital outlay required to participate.
- Typically higher initial purchase price.
- Depends on viability of bidder to fulfill obligations. Equipment manufacturer not liable.
- Bidders must agree to post a performance bond in the amount of buy back.
- Strict maintenance schedule and/or reporting schedule which, if not followed, may void contract.
- Resale agreement is subject to interpretation pertaining to records and maintenance at the time of buy back.
- If an agency cannot recall their equipment within five years, buy back option is forfeited.

SURVEY OF STATE DOTs

A recent survey of state DOTs found that Arkansas uses TCM to purchase tractors with a one year buy back. The states of Florida, Georgia, Kentucky, Mississippi, North Carolina, Virginia and West Virginia do not use TCM. The states of South Dakota and Texas have had laws prohibiting the use of TCM.

CONCLUSION

The main advantage of using the TCM is that for budgeting purposes there are predetermined equipment and maintenance costs. The disadvantages, however, are numerous. There is no allowance for cycles in an Agency's budget allocations and availability of funding. The TCM promotes buy backs which eliminates some bidders on equipment. The manufacturer does not guarantee the buy back, and resale agreements are subject to interpretation pertaining to records and maintenance at the time of sale. If the agency does not return equipment, the buy back is void.

The future value of a single present payment based on the difference in total of buy back versus LBM clearly indicates the cost advantage to the LBM. The LBM using SCDOT specifications, does not reduce the standards of any equipment purchased, these include product warranty, downtime, safety, and Department image.