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# Business Plan for a Commercial, Third-Party Vanpool Operation

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**Vanpool rate schedules that are based primarily on meeting costs in a break-even operation discourage participation by the greater number of short-distance riders. As a result, this business plan is based on the supposition that, if vanpool rate schedules were directly related to the gasoline cost of travel by automobile, vanpooling would have much broader appeal, and might even be profitable. Of course, profit is not a necessity. This plan would also be useful in an unsubsidized, nonprofit operation. The plan itself is based on a computer-optimized model, created largely from 3M vanpool data. This model uses a pricing strategy that is indexed directly to the cost of gasoline. Other important features and assumptions are shown as well as profitability, cash flow, and internal rate of return over a seven-year time period.**

3M is generally regarded as a pioneer in development of employer-supported vanpools. The 3M program started with 6 vans in 1973. Now, the 3M program has 145 vans that serve more than 1500 employees. Average occupancy per van is 11.5 riders. In addition to reducing gasoline consumption by 300 000 gal/year, this program has reduced demand for parking space at the 3M Center by about 940 spaces. The estimated capital savings for these parking facilities is about $3.4 million. This, of course, if offset in part by the capital investment in the 3M van fleet, which at this time is in the neighborhood of $1 million.

The 3M fare schedule for employees is based on the cost of operating and maintaining the fleet plus amortized van cost. The costs of administering the program, providing maintenance facilities, collecting fares, and purchasing are borne by 3M.

This practice of vanpool subsidization by employers or government is quite common. Public Service Options, Inc., managed 50 vans in the Twin Cities of St. Paul and Minneapolis in 1979. About half of their costs were borne by state and federal government. Subsidization, in fact, seems to be common to most forms of multirider transportation, except carpooling. In October 1979, in a radio interview, one of the commissioners of the Twin Cities Metropolitan Transit Commission (MTC) stated that revenues for meeting the cost of operating the MTC come from the following sources:

| Source | Share of Operating Cost (%) |
|---|---|
| Fares | 33 |
| Property taxes | 22 |
| State subsidy | 25 |
| Federal subsidy | 18 |

Bus fare at that time was $0.40/ride; senior citizens rode for $0.10. Thus, subsidization for operating cost was between $0.70 and $0.80/passenger trip. This operating cost did not include amortization of the purchase price of the buses. Eighty percent of the cost of purchasing a new bus was borne by the federal government. If this capital investment cost is added to operating cost, the total subsidization of public transportation in the Twin Cities was in excess of $1/passenger trip. The business plan that follows will show that commercial vanpooling may be a more cost-effective means of multiple-rider transportation.

## MARKET PLACE PERSPECTIVE

In 1979 about 6000 (1) employer- or government-sponsored vanpools were in operation in the United States. A like number of private owner-operated vans are also estimated to be functioning in the United States. At an average of 10 riders/van, about 120 000 U.S. workers out of a total labor pool of 90 million are currently vanpooling. This is 0.13 percent of the total labor population. At the 3M Center in St. Paul, Minnesota, participation is 14 percent and there is a waiting list of applicants.

From the above figures one might project that the total potential for pooling in the United States may be about 100 times greater than its present level. This projection equals 12 million riders. The ensuing analysis will show average annual revenues

Table 1. Comparison of monthly vanpool rates.

| Daily Round Trip Car Miles | Cost of Driving a Car[a] ($) | Daily Vanpool Miles | Commercial Vanpool Price Factor[b] | Rate Schedule ($) Commercial Vanpool | 3M Internal[c] | Vanpool Services[c] |
|---|---|---|---|---|---|---|
| 9.1 | 13.49 | 15 | 1.750 | 23.60 | 27.50 | NA |
| 13.3 | 19.71 | 20 | 1.268 | 25.00 | 29.25 | 29.22 |
| 17.5 | 25.94 | 25 | 1.000 | 25.90 | 31.00 | 30.90 |
| 21.7 | 32.17 | 30 | 0.977 | 31.40 | 32.75 | 32.58 |
| 30.1 | 44.62 | 40 | 0.930 | 41.50 | 36.25 | 35.94 |
| 38.5 | 57.07 | 50 | 0.883 | 50.40 | 39.00 | 39.30 |
| 46.9 | 69.52 | 60 | 0.837 | 58.20 | 42.50 | 42.66 |
| 55.3 | 81.97 | 70 | 0.790 | 64.80 | 46.00 | 46.02 |
| 63.7 | 94.37 | 80 | 0.743 | 70.10 | 49.50 | 49.38 |
| 72.1 | 106.88 | 90 | 0.697 | 74.50 | 53.00 | 52.74 |
| 80.5 | 119.33 | 100 | 0.650 | 77.60 | 55.75 | 56.10 |
| 88.9 | 131.78 | 110 | 0.603 | 79.50 | 59.25 | 59.46 |
| 97.3 | 144.23 | 120 | 0.557 | 80.30 | NA | 62.82 |

[a]Gasoline cost only, figured at $1.20/gal. The average automobile fuel efficiency is 17 miles/gal.
[b]See text for explanation.
[c]Figures are for March 1, 1980.

of $4500 per 11-rider van or about $410.00/rider per year (at $1.50/gal gasoline). Thus, a total market potential of $4.9 billion may be estimated:

(120 000 riders) x (100) x [($4500/van-year)/ (11 riders/van)] = $4.9 billion/year

PRICING

When a driver decides that no serious obstacles, such as scheduling, will hinder participation in a vanpool, the decision on whether to pool or not will depend on what is perceived as the cost of driving versus the cost of vanpooling.

With gasoline priced at $1.20/gal and average car fuel efficiency of 17 miles/gal, the perceived cost of driving a car is about $0.071/mile. The full cost of operating an automobile is actually much higher. The Wall Street Journal (2) states that the national average is $0.319/mile. Depreciation and insurance are major contributors to this cost. However, unless the potential vanpooler is ready to dispose of a car, he or she bears the burden of these costs whether or not the car is driven to work. Thus, at most times, the driver is quite correct in using only gasoline cost as the marginal cost for driving to and from work. Nevertheless, at least one time each year he or she will pay significant insurance premiums, and about every five to eight years he or she will face the expensive prospect of buying a new car. These are times when the driver will surely consider pooling if he or she had not done so to date. We estimate that 15-20 percent of individual worker-drivers will face this decision once each year.

In general, this simple comparison of gasoline cost versus fare makes vanpooling look unattractive for short distances and very attractive for longer commuting distances of 20 miles/day or more (see Table 1). Unfortunately, only 30-50 percent of a typical company's employees commute over these longer distances (i.e., 50-70 percent of the nation's traveling work force are not attracted by organized vanpools).

Vanpool rate schedules based primarily on meeting costs in a break-even type of operation discourage participation by the greater number of short-distance riders. As a result, this business plan is based on the supposition that, if rate schedules were directly related to the gasoline cost of travel by automobile, vanpooling would have much broader appeal and might even be profitable.

Our pricing strategy calls for vanpool rate schedules that are indexed directly to the cost of gasoline for an automobile that makes trips of the same distance. Thus, if gasoline prices increase by 50 percent, then the entire vanpool rate schedule would also increase by 50 percent, regardless of the rate of inflationary increases on other operating costs. If the rate of inflation of gasoline pricing continues to outstrip the overall rate of inflation, the profitability of this operation will continue to improve and the rider should be indifferent to these increases. The increase in profitability is because the cost of gasoline accounts for 20-45 percent of the direct cost of operating a vanpool over the period of study; however, 84-88 percent of total sales revenue will be directly indexed to gasoline pricing over that same period.

In this business plan vanpool fares are not always exactly equal to the equivalent gasoline cost for automobile travel. Instead, the rate for each distance is attenuated by a special price factor that either raises the vanpool fare above the equivalent gasoline cost or reduces it. The algebraic expression for the relationship is as follows:

$$V = pK \quad (1)$$

where

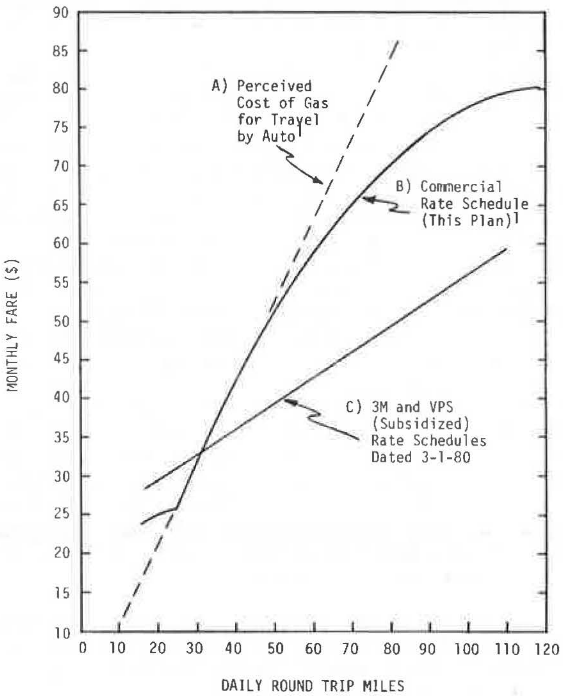
V = vanpool rate,
p = price factor, and
K = cost of gasoline for an automobile for the distance.

The purpose of the price factor (p) is to make adjustments to the rate schedule for marketing reasons. Our proposed p-values for various distances are given in column 4 of Table 1.

For daily vanpool distances of 25 miles (17.5 miles actual travel), a price factor of 1.00 was chosen. In this case the vanpool fare should closely approximate actual gasoline cost for the automobile trip. For distances that are less, the price factor is greater than 1.00 because the conscious cost of traveling only short distances must include a sharper realization that more than the cost of gasoline is involved. (The car owner should be more aware of the cost of the rapidly depreciating asset when he or she uses it for only brief periods of time.) For travel distances greater than 25 miles/day, the pricing factor drops below 1.00 because carpooling, as an alternative to vanpooling, will become more attractive with increasing travel distances.

For many U.S. vanpools, pricing is based on the cost of operation (i.e., the direct cost of opera-

Figure 1. Comparison of monthly vanpool rates with gasoline cost.




[1]Gas is $1.20 per gal. Auto Mileage is 17 MPG.

tion is divided by the number of riders to determine monthly fare). Since many of the major costs of operation, such as depreciation, are fairly independent of distances traveled, these fare versus distance curves tend to be flat. The fare for traveling 80 miles each day to and from work is not much higher than the fare for traveling 30 miles each day. Thus, to the individual driver who sees his or her gasoline cost doubling with a doubling of distance, vanpooling becomes more attractive for the longer distances. (Compare lines A and C in Figure 1.) At the 3M Center, only 20 percent of the personnel travel more than 25 miles each day, but approximately 92 percent of 3M's vanpools serve this select population.

The foregoing price strategy relates more closely to the rider's perceived cost of driving alone or carpooling and, as such, comes closer to market pricing. (See lines A and B in Figure 1.) This market pricing strategy is expected to have two effects: (a) it will make short-range vanpools more attractive, and (b) it will increase the profitability of longer-range vanpools.

## FINANCIAL ANALYSIS

A great deal is known about vanpooling in general. But, because the common approach to most vanpool operations is to run them on a partly subsidized basis, very little is published about how to make them profitable.

Late in 1979, 3M began to investigate third-party vanpooling as a potential business opportunity. The idea of indexing fare schedules directly to the price of gasoline seemed to provide the leverage needed to make commercial vanpooling feasible. In the face of rapidly escalating gasoline prices, it soon became apparent that, in time, commercial vanpooling could be made profitable if this strategy were adopted. As a result, definition of the important conditions for a profitable operation soon

Figure 2. Annual P & L for 15-passenger van for 15-mile round trip.

| | |
|---|---|
| PAYLOAD | 12.5 (DRIVER EXCL.) |
| LINE HAUL MILES | 2.8 (ONE WAY) |
| PICK-UP/DROP-OFF MILES | 4.7 (ONE WAY) |
| TOTAL DAILY POOL MILES | 17.4 |
| ANNUAL POOL MILES | 4402 |
| ANNUAL PERSONAL MILES | 2400 |
| GROSS ANNUAL MILES | 6802 |

| | |
|---|---|
| PURCHASE PRICE | 9300 |
| SALES TAX | 372 |
| TOTAL PURCH. COST | 9672 |
| IMMED. DEPREC'N | 200 |
| NET VALUE (NEW) | 9472 |
| VALUE AFTER 7 YRS. | 900 |
| VALUE FOR DEPREC'N | 8572 |
| ANNUAL DEPREC'N | 1225 |

| | | YEAR ONE | YEAR TWO | YEAR THREE | YEAR FOUR | YEAR FIVE |
|---|---|---|---|---|---|---|
| ODOMETER @ YEAR END | | 6802 | 13,604 | 20,406 | 27,208 | 34,010 |
| BOOK VALUE @ MID YEAR | | 8860 | 7635 | 6410 | 5185 | 3960 |
| DIRECT VAN COSTS: | | | | | | |
| VAN DEPREC'N | 1225 | | — | — | — | — |
| LIABILITY INS. | 252 | | — | — | — | — |
| LICENSE TABS | 43 | | -4 | -4 | -4 | -4 |
| OPERATING COST LESS TIRES & GAS @ $.084 PER MI | 571 | | — | — | — | — |
| TIRES @ $.015 PER MI | 302 | | -200 | — | — | — |
| GASOLINE @ 1.25 PER GAL | 1088 | | — | — | — | — |
| TOTAL DIRECT VAN COST | | 3481 | -204 | -4 | -4 | -4 |
| PAYMENT FOR PERSONAL MILES .160 X 2400 | | 384 | — | — | — | — |
| NET DIRECT VAN COST | | 3097 | -204 | -4 | -4 | -4 |
| MARKETING/SALES COST | | 250 | — | — | — | — |
| OPERATIONAL ADMIN. @ $35/MO. | | 420 | — | — | — | — |
| GEN'L ADMIN. @ 1.5 % PASS. REV. | | 42 | — | — | — | — |
| TOTAL OPERATING COST | | 3809 | -204 | -4 | -4 | -4 |
| EMPLOYER SUBSIDY @ $ .10 PER PASS.-TRIP 2 X .10 X 253 X 14.5 | 734 | | — | — | — | — |
| GOVERNMENT SUBSIDY @ $ .10 PER PASS.-TRIP | 734 | | — | — | — | — |
| TOTAL SUBSIDIES | | 1468 | — | — | — | — |
| NET OPERATING EXPENSE | | 2341 | 2137 | 2133 | 2129 | 2125 |
| REVENUE @ $18.25 PER PASS.-MO. 12 X 12.5 X 18.25 | | 2738 | 2738 | 2738 | 2738 | 2738 |
| ANNUAL PROFIT | LIFETIME AVG 580 | 397 | 601 | 605 | 609 | 613 |
| AS A % OF REVENUE | 21.2 % | 14.5 % | 21.9 % | 22.1 % | 22.2 % | 22.4 % |
| RET. ON CAP. EMPLOYED | 16.1 % | 4.5 % | 7.9 % | 9.4 % | 11.7 % | 15.5 % |

Note: Distance from home to work is approximately 2.8 miles.

became the major thrust of our study. The results of this analysis follow.

Any broad-scale vanpool operation may be viewed as a conglomerate of several individual vanpools. Thus, our business model began with the detailed analysis of a single van that operates over a regular distance of travel each day for its entire life. An example of this unit analysis is shown in Figure 2.

Figure 2 is the lifetime profit and loss statement (P&L) for a 15-passenger van that travels 15 miles/day with a fixed gasoline price of $1.25/gal. Similar P&Ls were created for longer-distance vans (25, 40, and 80 miles/day), for 12-passenger vans, for other gasoline prices, and for other levels of outside support fees. The bottom line of this P&L not only shows profit or loss but also shows the return on capital employed (ROCE) that would accrue from such a single-unit operation. By using this simple analysis, some understanding was developed regarding the relative importance of cost and revenue factors on investment criteria. Figure 2 is a preliminary hand calculation that includes some features, such as a government subsidy, that are not a part of the final model. These hand calculations helped in the design of our computer program that contains most of the elements shown in this figure.

A model fleet P&L was synthesized by combining unit P&Ls, like Figure 2, in a way that would simulate a typical fleet mix. Ordinarily, any fleet of 100 vans would have individual vehicles that travel a variety of at least 15 different distances each day. For the sake of simplifying the calculations, only four distances were chosen in the following mix:

50 fifteen-passenger vans that travel 15 miles/day,

30 twelve-passenger vans that travel 25 miles/day,
15 twelve-passenger vans that travel 40 miles/day, and
5 twelve-passenger vans that travel 80 miles/day, for a total of 100 vans.

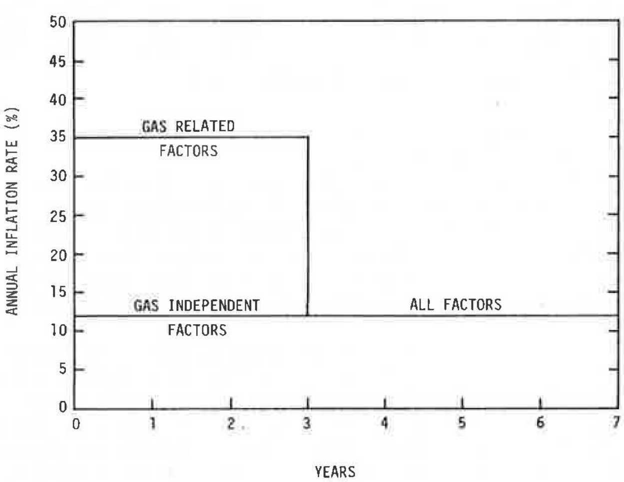
This mix of travel distances was chosen to simulate the distribution of distances traveled by most workers in the United States. Any deviations from this simplified mix will not have any significant effect on the final results of our analysis.

Our model calls for a one-city fleet to grow at the rate of 200 vans/year until it reaches a level of 1000 vans, at which point fleet size remains constant. For simplicity, no continuing growth in fleet size is projected beyond the 1000-van level. At this point, we assume that total demand for vanpools in this one-city market has been satisfied.

Expansion of the model to include more than one urban center may be achieved by taking multiples of this one-city model. In this respect, note that, for this type of business, economies of scale can only occur within a single compact area of operation. One hundred vans in each of 10 cities will not operate as efficiently as will 1000 vans in 1 city. Thus, a national business is seen as a conglomerate of single urban area operations, such as the one described by our model.

In our fully developed one-city model, consideration is given to depreciation (linear and accelerated), special tax benefits, resale values of mature vans, and computer-based administration of fleet operations. Our seven-year model also takes inflation into consideration.

Figure 3. Projected annual inflation rates.




A general rate of inflation of 12 percent/year was used for all cost factors that are not directly related to the price of gasoline. All gasoline-dependent costs and revenue factors (such as fares and personal use charges) are inflated at the rate of 35 percent/year for the first three years and at 12 percent/year thereafter. Figure 3 is a graphical representation of this inflation schedule. The top line of Table 2 shows our projections of the average annual price of gasoline that results from this inflation rate, with a starting point of $1.50/gal.

An unusual source of revenue that appears in this model is the employer's fee. This is the fee paid by the employer of the vanpool rider to the third-party vanpool operator for organizing and maintaining the vanpool for employees. In our model, this fee is set at $0.15/passenger trip or $0.30/day for the rider who travels to work (one trip) and back (second trip). This fee is analogous to 3M's contribution to the administration of its internal vanpool. In our model this fee is also inflated at 12 percent/year and is treated as revenue in the model.

At the present time, wherever vanpools flourish, employer support is an important part of the operation. Usually, this support takes the form of fleet administration and financing when vans are purchased. The employer's fee is a substitute for these costs.

These and other considerations were programmed into a special vanpool model for computer analysis. Because the entire model was programmed into the computer, we could test several variables and their impact on the various investment criteria. In this fashion, the following financial model evolved. Although the model was refined repeatedly, the pool's size, its growth rate, sources of revenues, inflation rate, and basic pricing strategy remained as described in the foregoing discussion.

Figures 4, 5, and 6 are copies of computer printouts that show fleet P&L, sources and uses of funds, and ROCE, respectively, for a seven-year period. Figure 6 shows ROCE figures that are quite high in the later years of the study period. This is due, in large measure, to the 12 percent inflation rate and to the fact that 80 percent of the van fleet has a life expectancy of seven years. The purchase of new replacement vans in the eighth year will cause fleet ROCE to drop sharply for that year. Because of the irregularity in rate of van replacement in

**Table 2. Summary of average annual gasoline cost, investment, and revenue levels for seven-year, 1000-van commercial pool.**

| | Year | | | | | | |
|---|---|---|---|---|---|---|---|
| Factor | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Projected avg. annual gasoline price ($) | 1.50 | 2.03 | 2.73 | 3.06 | 3.43 | 3.84 | 4.30 |
| Total revenue ($000s) | 586 | 2309 | 5074 | 7956 | 11 456 | 14 256 | 15 967 |
| Profit ($000s) | -206 | 371 | 1449 | 2550 | 3839 | 5169 | 5901 |
| Profit as percentage of revenues | -35.2 | 16.1 | 29.5 | 32.0 | 33.5 | 36.3 | 37.0 |
| Net permanent investment ($000s) | 1679 | 3263 | 4738 | 6225 | 7581 | 6330 | 5284 |
| Return on capital employed (%) | -12.0 | 10.8 | 29.1 | 37.1 | 45.1 | 69.1 | 89.7 |
| Cash flow ($000s) | -1664 | -1303 | -608 | 26 | 887 | 4099 | 4434 |
| Cumulative cash flow ($000s) | -1664 | -2967 | -3575 | -3549 | -2662 | 1437 | 5871 |

Note: The internal rate of return for the seven-year period is 33.5 percent. A 12 percent annual inflation rate is assumed.

general, wide fluctuations in ROCE can be expected from year to year. More gradual fleet growth in developed areas and expansion into new market areas will tend to dampen these fluctuations. Nevertheless, if an overall inflation rate of 12 percent/year is maintained, a long-term-average ROCE in the range of 60-90 percent may be expected.

Profit and the various operating costs as a part of total revenue are shown in Figure 7. The rapid growth of profit and gasoline cost over the years as a result of inflation are more obvious in this graph. It should not be assumed that these are recommended levels of profitability. The quoted levels are simply those that can be projected for this model under the stated conditions. Note, however, that there is sufficient profitability in

**Figure 4. Seven-year vanpool P & L.**

$ THOUSANDS

1. Gas pricing starts at $1.50 per gallon.
2. Employer fee starts @ 15¢ per passenger trip.
3. All gas dependent factors inflate @ 35% (first 3 years), then at 12%.
4. All gas independent factors inflate @ 12% per year.

| | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | YEAR 6 | YEAR 7 |
|---|---|---|---|---|---|---|---|
| TOTAL EMPLOYER FEES | $ 94 | $ 316 | $ 589 | $ 924 | $ 1,330 | $ 1,655 | $ 1,854 |
| TOTAL PERSONAL MILEAGE REV | $ 41 | $ 166 | $ 374 | $ 587 | $ 845 | $ 1,051 | $ 1,177 |
| TOTAL SERVICE REVENUES | $ 451 | $ 1,827 | $ 4,110 | $ 6,445 | $ 9,281 | $11,550 | $12,936 |
| NET SALES | $ 586 | $ 2,309 | $ 5,074 | $ 7,956 | $11,456 | $14,256 | $15,967 |
| DIRECT COST | | | | | | | |
| GAS EXPENSE | $ 160 | $ 649 | $ 1,461 | $ 2,291 | $ 3,299 | $ 4,106 | $ 4,599 |
| TIRE EXPENSE | $ 13 | $ 45 | $ 83 | $ 131 | $ 188 | $ 234 | $ 262 |
| INSURANCE EXPENSE | $ 24 | $ 80 | $ 150 | $ 235 | $ 339 | $ 422 | $ 473 |
| LICENSE EXPENSE | $ 3 | $ 10 | $ 19 | $ 30 | $ 44 | $ 55 | $ 61 |
| DEPRECIATION EXPENSE | $ 290 | $ 631 | $ 1,004 | $ 1,435 | $ 1,918 | $ 1,977 | $ 2,062 |
| OTHER DIRECT EXPENSE | $ 74 | $ 250 | $ 466 | $ 731 | $ 1,053 | $ 1,310 | $ 1,467 |
| TOTAL DIRECT EXPENSE | $ 573 | $ 1,666 | $ 3,185 | $ 4,854 | $ 6,841 | $ 8,104 | $ 8,924 |
| DISCRETIONARY COSTS | | | | | | | |
| SALES COST | $ 150 | $ 168 | $ 220 | $ 290 | $ 384 | $ 463 | $ 518 |
| ADMINISTRATIVE COST | $ 70 | $ 104 | $ 171 | $ 262 | $ 392 | $ 521 | $ 624 |
| TOTAL DISCRETIONARY COST | $ 220 | $ 272 | $ 390 | $ 552 | $ 776 | $ 903 | $ 1,142 |
| GRAND TOTAL COST | $ 792 | $ 1,937 | $ 3,575 | $ 5,406 | $ 7,617 | $ 9,087 | $10,066 |
| NET PROFIT | $ (206) | $ 371 | $ 1,499 | $ 2,550 | $ 3,839 | $ 5,169 | $ 5,901 |
| PERCENT PROFIT | (35.2%) | 16.1% | 29.5% | 32.0% | 33.5% | 36.3% | 37.0% |

This computer program calculates in whole dollars and then rounds the result to the nearest thousand.

**Figure 5. Sources and uses of funds over seven years.**

$ THOUSANDS

1. Gas pricing starts at $1.50 per gallon.
2. Employer fee starts @ 15¢ per passenger trip.
3. All gas dependent factors inflate @ 35% (first 3 years), then at 12%.
4. All gas independent factors inflate @ 12% per year.

| | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | YEAR 6 | YEAR 7 |
|---|---|---|---|---|---|---|---|
| OPERATING PROFIT | $ (206) | $ 371 | $ 1,499 | $ 2,550 | $ 3,839 | $ 5,169 | $ 5,901 |
| INCOME TAX | $ (87) | $ 156 | $ 629 | $ 1,071 | $ 1,613 | $ 2,171 | $ 2,479 |
| INVESTMENT CREDIT | $ 181 | $ 202 | $ 227 | $ 259 | $ 290 | $ 42 | $ 54 |
| NET INCOME AFTER TAX | $ 61 | $ 418 | $ 1,096 | $ 1,737 | $ 2,516 | $ 3,041 | $ 3,477 |
| VALUE OF DISPOSAL | | | | $ 9 | $ 10 | $ 34 | $ 51 |
| DEPRECIATION EXPENSE S | $ 298 | $ 631 | $ 1,004 | $ 1,435 | $ 1,918 | $ 1,977 | $ 2,062 |
| TOTAL CASH GENERATED | $ 359 | $ 1,049 | $ 2,100 | $ 3,181 | $ 4,444 | $ 5,052 | $ 5,589 |
| WORKING CAPITOL | $ 45 | $ 138 | $ 228 | $ 233 | $ 284 | $ 227 | $ 139 |
| FIXED ASSAT PUR | $ 1,977 | $ 2,214 | $ 2,480 | $ 2,922 | $ 3,273 | $ 726 | $ 1,017 |
| TOTAL USE OF FUNDS | $ 2,022 | $ 2,352 | $ 2,708 | $ 3,156 | $ 3,557 | $ 953 | $ 1,155 |
| CONTRIBUTION TO CORP CASH | $(1,664) | $(1,303) | $ (608) | $ 26 | $ 887 | $ 4,099 | $ 4,434 |
| **CUMULATIVE CASH FLOW** | (1,664) | (2,967) | (3,575) | (3,549) | (2,662) | 1,437 | 5,871 |

This computer program calculates in whole dollars and then rounds the result to the nearest thousand.

Figure 6. Return on capital employed over seven years.

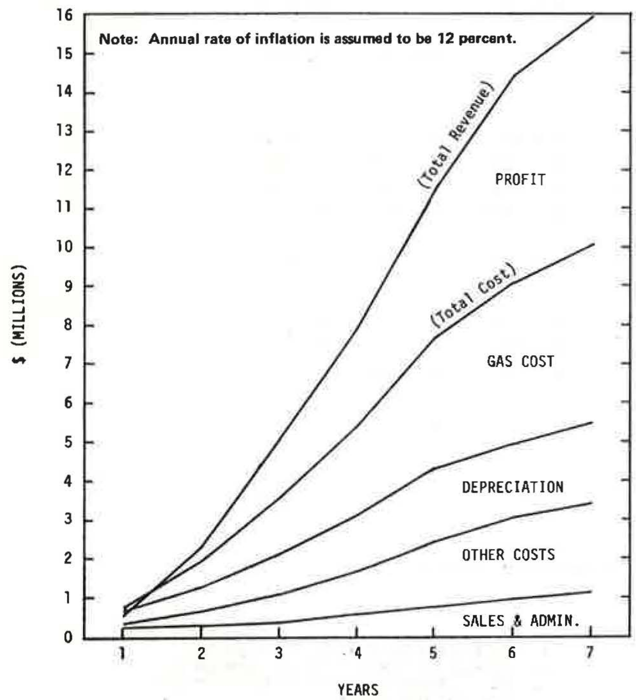
1. Gas pricing starts at $1.50 per gallon.
2. Employer fee starts @ 15¢ per passenger trip.
3. All gas dependent factors inflate @ 35% (first 3 years), then at 12%.
4. All gas independent factors inflate @ 12% per year.

$ THOUSANDS

| | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | YEAR 6 | YEAR 7 |
|---|---|---|---|---|---|---|---|
| TOTAL SALES | $ 586 | $ 2,309 | $ 5,074 | $ 7,956 | $11,456 | $14,256 | $15,967 |
| WORKING CAPITAL | $ 45 | $ 183 | $ 411 | $ 645 | $ 928 | $ 1,155 | $ 1,294 |
| NET PERMANENT INVESTMENT | $ 1,679 | $ 3,263 | $ 4,738 | $ 6,225 | $ 7,581 | $ 6,330 | $ 5,284 |
| TOTAL CAPITAL EMPLOYED | $ 1,724 | $ 3,445 | $ 5,149 | $ 6,870 | $ 8,509 | $ 7,484 | $ 6,578 |
| OPERATING PROFIT | $ (206) | $ 371 | $ 1,499 | $ 2,550 | $ 3,839 | $ 5,169 | $ 5,901 |
| RETURN ON CAPITAL | (12.0%) | 10.8% | 29.1% | 37.1% | 45.1% | 69.1% | 89.7% |

This computer program calculates in whole dollars and then rounds the result to the nearest thousand.

Figure 7. Seven-year comparison of costs and profit.




this model to allow for a variety of plan adjustments, such as going to an unsubsidized, nonprofit operation.

By using the appropriate investment parameters that were developed by this model, an overall internal rate of return of 33.5 percent is computed for the seven years under study. This and other investment criteria are summarized in Table 2. The assumptions that were used in constructing this model for analysis are summarized below.

1. Employers of vanpool riders will pay a small per trip fee to support the program.
2. Purchase price of a 12-passenger van is $10 300; for a 15-passenger van, it is $10 500. Resale occurs after 70 000 miles or seven years of use, whichever comes first. Resale value is $675-$900, depending on age. (Recently 3M has found retrofitting to be more practical than resale for older vans.)
3. Fifteen-passenger vans are used for all round trips of 20 miles/day or less. Twelve-passenger vans are used for all round trips of 25 miles/day or more.
4. All vans operate, on the average, at one-half seat under full capacity.
5. Driver rides free and also receives the fare from the last seat in the van. Driver keeps van overnight and keeps van clean.
6. All personal mileage is repaid at a rate equal to the cost of gasoline up to 200 miles/month. A surcharge of 30 percent is placed on personal mileage over the 200-mile monthly maximum.
7. Fifty miles/month, on the average, are allowed for maintenance.
8. Van depreciation is linear for P&L purposes and accelerated for taxes.
9. Liability insurance is $250/year per van. Collision is self-insured by the operator.
10. Cost of license tags, maintenance, and tires are based on 3M internal vanpool fleet averages. Mileage varies with distance traveled from 7.5-10.0 miles/gal, based on 3M fleet averages.
11. Pick-up and drop-off distances will vary according to total distance traveled, as per 3M internal vanpool averages.
12. Payment by riders is by the month in advance. Accounts receivable should show net payment in advance instead of in arrears. Model does allow for some receivables and inventory (e.g., gasoline). Payments are made to the employer, by payroll deduction, for example. The employer is then billed by the third-party operator.
13. Taxes are paid on operating profit at a consolidated rate of 42 percent.
14. Vans that are retired for reasons of age or mileage are immediately replaced with new vans.

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