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[CT] Chapter 9

[CT] Equipment Costs

Key terms

Acquisition cost per hour
Cost per hour CPH
Fuel cost per hour
Lifetime hours
Maintenance cost per hour
Meter Time
Mileage rates
Useful Life

[OH] **PURPOSE**: To calculate both field and general and administrative (G&A) overhead equipment and vehicle costs for budgeting purposes;

To differentiate between direct field equipment, trucks and G&A overhead vehicle costs;

To calculate equipment cost per hour amounts for the various types of equipment and vehicles in your company/division.

[OH] **INTRODUCTION**

The best method for budgeting equipment (or any item) is to review historical data as a point of reference and then make the appropriate adjustments for the budget period being developed. However, this isn't always possible. If you're in a start-up situation or if your historical data is unavailable, inaccurate or not properly formatted, you must make educated calculations (guesstimates).

It's important to understand the reasoning behind differentiating direct field equipment and truck costs, which are bid into jobs based upon **costs per hour (CPH)** and the number of hours to be used on a specific job, and indirect (or G&A overhead) vehicle costs. The latter is bid into individual jobs as a part of G&A overhead costs.

Some estimating systems place all equipment costs (tractors, pickups, dump trucks, G&A overhead vehicles, etc.) into G&A overhead and allocate them to specific jobs in their G&A overhead markup. This is usually as an overall percent markup or as a specific dollar amount multiplied by estimated field-labor hours on a particular job.

This method is inaccurate. Whether you're in a construction or a maintenance bidding situation, it invariably understates or overstates the actual equipment costs for the job being bid.

Our goal is (1) to identity correctly specific equipment costs on a per hour basis, and (2) to multiply that specific hourly cost by the estimated number of hours that particular piece of equipment is to be used on a particular job. We do this in order to determine the total amount of equipment costs we'll bid into each individual job.

If the job requires only pickup trucks and wheelbarrows, then we only want to include costs for the same in the bid. If, on the other hand, the job requires dozers, large dump trucks, tractors, etc., we want to include those costs in the bid. Including all equipment costs in G&A overhead, and indiscriminately spreading them evenly like peanut butter over all your jobs, precludes accurate and competitive bidding. Refer to Chapters 11 and 12 for a more detailed discussion of bidding equipment on your projects.

[A] BUDGETING FOR EQUIPMENT COSTS

If you're in a start-up situation or lack accurate historical data for equipment costs, use either the percent of sales or the equipment-to-labor ratio method outlined in chapter 10 to calculate your projected annual equipment cost budget.

If you have accurate company/division historical data for both direct equipment and G&A overhead vehicle cost, make appropriate adjustments to your projected equipment budget by using one (or a combination) of the following methods:

1. Increase or decrease direct equipment costs (including repairs and maintenance costs at market rates, in-house mechanics, fuel and depreciation) by the same percentage of projected increase or decrease in sales. For example, if gross annual sales are projected to increase by 15 percent, increase direct equipment costs by the same amount.

2. Increase or decrease budget projections for direct equipment costs by multiplying the historical percent (the percent direct equipment was of previous gross annual sales) by the projected amount of gross annual sales. For example, if direct equipment costs have historically been eight percent of gross annual sales, multiply (for budget purposes) next year's projected gross annual sales by eight percent to obtain projected direct equipment costs for next year's budget.

3. This third method is possible only if you've established a formal equipment division with its own P&L statement and have accumulated accurate maintenance and repair costs for each piece of equipment. If adding, replacing or deleting field equipment, increase or decrease your projected budget costs as follows:

A. Cost out the piece of equipment that's being added or deleted, using the costing section of this chapter in order to determine its CPH and the cost data accumulated in your accounting software. Divide real costs accumulated by actual meter hours on the piece of equipment.

B. Multiply the CPH by the projected increase or decrease in hours used.

C. Adjust your projected costs accordingly.

If you're replacing a piece of equipment with one that has the same CPH, there's no need to adjust your projected costs, unless the projected hours of use will increase or decrease significantly (that is, by 15-20 percent). In this case, you'd adjust the projected cost to reflect the change in hours used.

If the replacement equipment CPH differs from the original (and the projected use hours are roughly the same), multiply the difference in CPH by the projected hours used, and adjust projected costs accordingly. For example:

$15 (new CPH) minus $12 (old CPH) = $3

$3 (CPH difference) x 1,000 (projected use hours) = $3,000 to be added to projected costs

If hours of use are also projected to change, calculate that change in your adjusted cost.

Once you've calculated total costs for the budget year for each piece of equipment in your company, combine all the totals to determine your total equipment cost budget for the year. Add G&A overhead vehicle costs to the field equipment total. Your new total is now your equipment division's sales or income budget for the year. You'll achieve this sales goal as you "rent" equipment at cost to the other divisions throughout the year.

As you accumulate sales, you'll also accumulate costs on your equipment division P&L statement. Repair parts cost, in-house mechanics, mechanics' tools and vehicle, and repair work

done outside the company are entered as direct costs: materials, labor, equipment and subcontractor costs, respectively. G&A overhead for the equipment division is calculated just as was done in Chapter 8.

****Box text - The *goal of the equipment division is to break even*.****

The *goal of the equipment division is to break even*. Sales to other divisions are calculated at the predetermined CPH multiplied by the hours used by that division. This amount is then charged to the respective divisions as an equipment direct cost.

If you've accurately projected your usage hours and your CPH for each piece of equipment, sales in the equipment division should equal the sum of all costs, both direct and G&A overhead. If your equipment division doesn't break even, review your costs and meter hours for each piece of equipment and determine where you went wrong.

4. G&A overhead vehicle costs. Even if you have accurate historical cost data for G&A overhead vehicles and associated costs, these don't necessarily increase or decrease in direct proportion to sales.

You could easily increase sales by 15-25 percent without adding another G&A overhead vehicle. Consequently, costs remain the same. You only adjust your G&A overhead vehicle costs if the number of G&A overhead vehicles varies.

To determine G&A overhead vehicle cost:

A. Identify the specific vehicles to be included in G&A overhead. These will be the company-owned vehicles used by persons listed in the "G&A overhead salary" category. (If a person's salary is only partially included in G&A overhead, then a corresponding percentage of any related vehicle cost will be included in G&A overhead.)

B. Determine the CPH for the G&A overhead vehicle (e.g., $6 per hour).

C. Multiply the CPH for the respective vehicles by the projected hours of use. For example:

$6 CPH x 2,080 (52 weeks x 40 hours per week) hours for full-time G&A overhead vehicles;

$6 CPH x 1,040 hours for 50 percent part-time G&A overhead vehicle use.

D. Add projected mileage reimbursed to G&A overhead personnel for use of their personal vehicles (and any other G&A overhead vehicle expense) to the totals for company-owned vehicles. Place this amount into your projected G&A overhead budget.

For tax purposes, you may have a number of "G&A overhead vehicles" that appear on your P&L statement. Unless these vehicles are realistically used in direct support of G&A overhead personnel, you can't include all their costs in your estimating budget. Your bids will not be competitive. Again, what's real isn't always what's reasonable to put in your estimating G&A overhead budget. Ask yourself if all these vehicles really reflect fair market value expenses.

For instance, if you have only two people in G&A overhead, you can't list four vehicles (at 2,080 hours each) in your estimating G&A overhead budget. It's just not realistic or reasonable to do so.

If you don't have reliable company/division historical data to use for budget projections, or if you're in a start-up situation for a company or division, use a percent of labor as outlined in Appendix E to project direct equipment costs. To calculate G&A overhead vehicle costs, use the procedures described earlier in this chapter.

[A] CALCULATING EQUIPMENT COST PER HOUR

There are two reasons for calculating the cost per hour (CPH) for a piece of equipment:

1. To calculate budget projections for direct equipment and G&A overhead vehicle costs.

2. To calculate the amount of direct equipment costs to include in a job in the bidding process.

Our goal is to recover all our company/division equipment costs for the year in the jobs we complete and bill in that year. In order to do so, we must:

- Accurately determine costs.
- Allocate the correct amount of these costs to jobs.
- Complete and bill enough work/jobs in the field to cover all our equipment costs for the year.

It may help to think of yourself as an equipment rental company, or a car rental firm (such as Hertz or Avis). They, just like you, need to know vehicle/equipment costs (purchase price, interest rates, repair and maintenance, etc.) in order to determine appropriate customer rental rates.

These rates are based on an hourly, daily, weekly, etc. cost figure that's marked up to cover corporate G&A overhead and net profit. If vehicle/equipment costs aren't identified accurately, subsequent rental rates would be either too high (prompting customers to shop elsewhere) or too low (causing the company to lose money).

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I know of construction and maintenance companies, both large and small, that lost customers and hundreds of thousands of dollars because they didn't bid their equipment costs accurately. Nor did they track their equipment costs (and revenues generated) in order to cover these costs in jobs completed. They didn't ensure that they'd at least break even for such costs (we'll cover this in greater detail in chapter 45).

*** How it works- start****

A contractor in New England, with whom I was consulting, questioned whether he needed to use my pricing methods. He did not have to competitively bid his work. He did the work and then gave his clients a bill. They always paid whatever he charged them because the contractor did good work, and the customers trusted him. As it turned out, his invoices were *more* than reasonable.

During the course of the day of consulting, the contractor kept complaining how he thought that his sales revenue for the year was about $75,000 short of what it should have been. Sales revenue should have been about $575,000 not the $500,000 that he had charged. Finally, I asked him to explain to me how he had priced his work for the previous year.

His 20 percent markup on material costs was fine. The $35 charge per labor, including general condition time, was accurate. There was nothing wrong with the 15-20 percent markup that he put on subcontractor costs. However, when I asked him how he charged for his equipment, he looked stunned. He replied that he did not think that he should charge for equipment as it was *just a cost of doing business*.

I responded that he was correct in stating that it was a cost of doing business. However, I wanted to know how he passed this $60,000 cost of doing business for equipment on to his customers. He had not. With a proper markup for net profit and G&A overhead, this $60,000 would have accounted for the missing $75,000.

Think of it! Had this contractor written out invoices totaling $575,000 for the year, his clients would have paid it without question. He simply shorted himself $75,000. And it was all profit

How would you have corrected this flaw in this contractor's estimating system? Do you have similar flaws in your estimating system?

*** How it works- end****

We need to make the following distinctions (or assumptions) concerning our method of equipment costing:

1. Useful Life and Meter Time

A. For cars and trucks under one ton in size and below, this will be 8,320 (2,080 hours per year x 4 years) hours.

We want to recover our costs for these "light" vehicles in either four years, at 2,080 hours per year (8 hrs/day x 5 days/wk x 52 wks/yr), or, for seasonal companies, in five years (8 hrs/day x 5 days/wk x 42 wks/yr). Incidentally, in this case, the eight hours per day is not necessarily meter (or engine running) time.

After four or five seasons, these vehicles are usually worn out. If they last longer, great! However, we want to be conservative in recovering our costs. We prefer to recoup our costs sooner than later, in no more than four to five years.

B. The **useful life** of heavy-duty trucks (larger than one ton), tractors, dozers, trenchers, mowers, etc., consists of projected actual **meter time**/hours prior to that piece of equipment needing a major overhaul.

We'll use 10,000 engine running or meter hours for heavy-duty trucks before needing such an overhaul. However, the 10,000 hours may be spread over 10 to 15 years, not just four to five like light-duty trucks.

Useful life meter time/hours for tractors, dozers, trenchers, mowers, etc., will generally be much less than those for heavy-duty trucks. They can, however, also last 10 to 15 years before needing a major overhaul. This equipment is built to last and to endure the wear and tear. If you don't use it, it won't wear out (for the most part) in four to five years, as do the lighter trucks and vehicles.

As a general rule, I like to project **lifetime hours** for gas engines at 100 hours of life per horsepower. Diesel engines I project at 125 hours of life per horsepower. However, I'll cap lifetime hours for equipment as indicated in the Table 9.1.

Table 9.1 Lifetime Hours for Engines

Engine horsepower	Gas engine	Diesel engine
20 to 25	2,000 to 2,500	2,500 to 3,000
25 to 30	2,500 to 3,000	3,000 to 3,500
30 to 40	3,000 to 4,000	3,500 to 4,500
40 to 50	4,000 to 5,000	4,500 to 5,000

50 to 100	Cap at 5,000	Cap at 7,500
Over 100	Cap at 7,500	Cap at 10,000

2. Seasonality

Light-duty trucks (one ton and below) that aren't used in winter have the same useful life in hours (8,320) as ones that are, but useful life is spread out over five years, rather than four. This is because seasonal use is shortened to (approximately) l,600 hours (40 weeks x 40 hours per week) per year, sometimes less. However, it generally evens out at a total useful life of 8,320 hours.

3. Costs for New vs. Used Equipment

Even if you plan to buy used equipment, we'll cost it out using the "new" purchase price. The CPH will generally be the same for new and used equipment. Another reason for using the new price is because useful life and repair and maintenance costs are easier to determine for new equipment. Using the new purchase price also automatically adjusts our equipment rates for inflation and price increases.

In essence, purchasing new versus old equipment is not a question of operating savings; it's a question of capital. Can you afford to buy new equipment? Used equipment may be cheaper to purchase, but is usually more expensive to maintain. Therefore, the CPH will tend to remain the same.

4. Renting vs. Owning Equipment

As a general rule, unless you use and bill for a piece of equipment at least 50 percent of the time (20 hours/week), it's not financially practical to own it.

If, however, a piece of equipment is either not readily available or would be impractical to rent, it usually pays to purchase it. But before purchasing, you should assess the financial feasibility of owning it by comparing projected revenues and operating savings generated to projected costs incurred.

5. Leasing vs. Buying Equipment/Vehicles

Leasing equipment and/or vehicles may or may not provide cost benefits to your company or division. Often, the leasing versus buying option is one driven by tax benefits (check with your CPA or accountant), rather than savings for operational costs.

To determine the costs and benefits of leasing, cost out the leased equipment/vehicles as you would those you might purchase. Be sure you adjust the "Purchase Price Column" so it reflects all

lease payments and other appropriate items (i.e., periodic maintenance included in lease agreements, extended warranties, etc.). Other costs, such as fuel costs and life expectancy, should remain the same.

If the lease-life for the equipment/vehicle is significantly shorter than the normal expected life (should you purchase), adjust the life expectancy to the shorter term. Adjust maintenance and fuel costs to account for the shorter period, as well.

For example, a leased vehicle that's to be replaced every two years by a "new" leased vehicle should have an adjusted life expectancy of 4,160 hours (2 years x 2,080 hours per year) versus 8,320 lifetime hours. Anticipated maintenance, insurance and fuel costs should cover only the two-year period. Theoretically, there should be little to no anticipated repair or maintenance costs, especially if periodic routine maintenance (replacing worn belts; lube, oil and filters, etc.) is included in the lease.

Finally, compare the lease CPH to the purchase CPH in order to determine any savings. If there are, adjust your estimating budgets accordingly and weigh the option of using the higher or lower CPH in your bids. While the lower is realistic, the higher would provide a "contingency" (or "fudge") factor that should translate into a slightly increased net profit margin (you should be able to detect this increased margin in your job-costing reports) for individual projects.

6. Small Tools/Non-motorized Items

Small tools and non-motorized items (such as: shovels, rakes, hoes, wheelbarrows, etc.) are reflected in general and administrative (G&A) overhead and are not included in this chapter.

7. In-house Labor on Equipment/Vehicles

Unless you have a separate equipment company/division with separate financial statements, calculate your projected maintenance costs by utilizing the prices and rates obtained from outside equipment repair shops. These prices will include their materials, labor, labor burden, G&A overhead, net profit, etc., at fair market value.

If you attempt to calculate your cost per hour figures using in-house labor (including labor burden, etc.), you'll greatly complicate the costing process. In addition, your rates will probably be more expensive than those on the open market. If so, you should save the money and have the work done outside. If, on the other hand, you can do it cheaper, use the open market rates (which are a fair market value rate) in your equipment costing and put the extra money in your pocket.

[A] MILEAGE RATES

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Using established **mileage rates** to reimburse your employees for the use of their own vehicles as G&A overhead transportation is fine on a limited basis. These costs are included in G&A overhead. Reimbursing field employees in a similar manner for using their own vehicles on the job is also fine. However, we don't bid costs into a job based on mileage rates for company-owned vehicles/equipment. Rather, we use hourly rates. Let me use an example to explain why.

****How it works - start****

You have two similar-sized jobs. One is 50 miles from your office; the other is only five miles away. If you want to bid a half-ton pickup truck into the jobs, you'd calculate (using sample rates) as follows:

1. Mileage rate method: lifetime costs $49,920 ÷ lifetime mileage 100,000 miles = .4992 = $ .50

2. CPH method: lifetime costs $49,920 ÷ lifetime hours 8,320 = $6

"Job A" (50 miles away):

Method #1. 100 (miles/day) x $.50 (per mile) = $50

Method #2. $6 CPH x 8 hours/day = $48

"Job B" (five miles away):

Method #1. 10 (miles/day) x $.50 (per mile) = $ 5

Method #2. $6 CPH x 8 (hrs/day) = $48

G&A overhead and net profit will be added to both in order to determine the price to charge the customer.

The mileage method breaks down for the following reasons:

1. Most of the wear and tear (broken mirrors, lights, windows, flat tires, etc.) on the truck will probably occur traveling around the job site once it arrives there. The highway is probably the safest place for the truck. Costing the vehicle based on miles driven to and from the site doesn't take this into account.

2. Although both methods are comparable for "Job A," you have to drive a vehicle 50 miles (one way) in order to gain equity. If all your jobs are this far away, this method might have some merit. However, this probably would rarely be the case.

3. Hours are easier to job cost than mileage; for example, four hours per day, eight hours per day, 40 hours per week, etc., versus so many miles per day actually driven. Also, how do you figure job costs if the vehicle stays at the job site overnight? Or what if this one particular vehicle is used on three jobs in any one day? It would be extremely difficult to prorate between each job and to job cost the individual projects accurately.

****How it works - end****

[A] WORKSHEET EXERCISES

Let's turn to the "Equipment Costing per Hour Calculation Worksheet" in Exhibit 6 and cost out some sample equipment and vehicles.

1. Mini-pickup truck: Used by owner for administrative purposes and for transportation to and from job sites. Will last four years and have approximately 100,000 miles on it when traded in.

A. **Acquisition cost per hour**

In order to calculate the acquisition cost per hour, add the purchase price (including tax, registration, racks, tool boxes, special paint, etc.) to total lifetime interest to be paid. If this total interest is not on the contract, use the formula below and subtract the anticipated salvage value when you replace the vehicle.

(Purchase price x number of years of payments x interest rate) ÷ 2

($13,500 x 4 x .12) ÷ 2 = 6,480 ÷ 2 = $3,240

Purchase price	$13,500
Interest	3,240
Subtotal	$16,740
Salvage value	- 4,500
Total	$12,240

Divide by lifetime hours (8,320):

$12,240 ÷ 8,320 = $1.47

Enter $1.47 in the worksheet column (1).

B. **Maintenance cost per hour** (total projected costs)

1.	Insurance: 4 years at $1,000/per yr. (average)	$4,000
2.	License fees: 4 years at $150 per yr. (average)	600
3.	Lube, oil & filters every 3,000 miles 33 x $25	825
4.	Brake jobs: 2 at $350 each	700
5.	Clutch jobs: 2 at $430 each	860
6.	Tune-ups: 3 at $155 each	465
5.	Smog certification: 3 at $50 each	150
8	Tires: 2 sets at $300 each	600
9.	Misc. (batteries, mirrors, belts, windshields)	3,000
10.	1 blown engine for every 3 vehicles (average) $2,400 ÷ 3	800
	TOTAL	$12,000

Divide total by lifetime hours: $12,000 ÷ 8,320 = $1.44

Enter $1.44 in the worksheet column (2).

C. **Fuel cost per hour**

Determine the fuel CPH for automobiles and trucks under one ton by using one of the methods below. Then enter the amount in worksheet column (3).

(1). Method using total miles used per useful life or per year

a. Total miles driven per year 20,000

b. Divide by miles per gallon 15

20,000 ÷15 = 1,333 gallons/year

c. Convert gallons to dollars at: $1.50/gallon

1,333 x $1.50 = $2,000 per year

d. Divide $2,000 by hours per year

$2,000 ÷2,080 = $0.96 per hour

Note(s):

[1]. You can use useful life hours and respective miles for the above example, as well.

[2]. If vehicle is used only part of the season, reduce hours accordingly but increase number of lifetime years for vehicle.

(2). Method using number of fill-ups per month (or week)

a. Determine number of fill-ups per month 5

b. Multiply tank size by approximate number of gallons per fill-up 20
5 fill-ups x 20 gallons = 100 gallons per month

c. Multiply by average price per gallon

100 x $1.50 = $150

d. Divide total costs by hours per month or week (40 hours/week x 4.33 weeks/month)

$150 ÷ 173 $.87

D. Total CPH. Add columns (1), (2), and (3). This will give you your total costs per hour (CPH) for a mini pickup:

$1.47 + $1.44 + $0.96 = $3.87 (round up to $4)

Mini-pickups generally cost $4 to $5 per hour to operate, depending upon the type of options added to the vehicle purchase price (four-wheel drive, air conditioning, AM/FM radio, deluxe interior package, etc.).

Note: the CPH is only your projected cost for the vehicle. It's *not* the price charged to the customer, because it hasn't yet been marked up for G&A overhead and net profit.

Let's now cost out a piece of field equipment.

2. 21" Rotary mower

Purchase Price:	$1,100
Use:	Approximately 2.5 hours/day, 5 days/week, 30 weeks/year
Life expectancy:	Two seasons (then replaced or rebuilt)
Interest:	None (if paid for in cash)
Salvage Value:	None

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A. Acquisition CPH

Divide purchase price by projected lifetime hours:

$1,100 ÷(2.5 x 5 x 30 x 2) = $1,100 ÷ 750 hours = $1.47

Enter $1.47 in worksheet column (1)

B. Estimate lifetime maintenance costs (repair parts, labor, blades, spark plugs, oil changes, filters, etc.). Check with your equipment dealer, who'll often have such data available. We'll estimate costs at $600.

Divide lifetime maintenance costs by lifetime hours:

$600 ÷ 750 hours = $0.80

Enter $.80 in worksheet column (2)

C. Determine running time (meter time) fuel consumption by one of the following methods:

(1). Ask: How long does one gallon of gas last for this piece of equipment? If all day (for two and a half hours used per day), divide the price of a gallon of gas by 2.5 hours. Add oil additive costs for two-cycle engines:

$1.50 per gallon ÷ 2.5 hours $0.60

(2). Ask: If I used this piece of equipment during a typical day (two hours meter time), how many times would I have to stop and refill the tank (e.g., one time)? Multiply number of fill-ups by size of tank (e.g., one gallon):

1.0 gallon x 1 fill-up = 1 gallon

Multiply result by price for a gallon of gas and divide by 2.5 hours:

1 gallon x $1.50 = $1.50

$1.50 ÷ 2.5 hours = $0.60

Enter $.60 in worksheet column (3)

D. Total CPH. Add columns (1), (2), and (3). This will give you a CPH for a 21" rotary mower:

$1.47 + $0.80 + $.60 = $2.87 (round to $3)

Note: These figures will vary depending on the type of preventive maintenance (PM) program you have, if any, and the purchase price of the equipment used.

The best method for determining CPH amounts is to use company historical data. However, most companies don't have such information readily available.

3. Small Tractor

Purchase price:	$23,000
Life expectancy: 300 hours per year for 10 years	
Interest ($23,000 x 4 x .12) ÷ 2 =	5,520
Salvage value	$ 8,000

A. Acquisition CPH

Divide purchase price + interest – salvage value by projected lifetime hours:

($23,000 = 5,520 – 8,000) ÷ 3,000 hours = $20,520 ÷ 3,000 = $6.84

Enter $6.84 in column (1)

B. Estimate lifetime maintenance costs (repair parts, labor, engine costs, tires, filters, oil changes, etc.). Check with your equipment dealer, who'll sometimes have such data available.

Divide lifetime maintenance costs by lifetime hours

$18,000 ÷ 3,000 = $6
Enter $6 in column (2)

C. Determine running time (meter time) fuel consumption. For the sake of brevity, let's say the cost of fuel and oil consumption is $2.25 per hour (1.5 gals. per hr. at $1.50 per gal.).

Enter $2.25 in column (3)

D. Total CPH. Add columns (1), (2), and (3). This will give you a CPH for a small tractor.

$6.84 + $6.00 + $2.25 = $15.09

Again, these figures will vary depending upon the type of tractor and other variables.

4. Rototiller, walk-behind

Purchase Price: $2,500 (including interest and any salvage value)
Lifetime Hours: 750

A. Acquisition CPH

Divide purchase price by projected lifetime hours:

$2,500 ÷ 750 = $3.33

Enter $3.33 in column (1)

B. Estimate lifetime maintenance costs (repair parts, labor, spark plugs, oil changes, filters, etc.).

Divide lifetime maintenance by lifetime hours:

$1,000 ÷ 750 = 1.33

Enter $1.33 in column (2)

C. Determine running time (meter time) fuel consumption. In this instance, let's say the fuel is consumed at the rate of one gallon per hour at $1.50 per gallon.

D. Total CPH. Add columns (1), (2), and (3). This will give you a CPH for a trencher.

$3.33 + $1.33 + $1.50 = $7.49

I would round this up to $7.50 or $8.00

[A] **VERIFICATION**

To verify your calculated CPH figures, consider the following:

1. Contact your local equipment dealer and/or check your owner's manual to verify maintenance costs, production rates, fuel consumption, lifetime hours, etc.

2. Compare your hourly, daily, weekly or monthly rates to those of your local equipment rental company. Reduce rental rates by 40-50 percent (to remove G&A overhead and net profit) in order

to determine the CPH for that piece of equipment. Your CPH rates should be reasonably close to theirs.

3. Contact the offices of your state/local Department of Transportation (DOT). They have manuals that contain CPH data for both maintenance and construction equipment. These offices are usually very helpful, and you can use their CPH figures for comparison purposes.

4. Obtain a copy of the Labor & Equipment Production Times for Landscape Construction noted in the reference section in the back of this book.

5. Equipment Watch (a division of **PRIMEDIA Business Magazines & Media Inc.**) offers a Contractors Equipment Cost Guide that can be used for comparison purposes. It's expensive, over $500, but thorough. Call 1-800-669-3282 to order a copy, or access them on the Internet at www.ironmax.com.

You can easily use a personal computer spreadsheet program (such as Lotus 1-2-3 or MS Excel) to cost out your equipment. This can simplify the process and the program will make the necessary adjustments quickly and accurately.

[A] SUMMARY

Some estimating systems put all equipment costs, both field and office related equipment, in G&A overhead. This is a big mistake which can cause you to charge too much for labor intense jobs and too little for equipment intense ones. We calculate a cost per hour (CPH) for each piece of field equipment. This CPH is then multiplied by the amount of hours the piece of equipment is going to be used to do the job. Costs for vehicles used by G&A overhead personnel are included in the G&A overhead budget.

The CPH for a given piece of field equipment is comprised of three items. They are: the acquisition cost; the maintenance cost; and the fuel cost. In order to maintain fair market value for equipment, the acquisition cost is calculated using the current replacement price for a given truck or piece of field equipment.

In order to ensure that equipment is paying for itself, many companies will create a separate equipment checking account from which all expenses for equipment are paid. Jobs are charged an intra-company rental rate for using the equipment and these charges are deposited into the equipment checkbook. Larger companies often form a separate equipment division or company, which pays all equipment expenses. These divisions or companies charge a rental rate to the users of the equipment and bill them accordingly.

[AP] ACTION POINTS

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1. Compute your projected field equipment and general and administrative (G&A) overhead vehicle budget amounts and enter them in Exhibit 1.

2. Using Exhibit 6 in the back of the book, calculate the CPH amounts for your equipment and vehicles and compare to those in Appendix C.

This article was adapted from James Huston's new book and audio book, ***How to Price Landscape & Irrigation Projects***, released in July 2003 and his previous book, ***Estimating for Landscape & Irrigation Contractors***. The author is president of J.R. Huston Enterprises, Inc., which specializes in construction and services management consulting to the Green Industry. Mr. Huston is a member of the American Society of Professional Estimators and he is one of only two Certified Professional Landscape Estimators in the world. For further information on the products and services offered by J.R. Huston Enterprises, call 1-800-451-5588, e-mail JRHEI at jrhei@jrhuston.biz or visit the J.R. Huston Enterprise web site at http://www.jrhuston.biz.