

AS THE ECONOMIC STORM CLOUDS GATHER, IS IT TIME TO CONSIDER LEASING?

RATHER THAN PUTTING OFF NEEDED VEHICLE REPLACEMENTS, CONSIDER CHANGING THE WAY YOU PAY FOR THEM

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While global economic conditions begin to pinch many organizations' fleet replacement budgets, it is an ideal time for fleet managers and other decision makers to consider changing the way they finance vehicle acquisitions. All too often, organizations respond to an economic downturn by curtailing replacement expenditures, leading to increases in vehicle age, downtime, repair costs, and total costs of ownership. Switching from purchasing to leasing vehicles not only can enable fleet operators to maintain an effective replacement program and all the direct and indirect benefits that attend it, but produce significant and immediate budgetary savings that can help organizations weather coming economic storms.

There are growing indications that the economic expansion enjoyed by much of the world over the last six years or so is, if not quite dead, certainly on life support. As a result, many fleet managers are beginning to feel the pinch as they are directed either to pare back their requests for vehicle replacement funds in next year's budget, to curtail replacement purchases in the current fiscal year – or both. In countless organizations around the world, an economic downturn virtually guarantees a reduction in funding for vehicle replacement purchases. Unlike employees, vehicles don't talk back when management decides

that trimming fleet size or postponing replacement purchases is a good way to help balance an organization's budget. While periodic downturns can serve as a useful corrective to the unchecked increases in fleet size and fleet-related spending that sometimes occur during an economic boom, many organizations risk increasing their overall fleet costs by curtailing fleet replacement spending too much in the pursuit of short-term budget savings. Depending on the current age of its fleet, the supposed savings from such actions may prove to be nothing more than a costly illusion.

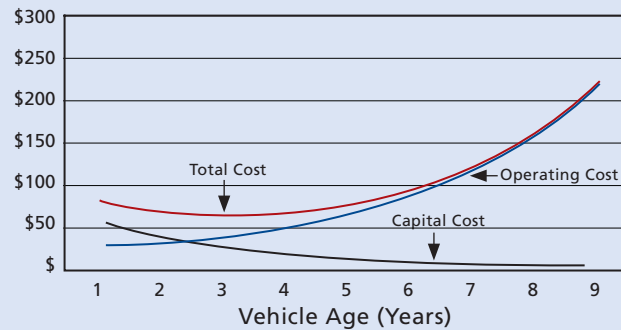


Although pressures on fleet managers and other decision makers to reduce fleet replacement spending can jeopardize the cost-effective operation of a fleet as they result in vehicles being kept in service beyond the end of their useful and economically viable service lives, they also can be viewed as an opportunity for organizations to examine and reassess the soundness of the methods they use to manage and pay for fleet replacement costs on an ongoing basis. Necessity being the mother of invention, fleet managers should view current financial challenges as an opportunity to get decision makers to “think outside of the box,” exploring fleet replacement financing strategies that are often given little attention during economic boom times.

THE ECONOMICS OF VEHICLE REPLACEMENT

The economic theory of vehicle replacement is well known to fleet managers, and is illustrated in Exhibit 1 which was derived from cost data on a particular type of truck in a large organization’s fleet. As the trend lines in this exhibit indicate, the capital (i.e., depreciation) cost of a vehicle diminishes over time while its operating (e.g., maintenance, repair, and fuel) costs increase. The combination of these two costs produces a U-shaped total life cycle cost curve. Ideally, a vehicle should be replaced around the time that this total cost of ownership is at a minimum – that is, before the total cost curve begins to turn upward. In the case of the trucks shown in Exhibit 1, we found the optimal replacement cycle – from the standpoint of minimizing total cost of ownership – to be 4 years. The actual cost estimates and computations on which this conclusion was based are shown in Exhibit 2.

Exhibit 1
Capital, Operating, and Total Cost Trend Lines
Side Loader Refuse Truck



It can be seen in the bottom row of this table that the equivalent annual cost¹ of the type of truck being analyzed is lowest under a replacement cycle of four years, but only moderately more so than under a three or a five-year replacement cycle. Conducting a life cycle cost analysis of a particular type of vehicle frequently reveals that its total cost of ownership curve is, as in this particular example, somewhat shallow or flat at the bottom. This means that there is not a single point in time at which an asset should be replaced in order to minimize its total cost, but a period of time – often lasting as much as two or three years in duration – during which it can be replaced with only a small variation in this cost.

Exhibit 2

Replacement Cycle in Years:	1	2	3	4	5	6	7	8	9
Mileage at replacement	10,578	21,156	31,734	42,312	52,890	63,468	74,046	84,624	95,202
CAPITAL COST									
Estimate Residual Value	\$161,500	\$83,978	\$57,991	\$44,977	\$37,176	\$31,991	\$28,304	\$25,556	\$23,436
Annual Depreciation	\$59,500	\$46,522	\$25,987	\$13,013	\$7,801	\$5,186	\$3,687	\$2,748	\$2,120
Cumulative Depreciation	\$59,500	\$106,022	\$132,009	\$145,023	\$152,824	\$158,009	\$161,696	\$164,444	\$166,564
OPERATING COST									
Annual Maintenance and Repair Cost	\$19,951	\$26,806	\$36,017	\$48,392	\$65,020	\$87,361	\$117,380	\$157,712	\$211,904
Annual Fuel Cost	\$8,881	\$9,239	\$9,611	\$9,998	\$10,401	\$10,820	\$11,256	\$11,710	\$12,182
Total Annual Operating Cost	\$28,831	\$36,045	\$45,628	\$58,390	\$75,421	\$98,182	\$128,636	\$169,422	\$224,086
Cumulative Operating Cost	\$28,831	\$64,876	\$110,503	\$168,894	\$244,315	\$342,497	\$471,133	\$640,556	\$864,641
TOTAL COST									
Annual Total Cost	\$88,331	\$82,567	\$71,615	\$71,404	\$83,222	\$103,368	\$132,323	\$172,170	\$226,205
Cumulative Total Cost	\$88,331	\$170,898	\$242,513	\$313,917	\$397,139	\$500,506	\$632,829	\$804,999	\$1,031,205
NPV of Cumulative Total Cost	\$83,332	\$161,225	\$228,786	\$296,148	\$374,659	\$472,176	\$597,009	\$759,433	\$972,835
Equivalent Annual Cost	\$85,831	\$84,258	\$80,883	\$79,672	\$81,809	\$87,162	\$95,824	\$108,186	\$124,945

Thus, deferring fleet replacement purchases in order to accommodate short-term budget constraints does not necessarily increase total fleet costs immediately. However, if an organization traditionally has not done a good job of replacing vehicles in a timely manner, even a temporary reduction in replacement spending can result in immediate increases in fleet operating – principally maintenance and repair – costs. Thus, decision makers who assume that cutting replacement purchases is a good



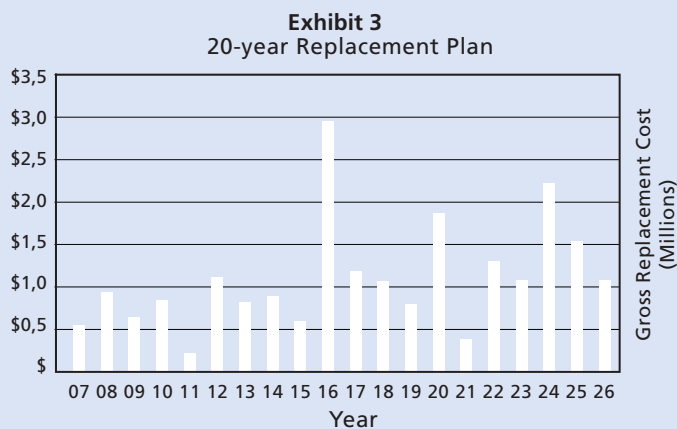
way to help balance the budget need to understand that such cuts may simply transfer fleet costs from the capital to the operating side of the general ledger, and may actually increase these costs overall. Regardless of its net effect on current fleet capital and operating costs, the deferral of replacement purchases today unquestionably increases future replacement spending needs, and continually putting off or under funding vehicle replacements unquestionably creates replacement spending backlogs that can become quite large and difficult to overcome. If under funding replacement spending needs a little bit each year creates a growing backlog of spending needs, it stands to reason that eliminating such a backlog ultimately will require over funding fleet replacement needs at some point down the road.

THE VULNERABILITY OF FLEET REPLACEMENT FUNDING REQUESTS

Even during good economic times, securing sufficient funds to replace vehicles in a timely manner is a challenge for many organizations. This challenge stems in part from a lack of understanding of the trade-off between a vehicle's capital and operating costs, as illustrated in Exhibits 1 and 2. Many decision makers also do not fully appreciate the role the fleet plays in supporting an organization's primary mission, whatever it may be. Intellectually, they may understand that vehicles are a necessary tool for directly or indirectly supporting the delivery of goods and services. When push comes to shove, however, decision makers may be quick to cut fleet funding in the belief that the purchase of vehicles is at least to some degree a discretionary expense that can be deferred during times of fiscal constraint.

However, the vulnerability of fleet replacement funding in most organizations stems less from a lack of appreciation of the importance of vehicles or of the need for them to be replaced on a regular basis, than from an inability to deal with year-to-year fleet replacement spending needs that are inherently lumpy in most organizations.

Exhibit 3 illustrates a long-term fleet replacement plan for a fleet of approximately 160 vehicles. The graph shows the gross² replacement cost of the fleet by year over a period of 20 years.



The fleet is comprised of 56 different types of vehicles and pieces of equipment. The replacement cost (i.e., purchase price) in today's dollars of each of these assets ranges from \$5,200 to \$353,000, and the interval at which they would be replaced ranges from 4 to 20 years. The weighted average replacement cycle for all the assets in the fleet is 10 years, and the weighted average replacement cost is \$62,000.

As can be seen, projected annual fleet replacement costs for this fleet are quite uneven, ranging from a low of about \$250,000 in 2011 to a high of almost \$3 million in 2016. This lumpiness is common in virtually all mixed-vocational fleets. The biggest impediment many organizations face to replacing vehicles in a timely manner (and thus minimizing vehicle total cost of ownership) is the lack of a replacement program that can deal with such volatile spending needs. Specifically, they do not know how to accommodate year-to-year changes in spending requirements when the source of funds for such expenditures is relatively static. The solution to this problem lies in pursuing one of two courses of action: eliminating the volatility in fleet replacement spending requirements, or eliminating the volatility in replacement funding requirements. What's the difference?

FLEET REPLACEMENT FINANCING ALTERNATIVES

Cash

Fleet replacement funding requirements are a function of the way in which an organization pays for or finances vehicle purchases. If these purchases are financed with cash from current income, funding needs will be every bit as volatile as are spending needs. This is because cash financing involves paying for a vehicle in full at the time it is acquired and placed in service.

Many organizations pay for vehicles with cash because they believe it to be the cheapest way to replace their fleet assets. There are no interest charges involved in using this financing method, as is the case with vehicle leasing or debt financing (i.e., loans). Thus, it would seem to be an economically as well as fiscally prudent way to acquire vehicles. Such thinking overlooks the fact, however, that the use of cash to finance fleet replacement costs creates the volatile funding requirements illustrated in Exhibit 3. While near-term peaks and valleys in annual replacement spending needs sometimes can be eliminated by manipulating the timing of the replacement of individual vehicles, no amount of such manipulation will completely eliminate year-to-year fluctuations in spending and, hence, funding needs over the long term.

Volatile funding requirements, in turn, almost always result in the deferral of some replacement purchases in years of peak spending needs and/or weak economic conditions such as many organizations are facing today. For instance, the likelihood that the organization whose fleet replacement plan is shown in Exhibit 3 would actually spend more than ten times as much in 2016 on the purchase of replacement vehicles as it would spend in 2011 is virtually zero. Consequently, organizations

that finance fleet replacement expenditures with cash usually have older fleets, large replacement backlogs, and high vehicle maintenance and repair costs, and higher total costs of fleet ownership than do organizations. To be sure, there are organizations whose financial resources are so great relative to their annual fleet costs that paying for vehicles with cash is never a problem for them. Such organizations tend to be the exception rather than the rule, however.

Reserve Fund

For most organizations, it is easier to budget, say, \$3,000 every year for a period of 7 years, than \$21,000 every 7th year to pay for the replacement of a vehicle. One method of financing fleet replacement purchases that allows an organization to spread out the capital costs of vehicles in this way is the use of a replacement reserve or sinking fund. Under this financing approach, an organization makes regular contributions – often through the use of an internal cost charge-back system under which the business units that use vehicles pay a fixed monthly amount for each vehicle in their possession – to a fleet-wide “savings account.” As long as the contribution or charge-back amounts are calculated and applied properly, funds accumulated in the replacement fund should be sufficient to ensure that there is enough money to pay for the purchase a replacement unit when each vehicle in the fleet reaches the end of its useful life.

Exhibit 4
Reserve Fund Balance

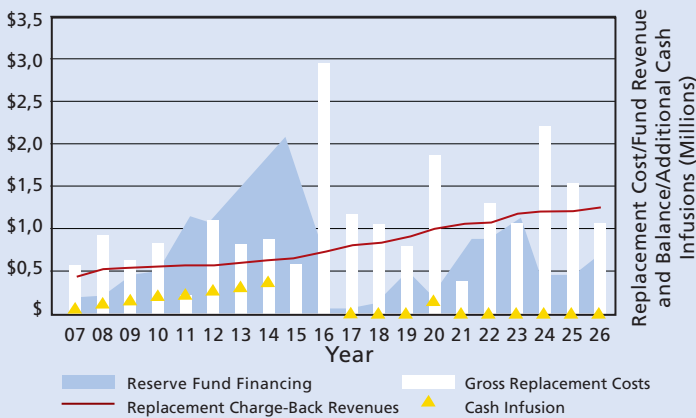


Exhibit 4 illustrates the effect of a sinking fund on long-term fleet replacement funding needs. Although projected spending needs are the same as those shown in Exhibit 3, annual contribution amounts (i.e., funding requirements) are relatively smooth and predictable. This is made possible by the replacement fund balance, which ebbs and flows in tandem with annual peaks and valleys in spending needs. The key to achieving this smooth funding line is calculating charge-back rates so as to properly account for the timing and magnitude of, and inflationary increases in, vehicle purchase prices and residual values and interest earnings on the fund balance.

By eliminating most if not all of the year-to-year volatility associated with funding fleet replacement expenditures, a

reserve fund increases the likelihood that sufficient funds will be made available to replace all vehicles in a fleet in a timely manner. This is because annual funding requirements are predictable under this financing approach, making them less susceptible to competition from other spending requests and less of a target for decision makers who may equate ad hoc funding requests with ad hoc – which is to say discretionary – spending.

An added benefit of using a reserve fund and charge-back system to finance fleet replacement costs is that the payment of regular lease charges for the use of vehicles encourages fleet users to pay attention to fleet utilization levels. Under a cash financing approach, in contrast, users often see little benefit in disposing of under-utilized vehicles whose purchase price, paid in full at the time the vehicle was first acquired, they view as a sunk cost. Organizations that have instituted fixed monthly charges to finance fleet replacement costs have seen voluntary reductions in fleet size of as much as 20 percent.

A major drawback of reserve funds, however, is that they are almost prohibitively expensive to establish if an organization already has a large backlog of replacement needs. This is because large amounts of cash (the cash “infusions” shown in Exhibit 4) must be deposited in the fund or charge-back rates must be set artificially high to provide the working capital needed to start replacing vehicles. Another drawback is that many organizations do not know how to calculate and apply charge-back rates properly. Some set them too high, with the result that the fund balance becomes too large. Others set them too low, with the result that there is insufficient money to replace all vehicles in accordance with the replacement cycles on which the internal replacement charges are based. Even when rates are calculated properly, the fund balance may be “raided” during an economic downturn to meet other funding needs, undermining a well-designed replacement program in a single year. Both revenue shortfalls and fund balance raids can seriously damage the goodwill of fleet users who have faithfully made monthly payments to the reserve fund in the expectation of being able to replace their vehicles in accordance with specified replacement cycles. These and other considerations factors can make reserve funds difficult to set up and administer.

Leasing

Like a reserve fund, leasing allows an organization to spread out the capital costs of the vehicles in its fleet over a period of several years. Rather than accumulating reserves internally to pay for the purchase of replacement vehicles, however, this approach involves tapping into the capital markets and actually never taking ownership of the vehicles in the fleet.

The impact of leasing on the long-term replacement funding requirements of the 160-unit fleet we have been discussing is illustrated in Exhibit 5. As can be seen, this financing approach is similar to a reserve fund in its ability to eliminate most of the volatility in year-over-year replacement funding requirements.

As such, it offers many of the same benefits as does a reserve fund without a reserve fund's drawbacks. Foremost among the benefits of leasing is consistent and predictable and therefore unobtrusive annual fleet replacement costs. Remember that it is the dramatic peaks and valleys in funding requirements under a cash financing approach (i.e., like those shown in Exhibit 3) and the ability to avoid making substantial outlays of cash in a particular year by simply postponing replacement purchases that are the two primary causes of organizations cutting fleet replacement funding in a down economy. As can be seen in Exhibit 5, even a tenfold increase in replacement spending requirements costs between 2011 and 2016 has a relatively small impact on replacement funding requirements when vehicles are leased rather than purchased using ad hoc appropriations of cash.

Exhibit 5
Lease Financing

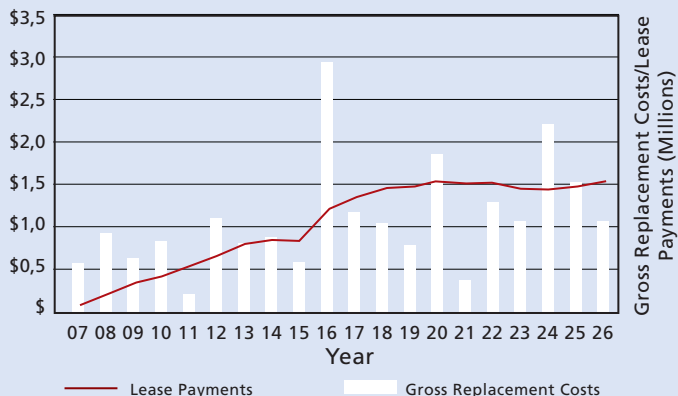
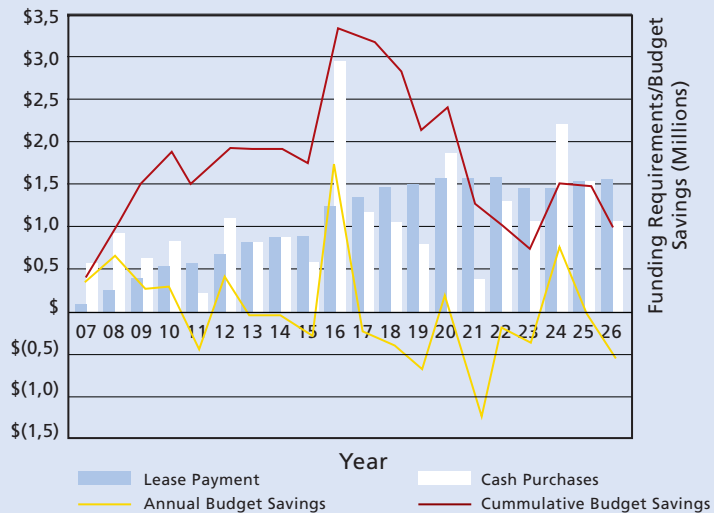


Exhibit 5 also illustrates another reason that leasing is particularly worthy of consideration at a time when many organizations are deferring fleet replacement purchases in order to balance their budgets. Switching from cash financing to leasing generates sizable near-term budget savings. These savings result from the fact that buying involves paying for the full capital cost of replacement vehicles before they are used, whereas leasing permits an organization to pay this cost while the vehicles are being used. Thus, transitioning to leasing permits an organization to shift most of the capital cost of a vehicle it puts into service this year to future years in which the vehicle will remain in its fleet. For instance, in our sample fleet, the amount of cash required to replace the fleet under a cash purchase versus a leasing approach are as follows: \$500,000 (cash purchase) versus \$30,000 (leasing) in Year 1 and \$2.94 million (cash purchase) versus \$1.49 million leasing in Years 1-5.

Exhibit 6 shows a side-by-side comparison of the long-term funding requirements under these two capital financing approaches. Some people might argue that what this exhibit

Exhibit 6
Leasing versus Buying Budget Savings



illustrates is little more than budgetary sleight of hand in the sense that switching from buying to leasing simply moves some fleet costs to future fiscal years. Moreover, opponents of leasing argue, such a switch comes with a "hidden" cost; namely, the interest charges that must be paid for the privilege of leasing vehicles rather than buying them outright. There is no question that interest charges included in lease payments increase the cost of acquiring a vehicle. It is far less clear, however, that leasing increases the total life cycle cost of a vehicle. If leasing allows an organization to replace vehicles that it otherwise would keep in service due to its inability to fund all its fleet replacement spending needs each year, interest expenses incurred under a lease may be more than offset by increases in vehicle residual values and reductions in vehicle maintenance and repair costs.

Given the shrinking budgets that many organizations are likely to face in a global economic downturn, a willingness to shift to leasing may make the difference between maintaining an effective fleet replacement program based on the economic principles of optimal vehicle replacement discussed earlier, and undermining such a program and the impact it has not only on direct vehicle capital and operating costs, but on vehicle availability, reliability, and safety as well. At the same time, such a shift could produce a sizable budget windfall that makes the fleet operation part of the solution rather than a contributor to a big budget deficit.

CONCLUSION

There is no single "best" approach to financing fleet replacement costs. Each of the approaches discussed here has advantages and disadvantages from a fiscal, economic,



administrative, and political point of view. The relative importance of such factors varies from organization to organization depending on the circumstances they currently face. It is clear, however, that the growing fiscal challenges facing many organizations today, and the threat they pose to fleet replacement spending in these organizations, warrant the consideration of new ways of doing business.

A low tide is to be welcomed if it reveals shoals and other hidden obstacles on which we could founder when navigating in unfamiliar waters. The economic tides appear to once again be ebbing rather than flowing, and fleet managers should take note of the threats to their fleets posed by such reverses. Fleet replacement spending is an easy target for budget cutters, notwithstanding its importance to the operation of safe, economical, and reliable vehicles. It is up to fleet managers to ensure that decision makers understand the full consequences of measures that are assumed to reduce fleet costs and save money. Of equal importance, fleet managers should recognize that the best time to experiment and innovate often occurs when traditional business practices – or spending habits – no longer seem to be tenable. There may never be a better time than the present to consider switching to leasing. Predictable long-term funding requirements, the timely replacement of vehicles, lower total costs of fleet ownership, and immediate budget savings; these are benefits that even the most aggressive budget cutter should find hard to resist.

MERCURY

The article's author, Paul Lauria, is the president of Mercury Associates, Inc. the largest fleet management consultancy in North America. The Washington, DC-based firm has assisted hundreds of organizations of all types and sizes in improving the management and operation of their vehicle and equipment fleets.

Mercury also has provided management training to thousands of fleet management professionals in North America, the Caribbean, Europe, Asia, and Australia. Mercury Associates and the Kjaer Group recently have agreed to collaborate in providing state-of-the-art consulting, training, research, analytical, and other fleet-related support services to the international aid community, to which the Kjaer Group has been providing fleet vehicles and related services for more than 45 years.

Be sure to check future editions of CarNation for information about upcoming fleet management training programs developed and conducted by Mercury and the Kjaer Group specifically aimed at meeting the unique challenges and opportunities facing international aid organizations.

Additional information about Mercury Associates, Inc. can be found at www.mercury-assoc.com.

¹ *Calculating the equivalent annual cost (EAC) of a particular type of vehicle under a series of potential replacement cycles is a good way to determine which cycle will minimize the vehicle's total cost of ownership – in contrast, for example, to comparing alternative cycles in terms of their net present value (NPV) costs. Since a longer replacement cycle obviously has a higher NPV cost than does a shorter one, NPV is not useful for determining optimal vehicle replacement cycles.*

² *The cost of replacing all the vehicles in the fleet that meet recommended age and/or accumulated usage thresholds for replacement each year before taking into account proceeds from the sale of the old vehicles that would be replaced in that year.*