

SAM – LEASE/PURCHASE EQUIPMENT

PRESENT VALUE TECHNIQUES

3740

(Reviewed 11/2014)

Before making a lease/purchase analysis, gather the following information from the sources listed:

1. Cost, *if purchased*, of:
 - a. Purchase price. —From the vendor.
 - b. Maintenance. —From the vendor.
 - c. Sales tax. —Compute from the purchase price.
 - d. Delivery and installation. —From the vendor.
 - e. Any other incurred costs. —From the vendor.
2. Cost, *if leased*, of:
 - a. Amount of each lease payment. —From the vendor. For office copiers, estimate the average number of monthly copies.
 - b. Maintenance (if not included in the lease payment.) —From the vendor.
 - c. Sales tax. —Compute from the lease payment.
 - d. Delivery and installation. —From the vendor.
 - e. Any other incurred costs. —From the vendor.
3. Useful life of the equipment. Determine how long the equipment is needed based on the length of the program. From the vendor, find out how long the equipment should last.
4. Estimated salvage value when the equipment is no longer needed. This value is only needed if the equipment will outlast the program. Estimate this value with help from the vendor and/or the DGS Office of Procurement.

Complete the lease/purchase analysis on the Lease Versus Purchase Analysis– Equipment Form, [GSOP 176](#), shown in the Appendix at the end of this chapter. Both a blank and completed example of this form are shown in the Appendix. This form uses the three most common ways to figure present value.

1. Discounted cash flow.
2. Amortized cost.
3. Break-even point.

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PRESENT VALUE TECHNIQUES

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The following information is given to help explain these three present value techniques. It also serves as an example for filling out the form's three sections.

Figuring out the Discounted Cash Flow. Use this method to compare the total cost of leasing to the total cost of purchasing. This method allows for the time value of money, based upon the premise that a dollar today is worth more than a dollar tomorrow because of earnings potential. If the value of money is 9.479 percent annually, then \$100 a year from now is worth \$91.34 today; i.e., $1.09479 \times \$91.34 = \100 . Thus you can find out if it is less expensive to postpone the payments until some future time by leasing, or make the entire payment right away by purchasing.

The eleven items under Computation of Discounted Cash Flow in the example shown in the Appendix were computed as follows:

1. Purchase price = \$8,000. (When rental credits can be applied, the amount subtracted from the purchase price should be stated.)
2. The following purchase costs:
 - a. Maintenance if purchased: \$50 per month (indicate period). Monthly table for Present Value of Annuity of \$1 for 96 months (useful life) shows a factor of 68.04:
$$\$50 \times 68.04 = \$3,402$$
 - b. Sales tax of six percent on \$8,000 = \$480.
 - c. Any other costs should be shown.Items 2a, 2b and 2c are then subtotaled.
3. Purchase price and subtotaled purchase costs are combined to produce a total purchase cost; i.e., $\$8,000 + \$3,882 = \$11,882$.

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4. Subtract the following if the equipment will last longer than your program:
 - a. Estimate of salvage value.
 - b. The Present Value of \$1 for the periods of your program's life. Find this value in the tables in the Appendix.
 - c. Salvage value is multiplied by the Present Value of \$1 figure to give you the present value of the salvage value.
5. Subtract the salvage value (none in this example) from Total Purchase Costs to give you the Net Purchase Costs, which remain \$11,882.
6. Lease payment per month (indicate period) = \$350.
7. Add the following costs for leasing over the same length of time as line 6 above.
 - a. The maintenance contract is included in this lease but should be shown if separate.
 - b. Sales tax of six percent on \$350 = \$21.
 - c. Any other costs should be shown.Subtotal these lease costs.
8. Add the lease payment and subtotaled lease costs to get the Total Lease Payment; i.e., $\$350 + \$21 = \$371$.
9. The monthly table (periods must match) for the Present Value of Annuity of \$1 for 96 periods (useful life) shows a factor of 68.04.
10. The present value of the lease is computed by multiplying the total lease payment by the factor for the Present Value of Annuity of \$1; i.e., $\$371 \times 68.04 = \$25,243$.
11. Compare the Net Purchase Cost with the Present Value of the Lease. Subtract the smaller amount from the larger amount; i.e., $\$25,243$ minus $\$11,882 = \$13,361$.

The number on line 11 shows the amount that can be saved by choosing the less costly option. In this example the purchase is less costly.

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Computation of Amortized Cost. Use this method to compare the cost of leasing and purchasing on a monthly basis (or some other regular period). A sum of money today is converted to a series of equal payments for a given number of times. This follows the same principle as an installment loan.

The three items under Computation of Amortized Costs in the example shown in the Figures Appendix were computed as follows:

12. The monthly table for the Annuity Whose Present Value is \$1 for the period of the useful life (96 months) shows a factor of .8147.
13. Multiply the net purchase costs shown on line 5 by the factor shown on line 12. This gives you the amortized cost of purchase; i.e., $\$11,882 \times .8147 = \175 , which equals the monthly cost of purchase over the period of the useful life.
14. Compare the Total Lease Payment (line 8) with the Amortized Cost of Purchase (line 13). Subtract the smaller amount from the larger amount; i.e., $\$371$ minus $\$175 = \196 .

The number on line 14 shows the amount that can be saved per period by choosing the lesser option. In this example the purchase is less costly.

Computation of Break-even Point. Use this method to figure out when the leasing costs equal the purchase price. This method allows for the effect of interest. In order to figure out the break-even point, any maintenance costs that are included in the purchase price or lease payment must be removed.

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The four items under Computation of Break-even Point in the example shown in the Figures Appendix are computed as follows:

15. Subtract the maintenance cost for purchased equipment (line 2A) from net purchase costs (line 5). This gives you the total purchase cost without maintenance; i.e., \$11,882 minus \$3,482 = \$8,480.
16. Write down the maintenance costs per period which are included in the lease payment (see line 2A). Then subtract this amount from the lease payment (line 8); i.e., \$371 minus \$50 = \$321.
17. Divide the purchase costs (line 15) by the lease payment (line 16). This gives you the present value factor; i.e., \$8,480 divided by \$321 = \$26.42.
18. Find the factor now shown in line 17 on the appropriate period table for the Present Value of Annuity of \$1 in the Tables Appendix at the end of this SAM chapter; i.e., on the *monthly* table, 26.42 appears at 30 months.

Line 18 shows the break-even point; i.e., the point in time when lease costs equal purchase costs. When the useful life exceeds the break-even point, as in the above example, it is less costly to purchase the equipment. If the useful life is shorter than the break-even point, it is cheaper to lease the equipment. In our example, the break-even point is at 30 months.

Most Economical Method of Acquisition. In the case of our example, the most economical method of acquisition is "purchase." Therefore, check the purchase box on line 19.