need to move their clients to and from their agency center on a daily basis and (b) midday nutrition programs. Therefore, it is recommended that the TSC initiate this type of service on a trial basis (probably by purchase from an existing operator).

Without the analysis of efficiency and effectiveness, it is probable that a much more ambitious program of actual transportation operations would have been attempted. This could have resulted in a substantial increase in the total costs of services provided.

SUMMARY

The approach outlined in this paper should help to establish a framework for coordination of agency transportation. The underlying philosophy is the need to identify how much coordination is good for a given agency. If the available financial resources are to be used in the most efficient manner, care must be taken not to overcoordinate. The analytical tools presented here will provide decision makers with at least some factual data with which to answer the questions of "How much coordination?" and "For which agencies?"

ACKNOWLEDGMENT

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REFERENCE

1. Human Service Agency Transportation Study. Barton-Aschman Associates, Evanston, IL, April 1977.

Paratransit and the Journey to Work: Status Report

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Work-trip paratransit will flourish if the time and money costs of competing modes increase, whether due to price increases or taxation policies. It will also prosper if its time, money, and flexibility costs decrease as a result of operational economies or subsidies. In the short run, it appears that the competing modes will suffer only modest price inflation and largely escape the effects of energy taxation. It also appears that paratransit will receive little subsidization; it has only a weak institutional base and public officials are currently reluctant to embark on new spending programs. It follows that the growth of work-trip paratransit in the near term depends on the development of suitable, low-cost provider arrangements and on price reductions deriving from decreased insurance costs and improved vehicle operating efficiency for van pools. If successful adoption of these techniques produces significant market penetration at present price levels, public officials may find additional ride-sharing initiatives, in the form of price incentives or subsidies, both cost-effective and politically feasible as means of conserving energy, reducing emissions, and alleviating congestion.

None of the modes grouped under the rubric of commuter paratransit is exactly new. In fact, the shared use of automobiles was much more common in the early days of the motor age, and the various shared-ride-taxi and commuter-jitney options discussed in the past few years were well-known by the 1920s. However, in the period between the end of World War II and mid-1973, neither the commuting public nor the American government at any level showed much interest in these modes, and they were for the most part forgotten. Commuters were busily switching from transit and shared automobiles to driving alone, and governments were attempting to ensure adequate road space for the burgeoning drive-alone commuter force.

Suddenly, at the end of 1973, two circumstances—the energy crisis and the approaching deadlines of the Clean Air Act Amendments of 1970 (set for 1975)—created the widespread expectation that this was all about to change. Under the twin spurs of the energy embargo and court orders to develop transportation control plans (TCPs) for air-quality improvements, public officials busily sought alternatives to drive-alone commuting. Ride sharing in particular attracted interest because of all the options available, including rationing, fuel taxes, and expansion of mass transit, it alone combined immediate availability, low public and user costs, and expansion rather than constriction of commuter options. Within a short period, four federal agencies—the Federal Highway Administration (FHWA), the Federal Energy Administration (FEA), the Environmental Protection Agency (EPA), and the Urban Mass Transportation Administration (UMTA)—were actively promoting ride sharing, and parallel efforts were under way in many states and localities and among many major employers. In addition, a new and promising variant of ride sharing, the van pool, had just been invented and initially tested. To many observers of the urban transportation scene, it appeared that a major transformation in commuting habits might be just ahead.

In reexamining the scene 4 years later, it seems fair to say that events have not evolved as many expected. After increasing 40.2 percent between September 1973 and July 1974, gasoline prices have increased only 13.8 percent in the following 3 years. (Price data are from various issues of the Consumer Price Index: Detailed Report of the U.S. Department of Labor, Bureau of Labor Statistics.) By contrast, the general price level in the 1974 to 1977 interval rose 23.4 percent. At the same time, the perceived threat of an oil embargo has receded, the price demands have moderated, world supplies have increased with the opening of new fields in Alaska, the North Sea, and Mexico, and the U.S. Congress has proved reluctant to deregulate gasoline prices or impose energy conservation taxes. As a result, energy prices will probably remain roughly constant (in real dollars) into the 1980s.

Paradoxically for work-trip paratransit, the specter of energy shortages and additional price increases has

motivated the automobile manufacturers to improve fuel economy dramatically (about 40 percent between the 1974 and 1978 model years), with the result that the gasoline price increases (59 percent over this same period) have been largely offset. This, combined with only modest inflation in the cost of automobile operation as a whole [46.2 percent versus 37.6 percent for all prices between July 1973 and July 1977 [a trend largely explained by the modest increase in new automobile prices (27.7 percent between July 1973 and July 1977) that has offset the much larger increases in insurance, repairs, and gasoline]] and increased consumer income [a 5.5 percent increase in real purchasing power during this 4-year interval (this figure is derived from the per capita disposable personal income adjusted for inflation given in various monthly issues of the Survey of Current Business of the U.S. Department of Commerce, Bureau of Economic Analysis)], means that drive-alone automobile commuting is hardly more of a luxury in late 1977 than it was in early 1973. Since the prime attraction of paratransit for the consumer is its potential for cost savings, it is hardly surprising that the market for these new products has proved rather soft, even where they have been vigorously promoted by government officials and corporate leaders.

Nor are there likely to be any new inducements to commuter paratransit from the environmental movement. The 1977 amendments to the clean air act will have the effect of delaying TCPs with stringent enforcement requirements until at least 1982, while the new emphasis on vehicle inspection-and-maintenance programs as the preferred technique makes it unlikely that restraints on commuter vehicle movements will be seriously considered as part of future TCPs.

Finally, if commuter paratransit has not benefited from any sticks in the form of higher gasoline prices, energy taxes, or environmental sanctions, neither have its proponents succeeded in developing any significant carrots in the form of government subsidies or internal operating economies.

These trends do not necessarily presage the end of commuter paratransit, but do make clear that its widespread acceptance and transition from a minor, enthusiast's mode to a mass mode will require much more promotion and nurturing than might have been the case if the potential cost savings and the environmental imperatives were greater. The aims of this paper will be to survey the present institutional environment of commuter paratransit and to determine what new initiatives might make these modes attractive to the widest possible cross section of the commuting public.

INSTITUTIONAL CONTEXT OF COMMUTER PARATRANSIT: FALL 1977

Federal-Level Programs

EPA was the first federal agency to begin paratransit promotion by virtue of several court cases in 1973 whereby EPA was directed to promulgate TCPs for air-quality control regions (AQCRs) in probable violation of ambient air quality standards by 1975. (The most important of these was the Natural Resources Defense Council decision in early 1973, whereby the D.C. Court of Appeals disallowed an EPA request to grant a blanket extension from 1975 to 1977 for AQCRs unable to meet the standards.) Of the 38 TCPs developed, 17 contained some sort of ride-sharing element. The strongest of these by far was in the Boston AQCR. But even this TCP was quite mild, simply calling for all employers with 50 or more full-time, daytime employees at a site to develop car-pool matching programs, for those with 250 or more employees to develop and continually update car-pool matching programs, and for those with 1000 or more at a site to continually support car pooling and make van pooling available if requested by the employees. Each employer was to make a good faith effort by use of these techniques to reduce by 25 percent the number of drive-alone automobiles brought to the site (details are given in 40 Code of Federal Regulations section 52).

These TCPs provided no funds for program development, administration, or enforcement and thus have been implemented with minimal enthusiasm by local governments and employers. In Boston, the most ambitious of these programs (funded with FHWA car-pool demonstration money) reduced work-trip vehicle travel by only about 1 percent. Also, only 4 of the approximately 50 employers with 1000 or more employees at a site actually established van-pool programs. The others cited lack of employee interest in vans. While an evaluation consultant recently found the program highly cost-effective in terms of benefits to commuters (ride-sharing promotions generally have very favorable cost-benefit ratios, although the ratios commonly cited by proponents are clearly gross overestimates because they fail to subtract the value of extra travel time from the saving in operating costs), it is also apparent that the program has had a trivial air-quality benefit.

As EPA looks ahead, the potential benefits of hardware solutions such as inspection-and-maintenance programs appear very large as compared with programs such as ride sharing that aim at altering commuter behavior. While the 17 TCPs with ride-sharing components will remain in effect pending filing of new plans by January 1, 1979, the feeling among those concerned with these matters at EPA is that ride sharing will have a very minor role in new TCPs.

FHWA entered the ride-sharing area in a major way in early 1974 via the car-pool demonstration program authorized under the Emergency Energy Conservation Act of 1974. Car-pool matching programs on an area-wide basis and through employers were initiated in 86 of the nation's 283 urbanized areas using these funds, and van pools were soon added to the program through a provision of the Federal-Aid Highway Act of 1974 permitting use of car-pool demonstration funds for van-abort costs, interest-free van loans, and the administrative costs of car- and van-pool programs borne by either local governments or employers. A recent consultant's report on these programs concludes that the best of these produced work-trip vehicle travel reductions of 1 to 3 percent [or 0.3 to 1 percent reductions in overall vehicle travel (1)]. The programs were highly cost-effective compared with most other highway programs, but trivial contributors to energy saving, air-quality improvement, or congestion relief.

This program was placed on a permanent basis when the Federal-Aid Highway Act of 1976 authorized unlimited use of federal-aid urban systems (FAUS) and federal-aid primary (FAP) funds for car-pool matching, van-abort costs, interest-free van loans, and car- and van-pool administrative costs. At first, this seems a remarkably generous level of support; FAUS-FAP funds in FY 1977 totaled $2.04 billion. However, in practice, these funds are divided on the local level without any national directives on their use. Since ride-sharing proponents have no lobbying assistance from road builders or construction unions or any other substantial interest, it is not surprising that only about 40 metropolitan areas will use any FAUS-FAP funds for ride sharing and that even in these the amounts will be modest, in no case exceeding $300 000/year. The key factor in a local decision to use FAUS-FAP funds seems to be the presence

of an innovative individual or group who can point to past results and articulate a good case for additional funding.

FEA, itself a creation of the energy crisis, identified van pooling in 1974 as one of the most promising energy-conservation techniques. A series of workshops for more than 1000 major employers were conducted in 1975 and 1976 in about 150 metropolitan areas. As a result, most employers large enough for economical in-house van-pool programs are probably at least aware of the concept.

Now that the active van-pool promotion is ended and FEA authority for such activities has been transferred to the U.S. Department of Transportation (DOT) as a result of an amendment to the Department of Energy Organization Act of 1975, the agency's one continuing paratransit activity involves funding for the state energy plans (SEPs). These plans are to be prepared by each state with the object of reducing energy consumption through conservation to 5 percent below the probable 1980 level in absence of the plans. The Energy Policy and Conservation and the Energy Conservation and Production acts of 1975 together authorize about $35 million/year to develop and implement these plans in the 50 states. Although the purchase of vans or other paratransit vehicles with these funds is not permitted, they may be used for the administrative costs of ride-sharing promotion. However, because the funding level is low (an annual average of $700 000/state) and because a wide range of projects compete for these funds, paratransit has received only small assistance to date. Officials report that only in California—where the third-party van-pool promotion in San Francisco is receiving $115 000—and in Massachusetts—where about $100 000 will go to MASSPOOL in calendar year 1978—are substantial FEA funds being used for the direct support of paratransit.

The present confusion over the shape of energy legislation makes it difficult to discern the future role of FEA and the U.S. Department of Energy in paratransit, but it appears that barring major amendment of the present bills before the Congress, its contribution will be minor.

The role of UMTA in paratransit promotion is of long standing, but until recently has been very low-key. Because of restrictions on the use of funding under sections 3 and 5 of the Urban Mass Transportation Act of 1964, the main evidence of UMTA interest has been in the service and methods demonstration program funded through section 6. The demand-responsive transit demonstration projects in Haddonfield and Rochester included subscription work-trip services to determine whether costs could be reduced to an economical level and whether automobile commuters could be coaxed from their automobiles, but the findings were not promising. Recently, UMTA has funded third-party van-pool promotional programs in Knoxville, Tennessee; Norfolk, Virginia; Minneapolis, and San Francisco. These attempts to develop satisfactory provider arrangements independent of employers are the most interesting and important federal initiatives in progress at present.

Because section 6 funding is limited (about $20 million/year) and is spread over the entire range of innovations in both conventional transit and paratransit, and because, in any case, the new ride-sharing provider arrangements cannot be continued as demonstrations indefinitely, it is apparent that other funding sources will soon be needed. UMTA's forthcoming Paratransit Services: A Statement of Policy would seem on the surface to open the way to a timely new source of funding for work-trip paratransit promotion. It reportedly permits the use of section 3 (capital) and section 5 (operating) funds for van and bus pools provided they are publicly available. However, on a moment's reflection, it is apparent that two major obstacles effectively block the path: the transit fiscal crisis and section 13c of the Urban Mass Transportation Act (this is being interpreted at UMTA to mean that employer-organized van or bus pools would not be eligible, but that third-party-organized pools would be, even if organized at an employer's work site—provided, of course, that nonemployees were not specifically excluded).

The extent of the transit fiscal crisis in most communities is such that every nickel for vans taken from the UMTA bus-rail subsidy will mean bus-rail runs cut or new equipment not purchased. Since paratransit for the moment has no effective allies to counter the powerful transit unions, operator associations, and supplier groups, it seems unlikely that substantial sections 3 or 5 funding will be made available in the short run.

Even if funds are allocated, section 13c will present additional problems. Because paratransit does pose a threat to some conventional services (despite tactical protestations to the contrary by paratransit proponents), transit unions have fought for and received elaborate guarantees in each of the van-pool demonstrations. These have included not only agreements that transit employees will not be adversely affected regarding their condition of employment, but also promises to maintain the size of the bargaining unit, to perform nonwarranty van maintenance with transit mechanics, to refuse van service to present bus users, and to run vans only over routes where bus service is not available even if the vans would pick up only former automobile commuters. When one considers that these van pools are only demonstrations funded from section 6 and that union negotiators are likely to push even harder for protections when the funds come from the common source of sections 3 and 5, it seems probable that paratransit will need to find other funding sources for the short term.

Provider-Level Programs

Turning from the consideration of funding sources to the actual paratransit provider arrangements currently in operation, we find an enormous range of experiments. Employer-sponsored programs will be considered first.

Although the trend in employer-based car-pool programs is unclear, it is quite apparent that the number of firms with van- and car-pool programs continues to grow. The National Association of Vanpool Operators (NAVPO) estimates their present number at about 100, with about 2000 vans on the road (but this is just a guess; only 29 employers have joined NAVPO). This is an impressive growth rate for only 4 years, but still represents only a tiny fraction of the 13 000 employment sites with 500 or more employees that may be capable of supporting van pools at reasonable overhead costs per van. It is also clear that the majority of larger employers will not be initiating van pooling. The available evidence indicates that employers who implement van programs do so in response to one or more of the following: (a) a parking shortage, (b) capacity limitations on routes to the job site that public agencies either cannot or will not remedy, (c) a poor image for corporate citizenship (this applies mostly to energy companies), or (d) an employee recruitment or retention problem (usually because of opening a remotely located plant or moving to a far suburban site). It seems reasonable that only a small proportion (perhaps 5 to 10 percent) of large employers face these problems and that the others will find van- and car-pool programs unpromising for two reasons. First, they are difficult to run on a self-costing basis (i.e., without employer subsidy) because full costing discourages many riders (the effect is to increase the commuting distance at which the vans become a bargain) and reduces participation. This further increases the fares because the overhead is spread over fewer vehicles and may reduce

participation to a point where the program hardly seems worth the trouble. Second, even in cases where full costing is possible, the program requires diversion of management energy and capable staff to tasks unrelated to the primary goals of the organization.

Although it is possible that a higher proportion of large employers will find it in their interest to promote van pools at some future date, particularly if there is an energy disaster or if vans come to be viewed as a relatively routine fringe benefit, ride-sharing proponents have for some time searched for third-party provider arrangements to serve large employers who are not interested and the two-thirds of the work force employed at work sites too small to support single-employer programs. The ideal provider, of course, would be a for-profit operator able to make money on such programs while aggressively promoting them on a wide scale. To date, however, no major private providers have emerged, although a number of automobile-leasing companies have shown some interest in the concept.

In the absence of for-profit operations, most of the current interest in van-pool experiments lies with the third-party programs now operating in Los Angeles and Knoxville, those just getting under way in Norfolk and the Golden Gate Bridge district in San Francisco, and those in final planning in Baltimore, Minneapolis, San Francisco, and Honolulu. These programs are quite similar in general concept, but differ in their particulars.

Commuter Computer in Los Angeles is a nonprofit corporation operated with both private (from Atlantic Richfield Company) and public (from the California Department of Transportation and FHWA) contributions that has concentrated to date on van pools for those commuting to downtown Los Angeles from far suburban areas. The vans are specially modified to seat 10 in maximum comfort on the long hauls, but at resulting high fares—the highest of any van-pool operation. Despite a very considerable contribution to overhead from Commuter Computer, it was necessary to raise fares substantially in mid-1977, with rather serious consequences for ridership.

In Knoxville, the vans have been owned by the city department of transportation and operated by drivers recruited in campaigns at various employment complexes. The present thrust of the demonstration is to sell the vans to the drivers and form a van-pool association consisting of the approximately 50 former city vans and the approximately 200 private free-lance van pools thought to be operating in the area. The association would attempt to find ways to economize through group purchase of new vans, repairs, and perhaps insurance. It would maintain a file of interested poolers to replace those dropping out and conduct new recruitment campaigns as necessary.

In Norfolk, the vans are owned by the local transit authority and will be leased to drivers and riders working at the various naval bases. Special efforts are being made to fit the vans into gaps between the existing transit system and the long-established, third-party, for-profit bus-pool system.

In the Golden Gate Bridge district north of San Francisco, section 6 funds are being used to purchase 35 vans. The program will attempt to initiate the largest possible number of van pools by requiring that the poolers purchase their own van after 6 months use of the UMTA-funded van. The UMTA van will then be given to another group for a 6-month trial. It is hoped that the 35 vans will spawn 140 van pools during the 2 years of the demonstration. A second object of the demonstration is to test consumer preferences for types of vans, seating, and fares. Half the vans seat 12 in standard bench seats. The other half seat 10 in aircraft-type reclining seats of the kind used by Commuter Computer. The fares for the deluxe vans will be about 35 percent higher.

In Baltimore, the vans will be leased from an automobile-leasing company with FHWA abort funds used to ensure the lease agreements. A nonprofit corporation (VANGO) with a small staff has been organized to match drivers and riders with vans. This project is funded by FHWA through the Maryland DOT.

In Minneapolis and San Francisco, the third-party providers (nonprofit corporations in both cases) will lease the vans from an automobile-leasing company with the loans guaranteed by funding from UMTA in the former case and FEA in the latter.

These experiments do not exhaust the list of programs under way or planned. In several states and metropolitan areas, for example, FHWA funds will be used in the next year by state departments of transportation or transit agencies to assist employers in starting programs and purchasing vans. These examples do, however, illustrate the wide range of operating arrangements feasible within the broad concept of van pooling.

Experience with these programs to date points up the following:

1. Van poolers are quite fare-sensitive, particularly since commuters tend to compare the van fare with their out-of-pocket automobile-commuting expenses. (Staff members of the third-party provider in Norfolk report that their most effective sales device is a balance-sheet flyer that totals all of the costs of automobile commuting and compares it with the van fare. Those taking the time to read it are immediately more receptive to van pooling.)
2. Local regulatory conditions, while often an annoyance, are not a major barrier if van pool promoters address them forcefully. In 17 states, regulations have been amended in the past 4 years to ease restrictions on ride sharing, and there is no known case where state or local regulations have permanently thwarted persistent ride-sharing promoters.
3. Insurance costs for third-party van pools, despite the new insurance services office (ISO) van-pool classification, continue to be very high (usually at least $1000/van annually) and far in excess of what actual claim experience would warrant.

Major questions about provider arrangements that should be answered in the next few years include the following:

1. What kinds of provider organizations—nonprofit corporations, transit agencies, other government agencies such as departments of transportation or metropolitan planning organizations, or private employers using public funding—are most effective in finding riders and fostering long-term van- and car-pool arrangements?
2. What specific details of the provider arrangements—such as leasing versus purchase of the vans, recruitment at a few major employment complexes versus areawide matching, and fancy vans versus plain vans—are important for the success of programs?
3. Most important of all, to what extent can third-party vans at present fares penetrate the drive-alone commuter market?

CONTINUING PROBLEMS AND NEW INITIATIVES IN WORK-TRIP PARATRANSIT

As paratransit proponents look ahead, the most immediate challenges lie in reducing van-pool costs and fares, particularly for third-party operators, and in providing the full range of car-, van-, and bus-pool services for

the majority of urban automobile commuters.

One cost-reduction technique is to develop a more fuel-efficient van. Present vans get only about 3.8 km/L (9 miles/gal), and fuel costs may be as much as one-fourth of total operating costs, so there is clearly room for improvement. The most probable methods would be substitution of weight-saving materials in van bodies and development of a lightweight diesel engine. Chrysler has already announced that a redesigned van for the 1979 model year will have room in the engine compartment for a diesel, although they have not announced that a diesel will actually be offered.

Another technique is to add passengers to the van pool or to divide the costs among more riders. Fifteen-passenger vans are now available and would permit a 20 percent reduction in fares compared with 12-passenger vans, but it is questionable whether the increase in collection time would offset the direct cost savings. Bus pools, which from the passenger's standpoint are only super van pools, have not found new markets in recent years, apparently because there are few concentrations of origin-destination pairs that permit their operation within tolerable collection times. (From the driver's standpoint, of course, the difference is much greater; few commuters are likely to want a bus in their driveway at night or need such a large vehicle for family outings. Consequently, drivers tend to be treated as part-time employees rather than as commuters. This added organizational complexity may be as significant as increased collection time in explaining the relative lack of interest in this mode.) However, experience at the 3M Company in St. Paul and elsewhere has shown that some van poolers are much more sensitive to fares than to collection time, so that any van-pool program may have a place for at least a few larger pools. Rather than stretching the van, providers might also consider reducing fares by dividing the costs of present eight-fare van pools over all 11 passengers. There may be a problem in finding enough drivers when the only compensation is a free trip to work and use of the vehicle nights and weekends, but several of the provider experiments under way are reporting success with 11-fare vans. The greatest fare reduction not surprisingly comes from combining these two techniques. Fares for a 14-passenger, 14-fare van, for example, are nearly 40 percent below those for an 11-passenger, 8-fare van for any given trip length.

Yet another path to reducing costs and fares is cheaper insurance. Even with the ISO rating, third-party operators are finding it very difficult to obtain insurance with adequate limits (generally $100 000/person, $300 000/accident or $300 000/person, $500 000/accident) for less than $1000/van annually. When one considers that 3M's monthly van-pool fixed costs are only $142 (of which $40 goes to a self-insurance plan), while many third-party operators are paying $80/month for insurance and some are paying as much as $150, the extent of the problem is apparent. One approach being explored in Knoxville and already in use at the Social Security Administration in Baltimore is to lease or sell the van to the driver and have him or her insure it as a personal vehicle. In this circumstance, it appears that insurance with $300 000/person, $500 000/accident limits and additional uninsured-underinsured-motorist coverage can be obtained in some states for less than $300. The problem lies in finding drivers either willing to risk personal exposure in the unlikely event that an accident produces claims in excess of the insurance limits or able to obtain catastrophe coverage under homeowners policies or other personal insurance.

The problem of providing car-, van-, and bus-pool options for most members of the work force with commuting distances long enough to make the arrangements attractive is rather more difficult. At present, it appears that car-pool matching either at major employment complexes or areawide will be available on a continuing basis in about 50 of the nation's 283 urbanized areas. Van pooling on a third-party basis will be offered in only about 10 areas in 1978. Employer-sponsored programs will probably be confined to 10 percent or fewer of the largest employers and will be impractical at the smaller employment sites that account for the largest part of the work force. Other shared-ride incentives such as preferential lanes and reserved parking for high-occupancy vehicles will be limited to a handful of corridors and employment complexes. The remedy for this relative lack of progress clearly lies in establishing effective car- and van-pool provider organizations on an areawide basis in most urbanized areas and in offering attractive incentives to employers to run their own programs. There seems to be little agreement, however, on how best to do this or at what scale the effort is most cost-effective.

One approach, proposed by Representative Robert Edgar of Pennsylvania, would create a separate ride-sharing modal agency within DOT. The first step in this process, involving the transfer of FEA's ride-sharing promotions to DOT, has already been accomplished, and Representative Edgar is now pushing a much more ambitious program. It would provide nearly $100 million/year from the highway trust fund for the new agency to fund ride-sharing development plans on a 90/10 matching basis in each state. The overhead costs of ride-sharing promotion as well as the vehicle-purchase costs incurred by any designated recipient, public or private, would be eligible for reimbursement. An additional $100 million would be placed in a revolving fund to permit interest-free vehicle loans to local provider groups, public or private.

A similar proposal by Representative Edgar was approved in the House last year as part of the Federal-Aid Highway Amendments of 1976. The Senate version did not include the measure, however, and it was deleted in conference committee. Representative Edgar reportedly plans to reintroduce the measure in 1978, but its prospects are uncertain. The established modal agencies and their beneficiaries are reluctant to see a competitor program established. FHWA and UMTA, in fact, have recently been directed by Secretary of Transportation Brock Adams to form a task force and develop, by February 1978, a program for ride-sharing promotion within the present modal framework. The established agencies also criticize the Edgar proposal by pointing out that it is another categorical grant program being introduced just as the department is moving toward block grants via some sort of surface transportation trust fund.

Many paratransit innovators at the local level are also skeptical that an additional federal program, with its inevitable bureaucratic rigidities, can do more than throw money at the problem. They argue that, unlike conventional transit, ride sharing must be sold to potential users, not merely offered. In their view, a traditional federal grant program based on needs rather than on demonstrated ability to produce results will be little more successful in the long run than the majority of the FHWA-funded ride-sharing programs that produced very little measurable benefit. More appropriate incentives, they suggest, might be patterned after other sales organizations. Providers (whether public, private, or employer) and even individuals within provider organizations might be placed on commission and given bonuses for forming exceptional numbers of van pools or eliminating large amounts of drive-alone automobile travel. Groups showing significant results would be given additional funding while the also-rans would be phased out.

Unfortunately, there is little precedent in federal experience for these types of incentives, and there is substantial question whether they could be offered without engendering major abuses. For these reasons, local innovators tend to support incentives aimed directly at the drive-alone automobile commuter via increased energy taxes for private automobiles or at employers by means of additional investment tax credits for those providing paratransit options for their employees. They also suggest that the federal government as the nation's largest employer is ideally suited to lead the way by developing effective in-house paratransit options for its employees.

At present, the prospects for these alternatives are uniformly dim:

1. The Carter energy pricing program, including gasoline price deregulation and the well-head tax, will have a very modest effect [1.8¢/L (7¢/gal) or less] even if fully enacted. Indeed, one recent analysis (2) argues that the oil industry has already found ways to defeat price controls and is presently charging the international price. If this is the case, deregulation and the well-head tax will have no effect on gasoline prices. As for taxation to raise domestic energy costs above the international level, no national political figure is presently even proposing this.
2. A proposal to allow a 20 percent investment tax credit after 3 years to employers purchasing vans for pooling has been approved by the congressional energy conference committee but is caught in the larger impasse over the energy bill. (The usual investment tax credit allows corporations to subtract 10 percent of the value of an investment from corporate income tax payments spread over a period of 10 years: The proposed credit would permit corporations purchasing vans for pooling to subtract a full 20 percent from their next tax payment provided they certified in the succeeding 3 years that the van was still in use for pooling.) Even if the credit is eventually enacted, however, there is serious question about its power to generate employer programs. Assuming a $7500 purchase price for a new van, the employer will receive only about $500/year in operating assistance via the tax credit compared with an overhead cost for many employer programs of $1000/year or more.
3. The House has voted down a proposal to purchase 6000 vans for federal employee van pooling, apparently in the belief that the program represents a new fringe benefit for federal employees rather than a significant energy conservation measure.
4. The Senate in July 1977 overwhelmingly (56 to 25) rejected Senator Charles Percy's proposal to charge federal employees the true cost of parking at federal facilities.

SOME LONGER RANGE PROSPECTS

This review of institutional initiatives suggests that commuter paratransit will proceed in the near term without benefit of significant carrots or sticks. Over the next few years, however, the external environment of paratransit may change in several ways. On the one hand, there will almost certainly be substantial energy price increases sometime in the future, in response to either balance of payments problems or actual shortages. These will negatively impact the drive-alone automobile commuter and increase the attractiveness of paratransit. On the other hand, the transit fiscal crisis may become so serious that receptivity will increase at the local level to paratransit alternatives that skim the deficits caused by the work-trip commuting peak. However, the situation will indeed have to be serious for this to occur, since public officials must first be convinced that the gratitude of those voters spared tax increases to cover the deficits will more than offset the protests of those (including transit employees) whose circumstances are worsened by curtailment of conventional services. However, it just may happen in at least a few localities.

If local officials do choose paratransit alternatives, there are several in addition to car, van, and bus pools available. One is the institutionalized hitch-hiking concept that consists of an association of drivers checked for driving and criminal records and adequate insurance and riders checked for criminal records. The drivers would use established corridors en route to work and pick up members displaying association identification. The riders would pay a small cash fare set by the association. More elaborate versions of this concept would blend into car and van pooling through use of telephone matching in place of street hailing and prepayment rather than cash fares. A large number of combinations are obviously possible.

UMTA has considered this idea several times in recent years, and consultants have analyzed it from just about every possible angle, but no demonstration has been undertaken. In part, this is because no corridor with sufficient demand has been identified that does not already have conventional service and UMTA has not been anxious to prove a new concept at the expense of transit. Perhaps more important, there are strong doubts about public acceptance because of fears for personal safety and questions about reliability, even if conventional buses at long headways are available as back-up transportation.

A variant of this concept that addresses both the security and reliability problems might be termed share-a-van. Commuters willing to purchase a van and affix a share-a-van logo would be licensed to pick up association members along certain corridors or in response to phone hails. The more substantial van vehicle with its larger average loads would provide security of numbers and bright interior lighting in the early morning and late evening hours and so might assuage passenger fears. Drivers might be spared the risk of handling cash, as well as the unpleasantness of cash transactions with neighbors, through use of a coupon system administered by the association. The reliability problem could be solved by paying part-time workers, housewives, retirees, or even commuters themselves to drive along certain corridors each day at specified times.

Subvariants within this concept can also be imagined. For example, a share-a-van with four or five regular riders might pick up four or five additional riders from the street corner or in response to telephone requests the previous evening. This amalgam of long-term and ad hoc ride sharing might be stronger than either option alone.

Moving a bit further in this direction, one can imagine the revival of the old-fashioned jitney, using vans and full-time drivers. A natural off-peak use for the vehicles and drivers would be in shared-ride taxi service.

At least a few of these concepts may be more cost-effective in certain applications than conventional transit services. Whether they receive a trial in the near term seems more a political and institutional, than a technical or economical, question.

SOME CONCLUDING PROGNOSTICATIONS

The theme of this paper has been that work-trip paratransit will flourish to the extent that the time and money costs of competing modes increase (whether because of price increases or taxation policies) and to the extent that the time, money, and flexibility costs of paratransit

modes decrease (whether because of operational economies or subsidies). For the moment, it appears that the competing modes will suffer only modest price inflation and largely escape the effects of energy taxation and that paratransit will receive little subsidization. It follows that the growth of work-trip paratransit in the near term depends on the development of suitable provider arrangements as well as price reductions from decreased insurance and fuel costs. As these goals are achieved and experience accumulates on probable market penetration at present price levels, additional price incentives or subsidies may become very attractive to public policy makers as cost-effective and politically feasible ways of conserving energy, reducing emissions, alleviating congestion, and stabilizing transit deficits.

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