

\$220 million is available for transit construction or rehabilitation and because state and local governments need provide only 20 percent in matching funds to gain the federal support. However, the problem in programming is the uncertainty of the federal funds because, under federal law, these funds can be, and are being, diverted to system operation.

In their attempts to hold down both local subsidy of transit operations and fares, state and local officials have opted to use much of the available capital funds for transit operations. Because New York City has an old rail transit system, this diversion of capital resources and the deferment of capital rehabilitation may cause future problems in the reliability of the subway system.

The other MTA programming problem surrounds the issue of mixing objectives. Mass transportation is evolving into a social benefit for elderly and handicapped persons without added financial resources to cover the additional costs.

An example of a social program that has no special

funding is New York City's half-fare program for the elderly. This program was enacted in 1969 without careful establishment of need. Basic to the enactment of the program was the assumption that twice as many elderly persons would use the system, thereby making the program a break-even financial proposition. However, in reality, the elderly are making only 27 percent more person-trips and, therefore, this program substantially increases the deficit of the system.

Also, new federal regulations require that, in the future, transit vehicles must accommodate wheelchairs (although there has not been a careful study of the needs of handicapped persons). Unless substantial public resources are made available to the MTA to meet this new social role, transit service to New Yorkers will deteriorate.

Publication of this paper sponsored by Committee on Transportation Programming, Planning, and Evaluation.

State and Federal Issues in Financing Highway Programs

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Current and emerging issues in highway finance are summarized from both a state and a federal perspective. The highway revenue outlook is presented and contrasted with recent historical experience. Inflationary forces, particularly in the highway construction and maintenance sectors, and the projected revenue impacts of the Energy Policy and Conservation Act of 1975 are having a severe effect on the ability of the states to maintain and improve existing highway systems. The increasing constraints on state highway budgets raise several questions concerning future highway finance alternatives and the proper roles of federal and state governments. The problem of the inability of the existing federal-aid highway program to adapt to changes in the highway finance environment and shifting investment priorities is growing. More attention should be given to the link between highway investment policy objectives and the programs designed to implement these objectives.

By past standards, the revenue outlook for state highway departments is austere at best. After nearly two decades of rapid growth in highway programs following the inception of the Interstate system, the states now face the prospect of sharply reduced revenues in the wake of the Energy Policy and Conservation Act (EPCA) of 1975. The recently mandated nationwide 88.5-km/h (55-mph) speed limit and other legislation pending before Congress may also serve to erode state highway revenue bases. Although various forecasts differ somewhat (1,2,3,4), it is generally conceded that recent legislative actions will result in gasoline consumption levels in 1985 that are little or no higher than current levels despite a significant projected growth in vehicle travel (VT). Because gasoline tax receipts have traditionally contributed approximately three-fourths of state and federal highway revenues, the revenue impact of projected automotive fuel-economy improvements is a significant concern of highway officials at all levels of government.

The potential problems associated with projected

decreases in the growth of highway revenues are compounded by inflation and the recent sharp increase in highway maintenance requirements. Inflation in particular has had a severe effect on the costs of construction, maintenance, and highway administration. As one example, the California Highway Commission on Problems of Financing Transportation has reported that, during the 8-year period between 1967 and 1975, the state highway-construction cost index increased by nearly 140 percent in contrast with the increase in the state consumer price index over the same period of only 63 percent. Nationwide, the figures are, if anything, more striking. The 1975 composite federal-aid highway construction index was more than double its 1967 level, although the nationwide consumer price index increased by little more than 50 percent over the 8-year period (5). Inflationary forces have been especially severe since the 1973 oil embargo. Petroleum cutbacks and increased oil-import costs have led to dramatic increases in the prices of the bituminous and asphaltic materials used in construction and maintenance. In fact, since 1973, the yearly increase in highway material costs in many states has been as high as 45 percent (6).

HISTORICAL PERSPECTIVE

Historically, the increase in construction and maintenance costs has not been accompanied by a commensurate increase in highway revenues, and this trend is likely to be exacerbated as new, more fuel-efficient automobiles enter the nation's vehicle fleet. Over the past 8 years, state highway motor-fuel tax revenues have grown by an annual nationwide average rate of 6.6 percent. Federal highway grant authorizations, another major source of revenue to the states, have grown even more slowly, at an annualized rate of only 4.4 percent [see below (7)].

| Item | 1967 Level (current year \$000 000 000) | 1975 Level (current year \$000 000 000) | Annual Growth Rate (%) |
|--|---|---|------------------------------|
| State gasoline tax receipts | 5.01 | 8.35 | 6.6 |
| Federal highway grant authorizations | 4.00 | 5.45 | 4.4 |
| Composite index for highway construction | 100 | 203.8 | 9.3 |

In contrast, the federal-aid highway construction index over this period has increased at an annual rate of more than 9 percent. Simply stated, the consequence of these trends is that total state highway revenues have decreased significantly in constant dollars over the past decade, as have total expenditures and expenditures per vehicle kilometer.

Unless this trend is reversed, the nation's highway system will decline from its present level of service, at least on selected routes. In fact, there are already signs that the states have been deferring needed maintenance on major federal-aid-system roads, bridges, and bridge decks. The Interstate system and its supporting structures have placed a major strain on state highway maintenance budgets. A large portion of that system was built in the 1960s under conditions in which the states were spending "10-cent dollars" for construction. Although the system was heavily subsidized, state funds devoted to Interstate construction still represented a sizable fraction of total yearly state highway department budgets as shown

in Figure 1. In the mid-1960s, in fact, the state expenditures on the Interstate system exceeded their expenditures on the primary and secondary systems combined, although the latter systems were federally subsidized only on an equal-matching basis (8).

Roads and bridges built during the mid-1960s are now more than 10 years old. Large sections of roadway constructed during that era of unprecedented highway route expansion are in need of resurfacing and other maintenance operations. In retrospect, it appears now that many highway departments overcapitalized during the past decade. The legacy of that era is the soaring maintenance requirements facing state highway departments. Highways built with 10-cent dollars now must be maintained with unsubsidized 1970s dollars whose purchasing power is only a fraction of their earlier value.

A sampling of recent public statements by state highway officials reported in the weekly newsletter "From the State Capitals" in the spring of 1978 testifies to the severity of the fiscal dilemmas faced by the states and the resulting shifts in program emphases:

1. The Alabama Highway Department is in "serious trouble in the maintenance" of highways, according to a department engineer. At a meeting with the Birmingham Regional Planning Commission's Transportation Citizens Committee, the state highway official said that his department receives federal funds to build highways, but must rely on state and local funds to keep them up. "There is no maintenance picture at all except for state and local funds, and we can't

Figure 1. State expenditures on federal-aid systems.

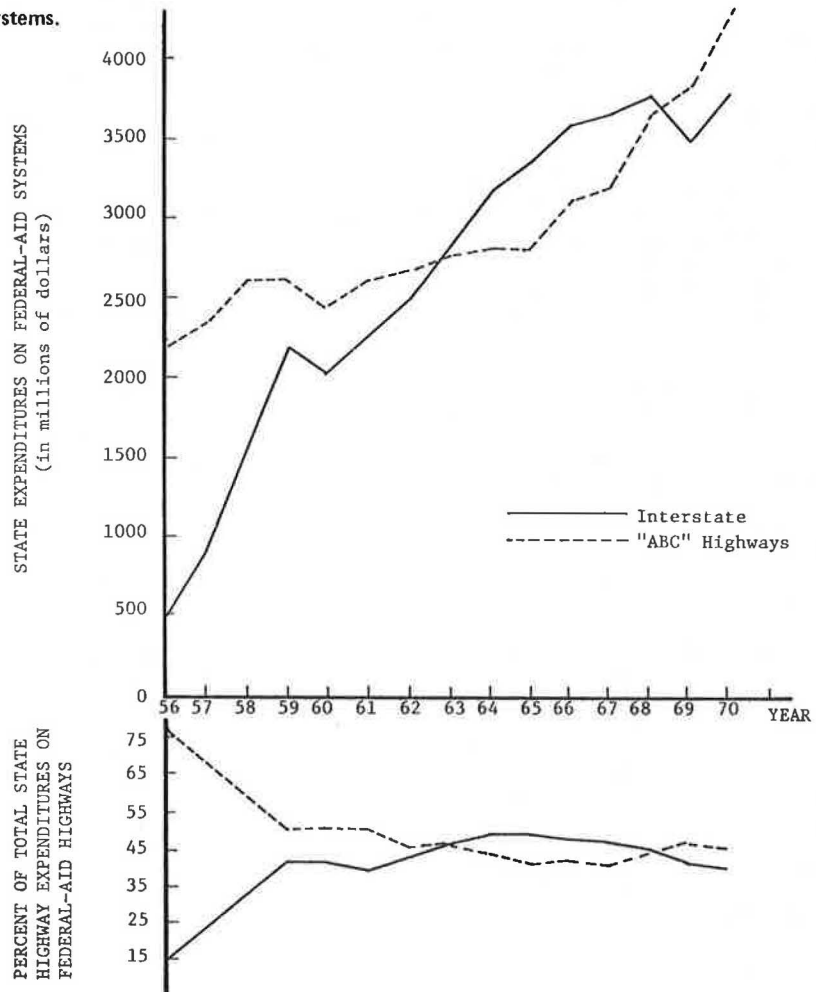
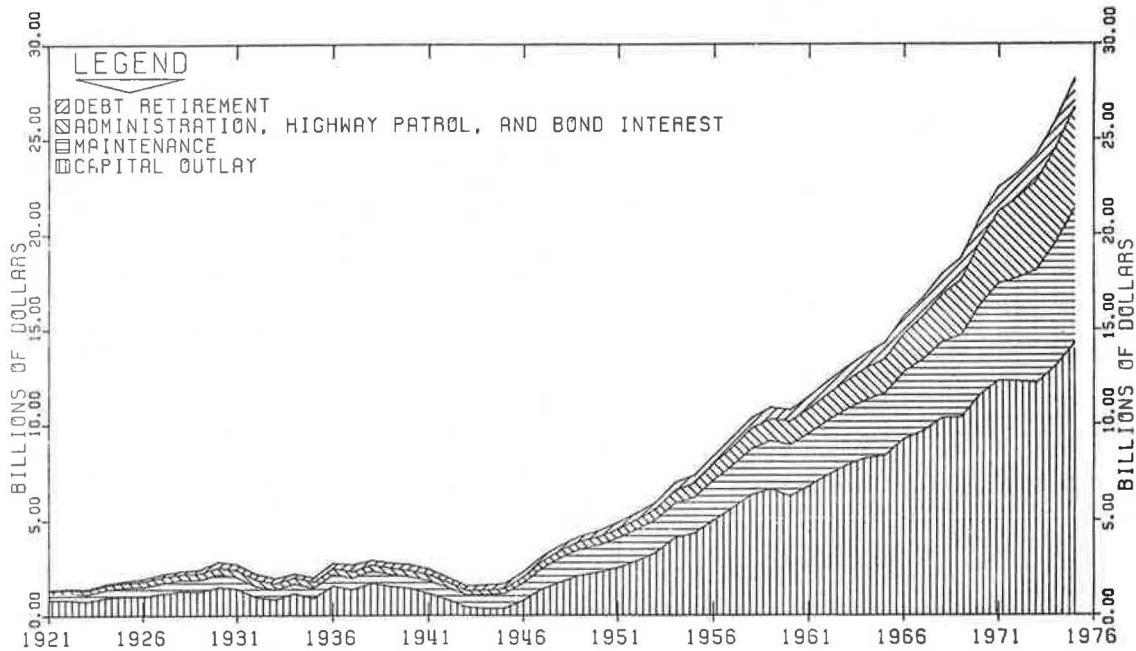


Figure 2. Total disbursements for highways by function: 1921-1975.



do what we want to with that," he said, adding that the situation could be solved only by a tax increase. At present, the highway department can mow grass and clean up litter along roadsides only once a year because of the lack of funds.

2. More than \$1.35 billion will be spent on highway and bridge construction in Minnesota between 1979 and 1985 under a plan proposed by the Minnesota Department of Transportation. The director of the transportation development division has said that the plan would shift the department priorities from building new highways to "fixing up the ones we have."

3. A Pennsylvania state legislative proposal for a \$2 billion road and bridge program that could cost motorists \$25/year more in gasoline taxes for the next 12 years was announced by the Southwestern Pennsylvania Regional Planning Commission at a press conference in Pittsburgh. The commission chairman declared, "I know people are sick and tired of taxes and hearing about our roads and bridges. But if we don't do something now, we might as well close up southwestern Pennsylvania and suffer the consequences."

4. Arizona state transportation officials have predicted that there will be a \$2.4 billion deficit in the state highway users trust fund in 20 years, based on current revenue sources. The transportation officials presented to state legislative leaders a report that said, "It is obvious that, without an increase in revenue, Arizona's state, county, and city highways and streets will further deteriorate due to lack of maintenance and pavement preservation."

5. The Delaware Secretary of Transportation has said that gasoline tax revenues for highway improvements are needed to help keep the state from falling further behind on making road repairs estimated to cost \$211 million. Attempting to have 2 cents of the gasoline tax designated for highway use, the secretary said that his office "is filled every week with requests from citizens, legislators, and personnel in the Delaware Department of Transportation for funds to repair and reconstruct roads."

6. More than \$29 million worth of Rhode Island highway improvement projects will go or already have gone out to contract this year in a burst of construc-

tion that state officials say rivals the "boom times of freeway building" in the 1960s. The major difference, however, is that the money now is primarily for road maintenance and improvement, not for new construction. "The whole direction of road construction now is toward improving the existing highways," according to an assistant to the Rhode Island Transportation Director.

Despite continued heavy subsidization for capital expenditures, 1976 marked the first postwar year of the federal-aid highway program (FAHP) in which capital outlays for highways were less than half of total disbursements by all units of government (Figure 2). With the impending leveling off or decrease in state highway revenues (at least given the current tax structure) and the continued inflationary pressures on state highway department budgets, increasing attention is being given to realigning the provisions of the federal role in highway finance. Calls for relaxing the strictures on federal aid for maintenance have become more frequent, as have proposals for merging the highway trust fund with other transportation funds and general appropriations.

In fact, the Interstate highway trust fund is scheduled to end in 1979, and its renewal has been a major focus of the Carter Administration and the second session of the 95th U.S. Congress. Complicating the choices facing the Congress are the changing emphases of state highway programs, a series of administration and congressional proposals toward some form of a unified transportation trust fund, components of the administration's proposed energy bill affecting highway finance, and the projected leveling off of gasoline consumption that will significantly affect the principal source of income for the Interstate highway trust fund.

The shifts that will probably impact highway finance in the next few years at both the state and federal level point to the need to reconsider highway revenue forecasts. Although few planners could have foreseen the large increases in crude oil prices and the resulting reorientation of national priorities that led to EPCA and the administration's proposed national energy plan (NEP), it is by now obvious that

the previously used revenue-trend extrapolations are no longer relevant for current highway planning.

POLICIES AFFECTING FUTURE HIGHWAY REVENUES

Because the primary source of federal and state highway revenues is from taxes on motor fuel, any policy affecting highway fuel consumption will directly impact highway revenues. The federal government has taken several actions in the past few years that will significantly affect future highway revenue availability at both the state and federal levels.

By far the most significant of these is the passenger and light-truck fuel-economy standards mandated by EPCA. This act stipulates incremental improvements in automotive fuel economy through the 1985 model year, when each major automobile manufacturer will be required to meet a fleet sales-weighted average of 11.7 km/L (27.5 miles/gal). Light-truck and van fuel-economy standards have also been promulgated under rule-making authority granted by EPCA to the U.S. Secretary of Transportation. The latest published standards require 1981-model-year light trucks and vans of less than 3860 kg (8500 lb) gross vehicle mass rating (GVMR) to achieve an average of 7.7 km/L (18 miles/gal) for two-wheel drive models and 6.6 km/L (15.5 miles/gal) for vehicles that have four-wheel drive. To underscore the significance of these standards, it should be noted that the fuel economy of new domestic automobiles steadily declined in postwar years, to a low of 5.5 km/L (12.9 miles/gal) in 1974. Thus, the standards now in effect are requiring manufacturers to improve average automotive fuel economy by more than 110 percent in little more than a decade. The revenue impacts of these standards are significant and will be assessed below.

Although of lesser significance, there are several other energy conservation policies recently implemented by the federal government that will also reduce motor-vehicle fuel consumption. These policies include the national 88.5-km/h (55-mph) speed limit, the right-turn-on-red rule, and the voluntary truck and bus fuel-economy program.

The national 88.5-km/h speed limit was permanently enacted in early 1975. In the year following enactment, the Federal Highway Administration (FHWA) monitoring program determined that, although as many as three out of four vehicles violated the new speed limit in some states, nationwide, average highway speeds decreased by about 8 km/h (5 mph). The reduction in highway fuel consumption that can be attributed to the new speed limit has been estimated to be as high as 2.9 percent (3).

Adoption of the right-turn-on-red rule was urged by EPCA. Most states had already enacted this traffic regulation at the time of the passage of the act and, by mid-1978, the new law was in effect in all but one of the states. Allowing drivers to make right turns after coming to a complete stop at red lights reduces unnecessary idling time. However, the fuel savings (and hence the highway revenue impacts) that can be attributed to this regulation are extremely small, approximately 0.1 percent.

The third recent federal government action designed to reduce highway fuel consumption involves the voluntary truck and bus fuel-economy program initiated in 1975 by the U.S. Department of Transportation (DOT), the Federal Energy Administration, now part of the U.S. Department of Energy, and the Environmental Protection Agency. This program is designed to encourage manufacturers and users of commercial vehicles to voluntarily improve fuel economy through such actions as developing and offering more fuel-efficient products, conducting and reporting on fuel-economy tests, providing fuel-economy product infor-

mation, advertising and training programs, and purchasing fuel-efficient new vehicles and add-on or replacement components. The program is concerned with trucks and buses that have a GVMR of 4550 kg (10 000 lb) or more and complements the EPCA provisions applicable to light trucks. An informal survey conducted by DOT indicates that fuel savings attributable to this program could be as high as 5 percent of total highway fuel consumption (3).

All of these measures are designed to reduce automobile and truck fuel-consumption rates. Unless there are compensating tax-rate increases, the net effect of these policies will be to reduce motor-fuel tax revenues. In the short run, consumers are direct beneficiaries. New automobile prices have traditionally increased more slowly than the consumer price index, and there is little evidence to suggest a significant shift in this price trend. Thus, in the years to come, consumers may be purchasing vehicles whose real acquisition and absolute operating costs are steadily declining.

In addition to legislation already in force, the administration has proposed a series of automobile-related proposals aimed at reducing 1985 gasoline consumption 10 percent below 1977 levels. Under the umbrella NEP published in April 1977, three specific proposals would have direct impacts on the size and composition of automobile and truck sales, vehicle use, fuel consumption, and (ultimately) highway revenues:

1. Graduated excise taxes on fuel-inefficient vehicles and rebates imposed on new automobiles and light trucks on the basis of their fuel economy: Although this policy would have no direct impact on federal revenues--it is designed so that tax revenues are wholly distributed as rebates--it provides a strong incentive for consumers to buy fuel-efficient vehicles. Its imposition would undoubtedly increase the sales-weighted fuel economy of new automobiles and light trucks and thus indirectly affect highway revenues.

2. Crude oil equalization taxes (COET) intended to bring world and domestic oil prices into parity by 1980: It has been estimated that imposition of this policy would cause a yearly 4 percent increase in the real price of gasoline at the pump through 1980, although tax adjustments thereafter would hold it constant. In the short term, this policy would reduce vehicle use somewhat as consumers responded to transient fuel-price increases.

3. Standby gasoline taxes of 1.1 cents/L (5 cents/gal) that accumulate for each year fuel consumption exceeds predetermined target levels: The administration's proposed consumption targets allow for slight increases through 1980, to be followed by relatively sharp decreases through 1985. Estimates vary somewhat, but it is generally conceded that these taxes would be triggered in 1982 at the earliest. As with COET, any revenues derived from the standby gasoline tax would be rebated to consumers. Thus, the major impact of this policy on highway finance would be its effect on vehicle use. Reductions in fuel consumption in response to higher gasoline prices would reduce the taxable base for revenue-generating state and federal gasoline taxes.

REVENUE IMPACTS: NATIONAL PERSPECTIVE

Although the consumer may be the short-term beneficiary of improved automotive fuel economy and other related measures, the longer term implications of the energy conservation policies described above concern the revenue impacts on federal and state governments and the resulting effects on highway construction and maintenance activity. A recent FHWA study (1)

Table 1. State gasoline tax revenues.

| Year | Revenue (\$ millions) | | | | | |
|-------|-----------------------|-------------------------------|-------------------|----------------------|-------------------------------|-------------------|
| | High VT Forecast | | | Low VT Forecast | | |
| | Neither EPCA nor NEP | EPCA but not NEP ^a | Both EPCA and NEP | Neither EPCA nor NEP | EPCA but not NEP ^a | Both EPCA and NEP |
| 1977 | 8 408.0 | 8 183.2 | 8 183.2 | 8 286.3 | 8 065.2 | 8 065.2 |
| 1978 | 8 735.3 | 8 287.2 | 8 220.9 | 8 485.4 | 8 050.0 | 7 985.6 |
| 1979 | 9 077.1 | 8 356.0 | 8 202.3 | 8 690.3 | 8 000.0 | 7 852.8 |
| 1980 | 9 432.7 | 8 401.0 | 8 149.0 | 8 900.6 | 7 927.1 | 7 689.3 |
| 1981 | 9 803.3 | 8 412.0 | 8 129.4 | 9 117.1 | 7 823.2 | 7 560.3 |
| 1982 | 10 188.6 | 8 405.5 | 8 113.0 | 9 338.8 | 7 704.4 | 7 436.3 |
| 1983 | 10 589.1 | 8 435.1 | 8 141.6 | 9 566.1 | 7 620.2 | 7 355.0 |
| 1984 | 10 944.3 | 8 462.2 | 8 053.4 | 9 799.1 | 7 534.7 | 7 272.3 |
| 1985 | 11 438.8 | 8 488.4 | 7 939.0 | 10 038.1 | 7 449.0 | 7 189.8 |
| Total | 88 617.2 | 75 430.6 | 73 131.8 | 82 221.8 | 70 173.6 | 68 406.6 |

Note: Assumes no change in present state gasoline tax rates.

^aBase case.

estimates that the revenue impacts may be extremely significant. The results of these analyses will be summarized below.

As a basis for comparing the impacts of the various proposals and existing legislation, the FHWA study simply assumed a baseline range of VT growth rates. Uncertainties about the future growth of travel and varying concepts of state reactions to offset the revenue effects of decreasing gasoline consumption make it difficult to decide on the most probable VT forecast. Thus, scenarios and options were developed to bracket the range of reasonable estimates of future fuel consumption, gasoline tax receipts, state revenue shortfalls, and the time at which the standby tax would be triggered.

The FHWA analysis was limited to changes in gasoline tax revenues even though the various policies may also affect the other highway revenue sources. Gasoline tax revenues were singled out because they are the focus of the energy conservation measures and because they are the predominant source of state and federal highway revenues. Also, it is not clear that EPCA and NEP will have a significant effect on nongasoline revenue sources (e.g., vehicle registration fees, drivers' licenses, and title fees).

The baseline travel forecasts were the basis for the projections of all other items. Two VT projections were made. The high forecast projects VT to maintain the same 4.1 percent annual growth rate experienced in the 1965-1975 period. The low forecast assumes a 2.6 percent annual growth rate that is more consistent with recent demographic trends and the approaching saturation of high-income automobile-ownership levels and driver licensing rates.

Table 1 summarizes the results of the FHWA analysis for three policy scenarios that represent revenue forecasts in the absence of both EPCA and NEP, in the presence of EPCA standards but not NEP, and in the presence of both. The first scenario assumes that average automotive fuel economy would remain at its 1976 level for the model years 1977-1985.

The most striking finding from the FHWA analysis is that, unless there are compensating tax increases, state highway revenues from motor-fuel taxation will decline significantly from historical levels, i.e., what could have been expected in the absence of the EPCA provisions. The cumulative change over the 9-year period 1977-1985 in state gasoline tax revenues that can be attributed to the EPCA standards is more than \$12 billion under the low-growth scenario and \$13 billion in the high-growth scenario. The addition of the NEP provisions would further reduce 9-year cumulative state revenues by \$2.3 billion to

\$3.1 billion, depending on VT growth.

Federal revenues show a corresponding decline under the provisions of EPCA and NEP. FHWA estimates that the EPCA provisions alone will reduce cumulative federal revenues over the period 1977-1985 by \$6.3 billion in the low-growth scenario and nearly \$7 billion in the high-growth scenario. The NEP provisions would add an additional \$0.9 billion to \$1.2 billion shortfall to cumulative federal revenues. For these projections, only revenues from the 0.9 cents/km (4 cents/gal) federal tax are considered. Although FHWA predicts that the standby gasoline tax would be triggered in 1984 and 1985 under the high-growth scenario and that COET would yield 1.8 cents/L (7.9 cents/gal) when fully implemented in 1980, NEP provisions call for full rebates of these tax revenues.

The impact of EPCA and the proposed NEP on the overall level of highway construction stems primarily from their effects on highway revenues, although the programs may also have an indirect inflationary impact on highway costs. The analyses described above found that the reduction in total state and federal gasoline revenues attributable to EPCA and NEP would be in the range of \$21.0 billion to \$23.6 billion in current dollars for the period 1977 through 1985.

Unless countervailing actions are taken, the revenue decrease may reduce cumulative highway capital expenditures by all levels of government by \$10.2 billion to \$11.4 billion in current dollars (or by about 14.5 to 16.7 percent), assuming that revenue reductions give rise to equal spending reductions and current capital-expenditure allocation trends continue. The exact amount of reduction is difficult to predict because it would depend on, among other things, the extent of state borrowings and the rate of obligation of available federal-aid funds.

Even if the states were to increase their gasoline tax rates at the same annual rate as in the 1970-1975 period, a prospect that appears dubious politically, total state highway revenues would still decrease substantially from historical growth rates. Specifically, if extrapolated state tax increases are assumed, state revenues under the EPCA provisions alone over the period 1977 to 1985 would decrease by an annual rate of approximately 1 percent. This is in contrast to a 6.6 percent annual increase in current dollar state gasoline tax receipts over the period 1967 to 1975. In fact, for the states to fully offset the effects of the EPCA standards, state gasoline tax rates would have to increase at twice the annual rate that took place in the 5 years preceding the passage of EPCA.

POLICY IMPLICATIONS

The increasing constraints on state highway budgets raise several questions concerning future highway-finance alternatives and the proper roles of federal and state governments. In one sense, the most important issue raised by recent and pending legislation involves a strictly political problem. The tax base of state highway departments is shrinking. To compensate for this, tax rates should be raised. Whether tax rate increases are imposed by individual states or by the federal government (and revenue transfers made to the states) at first glance seems to have more immediate political ramifications than economic.

For either federal or state governments, the justifications for a tax increase appear compelling. It has been argued that rates should be adjusted to maintain the same tax per vehicle kilometer of travel because, to a great extent, capital and maintenance cost requirements depend on road use. As vehicle fuel economy increases, tax rates must be adjusted upward to keep the rate per vehicle kilometer constant. Politically, this concept has proved hard to sell as

evidenced by the defeat in the U.S. House of Representatives of the proposal by Representative James Howard that the federal gasoline tax be increased 1.1 cents/L (5 cents/gal) and the inability of numerous states to pass gasoline-tax-increase legislation in the past few years. The problem, of course, is one of short-run perception. Although it may be true that, over several years (and presumably one or more changes in vehicle ownership), an individual may pay no more tax per vehicle kilometer of travel, at a given time when legislation is proposed, it is perceived simply as an unwanted tax increase affecting existing cars.

RESTRUCTURING FEDERAL-AID PROGRAM

Beyond the political issue of how the highway tax burden should be shared between federal and state governments, there are economic implications of the recent energy legislation that concern the effect of the federal-aid highway program on state highway expenditure behavior. Federal funding policies have their greatest effect when they are in a position to force state actions, i.e., in times of fiscal scarcity when states are highly dependent on federal aid. Given the realities of the current fiscal environment, it is becoming more and more likely that the states, in stretching their dwindling resources over various federal-aid programs, will undertake additional construction while current roads are undermaintained or initiate route reconstruction under the subsidized rehabilitation, reconstruction, and resurfacing program available under section 108 of the Federal-Aid Highway Act of 1976 rather than following a more economical, but unsubsidized, program of scheduled minor maintenance.

Until now, state fiscal resources have been sufficient for most of the categorical highway grants to have been allocationally equivalent to block grants. For example, consider the ABC program of subsidizing primary (A), secondary (B), and urban extension (C) roads that has been in existence for decades and had steadily growing federal authorization levels. In the decade between 1964 and 1973, federal ABC authorizations, available on a 50 percent matching basis, grew from \$950 million to \$1.225 billion. Over that same period, the states' own capital expenditures on the ABC systems grew from \$2.063 billion to \$3.578 billion. In other words, the states spent far more of their own funds on the ABC systems than the amount minimally required to secure the federal grants. A 1975 report analyzing these data (8) suggested that the categorical restrictions and matching provisions of the ABC program did not have a significant impact on the allocation of state funds and as such, speculated that the 1974 increase in the federal ABC share payable would not alter the state highway expenditure behavior. A more recent analysis of the FAHP (9) seem to bear these findings out. The state obligations of federal ABC funds actually declined relative to Interstate obligations over the period 1973-1975. This suggests that, even at the higher federal matching ratio, ABC grants still acted as a substitute for state funds rather than as a stimulation to greater state expenditures.

In light of these findings, it appears that past arguments for realigning matching ratios or consolidating categorical grant programs have, for the most part, been moot. By and large, we have had, except for the Interstate program, a block grant program of highway funding. These block grants have been disguised as categorical grants that have nonbinding provisions. Allocationally, there is no difference between a noncategorical \$50 million block grant and a \$50 million categorical grant for construction that a state would have undertaken in any event. In the

latter case, the categorical grant merely frees \$50 million in state funds for other uses.

The emerging fiscal environment has changed this situation dramatically. Because of the onset of fiscal scarcity in the aftermath of the oil embargo and the increasing fuel economy of new automobile fleets, state officials have indicated that nonfederal programs are becoming the first casualty and state resources are increasingly being channeled to federal-aid systems to maximize capital activities (9). The FAHP, which in many respects has been operating as a block grant program, is now beginning to behave as a categorical grant program and have all the attendant allocational implications. Therefore, this is the time to reassess its structure with respect to its impact on highway expenditure activity.

CONCLUSIONS

Categorical programs have been a primary means of encouraging state and local governments to invest according to perceived national priorities. The appropriate degree of categorization is of current concern in considering the rebate of federal funds to the states. By assuming that the federal government accepts some obligation to compensate the states for EPCA-induced revenue reductions, Porter and others note that there appear to be two distinct strategies (9).

On the one hand, additional funds could be placed in the present or new categorical programs. On the other, funds could be made available in the form of block transportation grants (with or without changes in present categorical programs and revenue arrangements). Preliminary experience in opening the urban system and Interstate highway programs for transit use has not led to excessive transfer from highways. The extent to which one can generalize from this is unclear, but it suggests that block grant programs might be workable.

Ironically, at a time when maintenance requirements are at their highest level since the inception of the FAHP, categorical restrictions excluding maintenance subsidization are for the first time becoming binding. State highway officials have consistently argued against federal aid for maintenance, fearing excessive red tape and unwanted maintenance standards. However, federal aid for maintenance need not inherently have these faults. For example, if administered properly, an unconditional block grant applied toward maintenance could tend to equalize interstate fiscal strengths without interfering with state preferences among investment alternatives.

Federal objectives must be clear if effective programs are to be formulated in the new fiscal environment. As has been shown by Sherman (8) and Porter and others (9), for programs whose objective is to stimulate expenditures in new areas or expand expenditures under existing programs, categorical grants are most appropriate. Categorical restrictions ensure that funds are spent for the desired activities, and associated matching ratios ensure that localities who share in the national benefits of a highway system also share in its costs. If, on the other hand, the goal of a particular federal program is not to stimulate expenditures, it is presumably to assist a state or municipality in maintaining its transportation system by substituting federal funds for some portion of state or local funds (e.g., the operating assistance available under section 5 of the Urban Mass Transportation Act of 1964). Programs of this type involve issues primarily related to equity and distribution. Who pays for and who receives the benefits of transportation service? In this sense, choices among increased state taxes, increased federal aid, and federal rebates to the states are inherently

political in nature but, as has been noted, the choices made may have significant economic consequences as well.

What is urgently needed is a clearer definition of federal and state transportation investment goals. This paper has documented the change in the highway finance environment and the shift in highway program emphasis from route expansion to route maintenance. A growing problem arises from the inability of the existing federal-aid highway program to adapt to the changing highway investment environment.

Although the potential of FAHP to influence highway investment decisions has always been present, it has taken shrinking highway revenues to dramatize the issue. Now, because the important link between federal transportation policy and the characteristics of grant programs to implement that policy, a renewed effort is required to realign the provisions of FAHP.

The Interstate system is now largely in place, and the role of the federal government in highway finance is changing. For the past 2 decades, the federal government has played a dominant role in influencing highway capital investment, leaving route maintenance as a strictly state and local issue. However, it is problematic whether the growing inability of localities to maintain highways financed with federal funds can continue to be viewed as strictly a local issue.

Perhaps the most fundamental requirement for planning changes in FAHP is to explicitly address the link between policy and programs. Highway investment policies must be redefined in light of the current energy-conscious environment, and programs must be designed accordingly. Simplistic statements aimed directly at programs (e.g., equalizing matching ratios) are certain to continue the ad hoc development of FAHP. Certainly, matching ratios can be different for highway grant programs, but there must be a rational explicit reason related to the trade-offs between local and national investment benefits. Tradition notwithstanding, highway block grants do make sense if the main purpose of the grant program is distributive rather than allocative. Future debate in this area should recognize the critical link between policy objectives and the programs that implement policy.

ACKNOWLEDGMENTS

This paper draws heavily on the ideas presented and discussed at a conference session--Financing Highway Programs--at the 57th Annual Meeting of the Transpor-

tation Research Board. I gratefully acknowledge the inputs received from the following session participants: Damian Kulash, Donald Symmes, John Dickey, Alan Porter, Srikanth Rao, Thomas Larson, and Bruce Campbell. Some sections of this paper are based on unpublished papers prepared by the session participants. However, the interpretation of the conference session discussion is entirely mine and does not necessarily reflect the view of the other participants.

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Publication of this paper sponsored by Committee on Taxation, Finance, and Pricing.

Review of Road Expenditures and Payments by Vehicle Class: 1956 to 1975

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The question of whether, over the past 20 years, the payments made by road users have been sufficient to match the expenditures made on their behalf for road systems is addressed. The results suggest that, in aggregate, payments by road users have not been sufficient to meet expenditures for roads. For urban roads, payments have more than met expenditures but, on rural roads, payments

have been well below expenditures. An analysis of time trends suggests that these discrepancies have grown progressively. This analysis further suggests that, if different road users are considered separately, payments by light vehicles (automobiles and light trucks) and by medium vehicles (medium trucks and buses) have been much greater than the expenditures occasioned by each. It is shown that,