OUR FUTURE HIGHWAYS

Remarks by Francis C. Turner, Director of Public Roads, Federal Highway Administration, U.S. Department of Transportation, prepared for delivery at the 17th Annual Georgia Highway Conference, Georgia Institute of Technology, Atlanta, March 4, 1968, at 11 a.m.

I am glad to be asked to participate in this Conference dedicated to Morris L. Shadburn, a great highway engineer, a fine public servant, and a good friend of mine. The fact that these annual conferences have been so successful over a period of many years, is a high tribute to Morris, who devoted so much thought, time and effort to them.

I have been asked to talk about our future highways. This topic may suggest to some a kind of futuristic Buck Rogers world of fantasy in which road and vehicle react to automation and electronic stimuli and in which driver and passenger alike become merely high class freight, all controlled by computers and red, green, and blue push buttons.

This is the scene as feature writers often sketch it for us, but it befalls the highway engineer to come along and foul that all up with practical and down to earth considerations. True, we are working toward the realization of this vision of effortless, foolproof, automated driving and actually have working models of the necessary equipment and gadgetry, but it's far enough away so that we must concentrate our main efforts on improvements to the basic types of vehicles and road networks that we now have. We are concerned at this meeting with the highway itself and especially the Federal-aid highway program, which has grown from very modest beginnings to an authorized $4.8 billion annual level.

In considering future highways we have to ask first of all, what is it that we expect of them? Obviously we need them primarily as transportation facilities by which to move people and goods safely and efficiently. But there are other factors which we also want them to serve. For example, we want them to be closely integrated with other modes of transportation. And we want them to pay fringe benefits, so to speak -- to serve as many other social and human needs as are consistent with the basic purpose of all transportation. But in doing all these fine things for humanity, we must not appreciably subvert the basic purpose which is transportation. This is indeed an important societal value in itself, and it is clear that many of the other desired amenities in our society cannot be attained without an adequate highway network for both public and private individual usage.

These considerations point up the need for long range planning, and this need has been recognized by Congress in Federal-aid highway legislation going back as far as 1934, and in many subsequent actions, most recently in the Federal-aid Highway Act of 1965. That legislation required a report to be submitted in January 1968, and every second year thereafter, on the highway needs of the Nation. The first of these reports was presented to Congress very recently and I propose to outline some of its major points in looking toward our future highways.

The 1968 National Highway Needs Report is the logical outgrowth of what may now be considered preliminary steps dating all the way back to 1916, when the original Federal-aid Road Act was passed. In that same year the Georgia General Assembly created your State highway department and appropriated

$10,000 to operate it during the year 1918. I'm not here to give an exercise in history. While it is true that the Federal-State program had its birth and grew up as a rural program, it has come nearly full cycle today, with current emphasis being placed on the urban side. Use of Federal-aid funds for highways in built-up areas was prohibited in the 1916 legislation. Cities had been taking care of their own highway needs and continued to do so with some exceptions during the '30's until the 1944 Federal-aid Act broadened the program to allow the use of Federal funds on extensions of State highways into and through urban areas on a regular basis.

In recent years the urbanization of our country has been recognized increasingly by Congress in successive Federal-aid Highway Acts, especially in the Act of 1962. That legislation required that urban highway plans be developed in cities of 50,000 or more population as part of a cooperative, comprehensive, and continuing urban transportation planning process, including coordination with plans for other modes of transportation (and alternative variations and combinations thereof), for local land development, and with full participation in planning by local government. This legislation merely formalized a process which had been developed and put into practice in a rather general way dating back to the 1944 Act.

The 1968 needs report deals with the period 1973-85 and it takes full cognizance of the continuing growth of urban areas. I want to emphasize that the report is more in the nature of a fact-finding and analytical study, rather than a detailed blueprint for action. It contains no specific recommendations; these are expected to be submitted separately on or about April 1. But it

does indicate broad areas for further exploration and charts some logical approaches to meeting the Nation's highway needs during the 1973-1985 period.

The report suggests that the most important first step toward meeting these needs lies in an objective nationwide highway classification study for use in redefining the Federal-aid highway systems -- as well as all other roads and streets -- in each State. Such a study would be undertaken in cooperation with the State highway departments and with local government participation under careful guidelines that have already been largely developed. It would classify all roads and streets by their functional use - for example, the Interstate System routes, the most important major arterials, the minor arterials, the collectors, and the local residential and business access roads and streets.

The suggested classification study might consider an expansion of the Federal-aid systems in urban areas to include all major arterial streets and highways with these being divided into two categories. One would be the urban penetrations of the rural intercity routes together with their major distributors, which are generally State highways and for which the State would have the primary responsibility to insure their integration into Statewide highway plans, as well as to integrate them into the local urban transportation planning process. The second category of the urban arterial system could comprise the routes of local areawide importance, which would also be the responsibility of the State highway departments and included in the Federal-aid system.

The needs study explored in detail the question of extending the authorized length of the Interstate System. However, most of the routes considered for addition to this coast-to-coast and border-to-border network were found to

be of lesser Federal interest than the presently authorized routes. The majority of those considered, for example, were contained within a single State or traversed only one or two States. The study therefore suggests the possibility of an intermediate system, comprising those routes next in importance to the Interstate System. As an incentive for priority construction of such an intermediate system, the State highway departments have suggested a higher Federal matching ratio than the normal 50 percent; or that special funds might be authorized exclusively for use on such an intermediate system. The construction standards could be less than those of the Interstate System although the control-of-access principle would seem appropriate for the whole of such an intermediate system.

The Federal-aid secondary system might be redefined as a network of collector roads comprising some percentage of the total mileage in each State and linking land access and arterial routes in both urban and rural areas. Such a definition would result in concentrating the major secondary effort on a relatively important network of collector roads and avoid the fragmentation of Federal-aid funds on unrelated individual projects which may not link up into a connected system in any reasonable period of years. Concentration of Federal-aid on such a system of collector roads would pay higher dividends in improved traffic service and highway safety.

The report is heavily oriented to the urban areas. In addition to the possible expansion of the Federal-aid system in these areas, it enumerates other programs and actions to aid the cities in developing adequate highway transportation. These programs and actions are closely related and are evolutionary. In some cases they comprise extensions or enlargements of ongoing programs

and concepts; in others, they amount to refinements of prior studies, or recommendations of the Bureau of Public Roads, also contained in greater detail in other reports to the Congress.

The current report also suggests that Congress should give its formal endorsement to the joint development concept in urban highway corridors, a proposal which the Bureau has been promoting for several years. This involves the coordinated "package" development of desirable non-highway needs such as housing, business, parking, and recreational facilities either above, below or alongside the urban highway. One of the most important social aspects of the joint development concept is the opportunity which it frequently affords for replacement housing of better quality for those persons displaced by the highway project itself. It would also, of course, make the most efficient use of both funds and space in urban areas which are usually short of one or the other or both. It would put more muscle in the joint development program if Federal highway legislation and State acquisition powers were amended to authorize the use of Federal-aid highway funds by the States for limited acquisition of property beyond the minimum highway right-of-way lines where necessary. If legislation were so drawn it could permit the initial expenditure from highway funds needed for the additional land acquisition to be recouped later from the ultimate owner or land user.

As you all know, one of the continuing problems in any type of urban development is the present structure of many local governments, where one unit frequently acts independently of others. This problem is particularly acute in the transportation field where it is essential to plan and schedule projects

from the perspective of the area as a whole rather than that of one or several communities acting individually. The continuation and strengthening of the planning requirement operations of the Federal-aid Highway Act of 1962 as now conducted under leadership of the State highway departments and the Bureau of Public Roads should go a long way toward solving this problem. There should be no change, either, in the present requirement that programs of projects be submitted through and by the State highway departments to the Bureau of Public Roads. It is believed that the best long-term gains can be achieved if the relationship between the State highway departments and the metropolitan areas is strengthened by this and other current procedures. We should build upon and go forward with the solid foundation already laid in this direction, rather than putting it aside for experimental ideas of inexperienced amateurs.

The report also discusses the establishment of a substantial Federal revolving fund which would be available to the States for long-range advance acquisition of highway right-of-way, especially in the rapidly-expanding urban areas. Such a program could not only be very helpful to those persons whose property must be acquired but it also would make possible substantial savings in land costs, and insure longer lead time for planning and coordination of other compatible land development and right-of-way acquisition and adjustments resulting therefrom. In the urban areas of over 50,000 population, the urban transportation planning process fosters the development of highway plans 20 years or more into the future. This permits the early identification of lands required for future highways and other planning purposes, including those of other transportation modes, as well as those not directly related to transportation, but based on land usage.

The report goes into the possible broadening of Federal-aid legislation to permit the use of Federal funds for parking facilities but adopts a cautious position in this field. It suggests that Federal funds for parking, if authorized for such purposes, be used experimentally at first, testing a variety of approaches. On the basis of such experiments, demonstration studies and research, recommendations may be made at some future time as to the type of continuing program that might be undertaken.

I will touch only lightly on the financing problems involved in the "After '75 Program" for several reasons. An obvious one is that highway finance is a complex, highly technical subject that cannot be dealt with meaningfully in a general presentation such as this. Also, we have just submitted a new estimate of the cost of completing the Interstate System, as required by law, and this new estimate totals $56.5 billion -- up $9.7 billion from the 1965 estimate. I'm not going into the reasons today, except to say that the major share of the increase is due to significant improvements in the System itself, including an extensive investment in upgrading the safety standards and meeting the considerably embellished designs needed to conform to the demands for compatibility with environmental factors, both rural and urban. The National Highway Needs Study, on the basis of State highway department estimates, has arrived at a preliminary figure for the annual cost of road and street needs for the years 1973-85. This comes to an <u>average annual capital cost</u> of $17.4 billion, more than double the $8.5 billion per year estimated annual capital accomplishments during the remainder of the current period, 1965-72.

I believe it would be premature and tenuous to go any deeper into financing at this time when the ink is hardly dry on the 1968 highway needs report and Congress has not had a chance to study it in detail. Even if eventually it should form the outline of a "new" Federal-aid highway program, many key matters would have to be determined, such as the ratio of Federal-State contributions, the sources from which the needed funds would be derived, and the method of apportioning the annual Federal share to the States.

We have studied possible changes in the methods of apportionment of Federal-aid funds, bringing into play such factors as motor vehicle registrations, vehicle miles of travel, and mileages related to functional classification. However, this question needs a great deal more study and there is still adequate time for it; so therefore we are not making any suggestions now as to future apportionment formulas.

I have given a capsule summary of the principal features of the 1968 highway needs report, necessarily touching only lightly on some very weighty matters and completely omitting others. I have not, for example, discussed the question of highway beautification or other human environmental considerations except in the sketchiest way. I have not gone into the difficult area of Federal policy on toll facilities generally and their integration into the Federal-aid systems.

I said earlier that there are serious questions as to the desirability of expanding the Interstate mileage. This may be misinterpreted, so let me say that there are very definitely freeways in the future. The State estimates include some 53,000 miles of needed freeway improvements on systems other than

the Interstate. These are the miles needing improvement, but they may be considered as roughly indicating the total miles of freeways that will need to be in service in 1985. It appears, then, that to serve the traffic anticipated in 1985, additional freeway mileage at least equal to the 41,000-mile Interstate System will be needed. This includes a substantial mileage in urban areas because that is where an ever-increasing majority of our people live, work, and do a major share of their travel -- and this need will have to be met for the most part by roads and streets, notwithstanding the frequent suggestions that the auto be eliminated and everybody be made either to walk or to ride the subway.

But despite this large need for new freeways these alone are not the total answer to all urban traffic problems in every city, nor is the answer to be found in the mere addition of more lanes to existing facilities. Neither will the proposed rail transit facilities furnish more than a very minor part of the total answer to urban transportation needs. In most cases, their share of the daily travel needs will about equal the growth each year in the total urban area miles traveled. We must exploit to the fullest in the years ahead the highways that we now have and those we are developing -- not alone in terms of moving great numbers of vehicles, but more importantly in moving greater numbers of people. This means, among other things, the active encouragement of mass bus transit using our road and street networks. Buses presently carry 70 percent of all transit passengers in urban areas. But transit is and probably will continue to be the only form of mass transit in at least nine-tenths of our urban areas of 50,000 or more population, and in all smaller communities.

It will be increasingly important in the future to entice as many urban dwellers as possible out of their personal cars and onto bus transit for their routine, everyday movements. This is no easy task but it can be done, provided the commuter is offered some advantage that will induce him to leave his car in the garage. One of the interesting ideas, proposed by an Atlantan, is now being investigated under a Federal research contract. The purpose is to find out whether free bus rides would substantially reduce the rush hour crush in cities across the country. The idea was advanced in Atlanta by Robert I. Sommerville, President of the Atlanta Transit Company, although some experimentation had also been done previously in other cities. Without passing on its merit at this time, I believe the proposal represents the kind of revolutionary thinking needed to solve the traffic congestion problem.

Every 50 persons lured to mass transit by whatever means represents a reduction of 30 automobiles in the traffic stream, which is the equivalent of a 2 percent reduction in volume, with a consequent easing of downtown traffic and parking congestion, a reduction in air pollution, and an increase in the people-carrying capacity of already existing streets and highways. Because of the large potential increase in capacity which can be achieved in this way, the Bureau of Public Roads is actively encouraging design features in the Federal-aid highway program to promote this trend.

In fact the existing capacity in many communities is entirely adequate right now and will be for a number of years ahead if any considerable number of persons bound to and from the downtown areas can be induced to use bus transit. In other cases, very little expansion of existing capacity would be required and this can frequently be accomplished at minimum cost -- sometimes with just paint and signs.

Of great promise in this type of capacity-stretching effort is the TOPICS program, initiated by the Bureau of Public Roads about two years ago. TOPICS (Traffic Operations Program to Increase Capacity and Safety) authorizes the use of Federal-aid funds for projects specifically designed to increase the capacity and safety of existing urban arterials without major new construction, by the systematic and comprehensive application of traffic operations combined with relatively minor construction improvements. These include among a wide range of things, the channelization of intersections, judicious street widening at bottlenecks and intersection approaches, and a variety of other proven engineering techniques, plus such cooperative efforts with local police as parking restrictions and special rush-hour traffic limitations.

Such programs can produce an increase in the capacity of a city street network of from 10 to 15 percent, with a concurrent decrease in accidents and a further incentive to the transit industry to improve bus service.

As to rail transit, it is generally found that it cannot be justified and successfully operated except in areas having at least 1 million inhabitants. Five cities in the United States now have rail rapid transit systems in operation, a sixth has one under construction, and five others are seriously considering such systems for the future. Thus the question applies now only to 11 urbanized areas, and may in future extend to a dozen more with populations of over a million, if the experience with the others proves satisfactory. But even in these areas, the proposed rail system cannot substitute for needed additional streets and highways, but serve only as complementary and supplementing facilities to carry a portion of the total load.

For example, in four of the five urban areas considering rail rapid transit systems, it should be remembered that such systems would serve only an estimated 5 percent of the urban area's total daily person trips and only 10 percent of the area's peak hour trips. The 5 percent carried by rail transit in these estimates is about the amount of annual traffic growth now being experienced. Even where rail transit is available, another form of transportation must also be provided to collect the riders from their homes in the morning and then to distribute many of them, almost entirely by highways and streets, to their ultimate downtown destinations; back to the rail station at night, and then to their places of residence in the evening.

To sum it up, the Federal-aid highway program, although begun and developed as a rurally-oriented program in accordance with the needs as they prevailed during the early years, has undergone major emphasis changes in 52 years. Prior to 1944 only a token amount of Federal or State funds went for highway projects within urban areas of 5,000 or more population. From 1944, when 25 percent of the Federal funds was first legislatively earmarked for use inside urban areas, until 1956, less than a third of the Federal highway funds went for highway projects within urban areas.

The metropolitan areas thus accumulated a backlog of needed highway improvements while their populations increased at a pace that astounded the demographers and other experts in social trends. As a result, the transportation needs of urban areas have received increasingly greater Federal and State attention in the past decade to comprise about half the total as of today, and undoubtedly this need will grow even larger in the future. Federal highway

legislation of the 1960's has been oriented more directly to the specific transportation needs of the urban areas, as well as to the many social and human values that are intimately bound up with the provision of new traffic facilities and improvements to the existing ones.

In brief, the Federal-aid highway program is turning full circle. Rather than building intercity routes with urban extensions, the program envisioned for the years ahead must necessarily concentrate on urban routes with "extensions" into rural areas. And any objective analysis must conclude that future highway needs in urban areas will continue to be great, even though extensive programs are undertaken to improve mass transit, whether by bus or rail, or both.