The Rent-Or-Buy Decision

by GENE HOLMAN / AOPA 460493

. . . how to graph the economics

Each of us who flies an airplane gives some consideration to purchasing his own plane rather than renting on an hourly basis. In some instances the decision to purchase may simply be the realization of a strong desire to own, with little regard for the dollars-and-cents advantages or disadvantages. Others may decide to purchase or not after a careful analysis of the costs involved in both arrangements.

Disregarding the financial aspects for the moment, there are a number of advantages to owning your own airplane. The plane is available for your use at any time, whereas if you're renting, you have to reserve time in advance but may find the weather unfavorable for flying at the appointed hour. Then, too, with ownership you don't have the urgency of getting the rented airplane back within the allotted time. It's always a little disappointing to have to head for home before you're ready to, in order to accommodate a rental schedule.

One of the reasons for owning an airplane is frequent cross-country flying that will take you away from your home airport overnight or for several days at a time. For a rented plane you'll incur a minimum rental charge each day you have the plane, whether you fly or not. With your own plane it's just a matter of tying down at a different airport, with probably a nominal tiedown charge.

Why are you considering buying a plane? If you're looking at a two-place military trainer, with 450 horses, to knock around the sky in on Sundays, your interests are probably considerably different from those of the potential buyer of a four-place, 180-hp, fixed-gear craft. If you buy a military plane, you're taking up an expensive hobby; if you can afford it, you need no further justification. The potential owner of the four-place plane more than likely wants to develop and maintain flying proficiency so that he can use the aircraft for family travel and personal pleasure as well.

This article is for both types of prospective owner, since we're going to talk about the costs of ownership. We'll show how to build up the ownership costs by element and present them graphically, so that an hourly rate can easily be determined at any number of operating hours, for any airplane, under any circumstances.

Let's assume you're interested in a four-place used plane with a 180-hp engine and a selling price of $10,000. Half the purchase price will be paid in cash, with the balance financed over five years at eight percent annual interest on the unpaid balance.

Costs of airplane ownership fall into two categories: (1) those that occur with the passage of time, e.g., insurance; and (2) those that occur with use, e.g., fuel.

Costs in the first category are referred to as "fixed costs" or "annual costs" because they do not change with increased or decreased use of the airplane. They relate to specific periods of time. There are at least seven types of these expenses:

- *Interest Expense*—Borrowed money should be shopped for as diligently as you shop for the airplane itself. The bank with which you conduct your other financial affairs is normally one of the first places to inquire. Your insurance company, the credit union at your place of employment, and well-heeled relatives and friends are also sources for consideration.

For our hypothetical used plane, we'll borrow the $5,000 from a bank for five years, at eight percent a year on the unpaid balance. With one annual payment of $1,000 on the principal at the end of each year, the interest will average out to $240 per year for each of the five years. If we still own the airplane at the end of five years, the interest then is no longer an ownership cost, since the note will have been paid off.

- *Storage*—Unlike an automobile, an airplane can't be taken home, so we'll have to make arrangements at an airport, where there is usually a choice of tiedown space or hangar space. Tiedown space in the open can be had for as

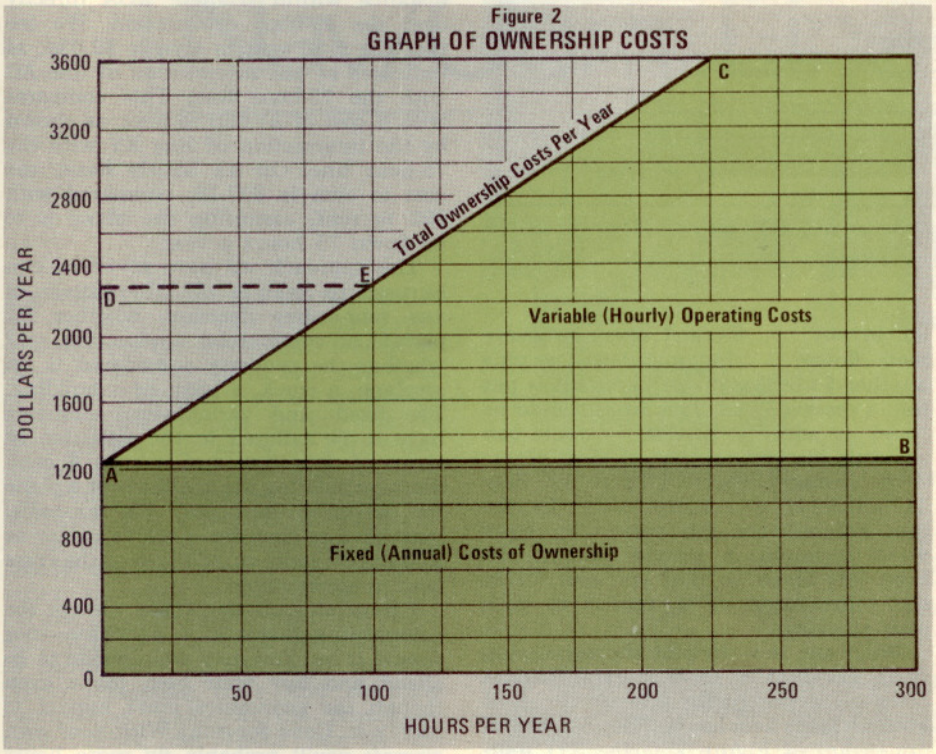
Figure 1

	Hypothetical Airplane	Your Airplane
Fixed (Annual) Costs:		
Interest Expense	$240	$_____
Storage—Tiedown	240	_____
Insurance	500	_____
Annual Inspection	150	_____
Personal Property Tax	125	_____
Depreciation	-0-	_____
Loss of Interest Income	-0-	_____
Total Annual Costs	$1,255	$_____
	Hypothetical Airplane	**Your Airplane**
Variable (Hourly) Costs:		
Fuel	$4.50	$_____
Oil	.29	_____
Maintenance	2.00	_____
Major Overhaul	3.60	_____
Total Hourly Costs	$10.39	$_____

little as $5 or $6, or as much as $25 or more, per month. For many of us, the prevailing rates at the only airport for miles will dictate what we pay for storage. Others of us may have the opportunity to select from two or more airports with varying rates.

Don't automatically select the airport with the lowest tiedown or hangar fee. Generally, the higher rates are attributable to higher property taxes, higher labor costs, and more services available for the airplane owner. With a $25-a-month tiedown fee, which seems steep without analysis, the airport will probably have a hard-surfaced, lighted runway. In addition, there will probably be adequate snow-removal equipment, providing minimal loss of flying time during winter; maintenance facilities on the field, equipped to handle everything from minor repairs to major overhauls; and a professional staff of pilots and instructors.

Figure 2
GRAPH OF OWNERSHIP COSTS



For our hypothetical used plane, we'll estimate the tiedown cost as $20 a month.

• *Insurance*—More than likely, the bank from which we borrow the $5,000 will require us to carry hull insurance, in addition to property-damage and public-liability coverage. The bank may also ask us to carry breach-of-airworthiness coverage. Premiums will vary in proportion to the value of the insured aircraft. An approximate rate for our $10,000 used plane is $500 a year.

• *Annual Inspection*—Our hypothetical plane will be used on a not-for-hire basis and will require annual inspections. After talking to an FBO, an A&E mechanic, and an owner of a similar plane, we determine that $150 will cover the usual annual (excluding parts and installation) on this airplane. (If our plane were to be used for hire, it would, of course, require 100-hour inspections, and we'd consider this an hourly cost, at $1.50 per hour, rather than a fixed cost of $150 a year.)

• *Personal Property Tax*—Our local tax assessor's office informs us that we may expect a tax bill of $125 a year on our used plane. (This cost will vary depending upon the location.)

• *Depreciation*—A new airplane depreciates during the first five or six years to 40 or 50 percent of its purchase value. The amount of depreciation on any given plane could vary more or less than this, depending largely upon the maintenance given it.

Depreciation should be looked at on an annual basis; i.e., What do we estimate the market value of our airplane will be, one year after purchase? The difference between the purchase price and the estimated market value a year later is the depreciation cost for that year. If we use our hypothetical plane as an example:

Purchase price on 7/1/72	$10,000
Estimated market value on 7/1/73	10,000
Depreciation	–0–

If we had purchased a newer airplane for $14,000, we might have had a different situation:

Purchase price on 7/1/72	$14,000
Estimated market value on 7/1/73	12,000
Depreciation	$ 2,000

The $2,000 is a real cost for one year because the value of the investment has been reduced from $14,000 to $12,000 during the first year of ownership. A similar analysis at the beginning of the second year of ownership might indicate further depreciation, bringing the value down from $12,000 to something lower. Depreciation cost should be analyzed each year until the purchase price is depreciated to market value.

How do we estimate market values one year in advance? We look at the going prices for similar planes, in comparable condition, that are one year older than ours is today. Classified ads, personal inquiries of airplane salesmen, purchases of like planes by friends, and hangar talk will give us a pretty good indication. Once an airplane is depreciated to market value, it could actually appreciate, or increase, in value because of inflation. This appreciation factor could technically be viewed as a minus depreciation cost, but as a practical matter it is usually not treated as such.

• *Loss of Interest Income*—We have to be very honest with ourselves on this one. This is the interest income lost on savings or other money that has been diverted to the purchase of an airplane. Usually we won't have both interest expense and loss of interest income in our cost of ownership calculation.

If you have funds invested in a specific interest-bearing program, such as common stock, or in a savings account, and you remove some or all of those funds to invest in an airplane, this becomes a valid cost item for you. In many instances, however, such funds have been accumulated for a specific purpose, such as buying a plane, and any interest earned during the accumulation is only incidental to the primary purpose.

To illustrate, let's consider the case of an individual who had the total purchase price of a $10,000 plane in his savings account. He had accumulated these funds over a period of time and was enjoying six percent interest income each year on his savings. If we were to remove $5,000 of his savings as partial payment for an airplane, he could logically consider the loss of six percent interest per year on $5,000 as cost of airplane ownership.

When we stop to consider that our entire lives are a series of saving and spending cycles, it seems inappropriate in most cases to assign an interest cost to the spending. You wouldn't normally consider the lost interest income if you took your money out of savings to put a downpayment on a new home or purchase a new automobile. So, depending on how you feel about it, you may or may not elect to assign a cost value to this situation.

Ownership costs that vary directly with each hour the airplane is used are identified as "variable" or "hourly" costs. These include:

• *Fuel*—According to the owner's manual for our hypothetical airplane, the average fuel consumption will be nine gallons per hour. At 50 cents per

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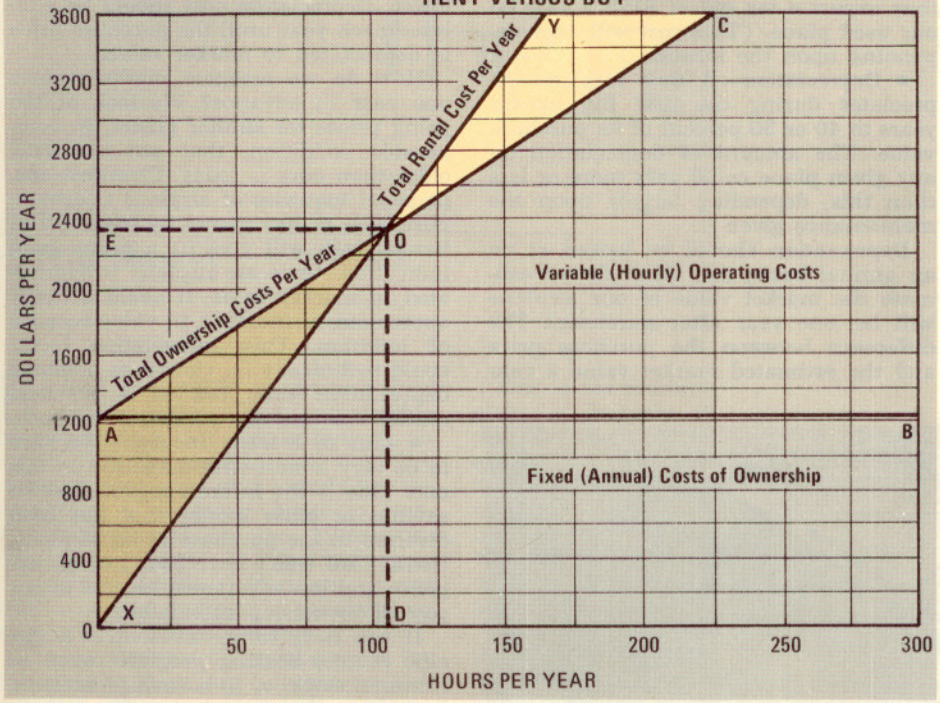
Figure 3
GRAPH OF EQUAL COST
RENT VERSUS BUY



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gallon, fuel cost could be expected to average $4.50 per hour.

• *Oil*—Oil for an eight-quart tank at 80 cents per quart, with changes at 50 hours, will cost 13 cents per hour. Plan on adding a quart each five hours for another 16 cents per hour.

• *Maintenance*—We'll have to estimate this as best we can, basing our guess on past experience and on the condition of the airplane. This cost could be segregated into two or more categories, e.g., avionics, engine, airframe. For our purposes we'll estimate $2 per hour for all maintenance, which will cover radios, tires, cold-weather starts, painting, etc.

• *Major Overhaul*—An estimate should be made of the number of hours remaining on the engine until a major will be required. For our hypothetical airplane, let's assume 500 hours, at a cost of $1,800, or $3.60 per hour. If a major is required immediately upon, or shortly after, purchase, that cost should be considered part of the purchase price of the plane. If you don't plan on keeping your plane long enough for a major overhaul, then don't include the overhaul in your operating costs. The additional engine hours, however, may mean a lower estimated market value at the time of sale, resulting in a higher depreciation cost to you.

With respect to maintenance and major overhauls, an effective way to accumulate the funds for these costs is to pay yourself the estimated hourly cost for every hour the airplane is operated. So, in our hypothetical case, for every hour flown, $2 for maintenance plus another $3.60 for major overhaul is put into a reserve fund. This fund should be "paid" or added to just as we would pay someone else for the use of their plane.

In summary, Figure 1 (page 38) lists 11 kinds of ownership costs. In the first column are the ownership costs we've reviewed. A second column has been left blank so that you can fill in the information as it applies to your own situation.

We want now to plot the ownership costs graphically so that total annual costs are apparent for a broad range of annual operation hours. The horizontal dimension of Figure 2 (page 39) indicates number of hours per year in increments of 25. The vertical dimension shows dollars of cost per year. Line AB is drawn across the chart at the $1,255 level. This, from our summary, is the expected total annual cost of ownership of our hypothetical airplane no matter how many hours we fly. On top of the annual-cost line (AB) is the hourly cost, represented by line AC. Notice that at zero hours our total cost is $1,255, all of which is fixed. At 100 hours, the total cost becomes $2,294 (dotted line DE), which is the sum of the fixed costs ($1,255) and hourly costs ($10.39 x 100)—an average of $22.94 per hour. Line AC represents total ownership costs for the number of hours indicated at the base of the graph.

We see that the total hourly cost decreases as the number of hours increases. This is because the fixed-cost portion is being allocated over a larger number of hours. If we compare the total hourly cost at 100 hours and at 150 hours, we determine from line AC that the total cost for the year is $2,294 at 100 hours and $2,814 at 150 hours.

In Figure 3, line XY represents the rental cost ($22 per hour) for an airplane comparable to our hypothetical airplane. The total-cost line (AC) and the rental line (XY) intersect at the point of equal cost, which is at 108 hours (dotted line OD) and $2,376 per year (dotted line OE). At 108 hours a year, the total hourly cost to fly our airplane is $22, whether this particular plane is owned or rented.

Triangle XOA depicts the economic disadvantage of ownership for any number of hours between zero and 108, while triangle OCY shows the financial advantage of ownership for any number of hours that exceeds 108. To determine the amount of disadvantage at 75 hours, for example, we refer to the vertical distance within triangle XOA directly over the 75-hour designation. We see that the total cost to own is $2,034, as indicated by the intersection of line AC with the 75-hour line. This compares with a cost of $1,650 to rent, as shown by the intersection of line XY with the 75-hour line. On an hourly basis, the cost to own is $27.12, compared with $22 to rent, assuming the plane is to be flown 75 hours a year.

The approach we have reviewed can be used to analyze the alternatives in any rent-or-buy decision, whether for private or commercial application, and whether the property considered is an airplane, a truck, a boat, or a building. The fixed- and variable-cost elements have to be tailored to the situation in terms of definition and values. A company considering the purchase of a plane for business purposes, for example, may have to consider a pilot's salary as a fixed-cost item, in addition to the costs used in our example.

Financial analysis is not always the determining factor in a purchase—nor should it be. You may well decide to go ahead and buy your own plane even though the economics don't appear to justify it. Good for you! With your own aircraft you'll probably fly more hours anyway, and you'll know exactly what your hourly costs are. □

THE AUTHOR

Gene Holman, of Crystal Lake, Ill., is an accountant for the Singer Company. He's new to the pages of The PILOT *and new to the aviation community, having received his private pilot certificate less than a year ago. Enthusiastic about the rewards of his new avocation, Holman is now working on his instrument rating.*