

PLANNED HIGHWAY TRANSPORTATION

By Herbert S. Fairbank, Deputy Commissioner
Public Roads Administration, Federal Works Agency

Presented at the Twentieth Annual Highway Engineering Conference,
University of Colorado, Boulder, Colo., January 31, 1947

What I shall speak of today is the substance of a dream. Just a dream, you may say. Yet, like the man who dreamed he was awake, and awoke to find that it was true, a public fully awakened to some of the facts of highway transportation as it now exists could convert to desirable actuality the stuff of which this dream is made, if there is the will to do so.

I describe what I shall speak of as a planned system of transportation.

Now, let me dismiss at once any thought that description may suggest that I dream that the myriad movements of passenger cars and trucks and busses should or could be subjected successfully to the governance of any preconceived plan. Particularly, let me disclaim any thought that highway transportation would be profited by subjecting its movements in detail to any system of centralized control, either by large corporate bodies such as the railway companies, or by government, in the manner of the scheme of nationalization now proposed in Britain.

Indeed, I look upon the highly individualized and widely disseminated initiative of highway transportation as among its highest merits and certainly as its essential advantage in relation to other forms of transportation. And the establishment of conditions under which such numerous and diverse initiatives may be facilitated, and combine to best advantage in the public interest is the very purpose

of the plan of which I speak.

Possibly it should not be described as a plan at all. Actually, what I have in mind when I speak of a planned system of highway transportation is a body of consciously and rationally related acts of government - of many governments, and a totality of compliant, yet largely uninhibited, action by numerous manufacturers of vehicles and by millions of vehicle owners and operators. It is a long way from regimentation, but assuredly it would establish conditions departing widely in many respects from existing conditions which militate against desirable enhancements of the efficiency of highway transportation as an instrument of economic and social progress.

Certainly, by no stretch of accuracy can highway transportation as it now exists be described as a planned system. Like Topsy, it "grewed". And it has the vitality for further prodigious and useful growth. But if, with the voice of its singing wheels it should sing of itself as it now is, it could find, I believe, no words more appropriate than those of the immortal Gilbert -

A wandering minstrel I -
A thing of shreds and patches.

In one part it is a large patch of roads and streets; in another it is a patch of millions of vehicles. The two are but loosely sewn together; and overlapping them, and intended somehow, but with astonishing ineptitude, to piece them together are patches of public vehicular and traffic regulation, and of road user taxation.

The patch of vehicles is made up of shreds produced by numerous manufacturers for various intended uses and used by millions of owners, often in ways for which they were not designed. It is made up of a

number of classes of vehicles of a wide range of size and weight and operating standard, productive of some inherent incompatibility of the several kinds when they are combined together in traffic, and some of a size, and weight and operating standard inconsistent with the character and design of roads over which they are operated.

The patch of roads and streets is made up of innumerable shreds of various ages, designed and fabricated by thousands of more or less independent highway authorities, each functioning within fixed and often narrow geographical boundaries unrelated to transportation necessities, with little or no regard for the desirable balance and harmony of their joint production; often without knowledge of the number and character of vehicles that may and do use the roads built; and too often in ignorance of the road and street qualities and characteristics essential to efficient usage either by vehicles and traffic as they are or as they may or might be.

The patch of vehicular and traffic regulations is composed of shreds of a wide diversity of form and intention formulated often without intelligent understanding of the capacities of roads and streets or the essentials of economical vehicle operation, and generally without conscious thought of their place and effect in promoting and preserving a desirable coordination of vehicles and roads.

And, finally, the patch of road user taxation, like all the others, a poorly knit fabric of many dissimilar shreds, not only fails signally in its primary purpose as a measure of highway finance, but in doing so imposes an inequitable relativity of demand upon the various classes of users and uses in such degree as to hamper, if not to prevent the evolution of sound road-traffic-vehicle relationships.

These are the conditions in which highway transportation now exists. They are clearly undesirable conditions. They are the result of many piecemeal decisions and actions taken at many times by many individuals and corporate bodies and many governments, without clear recognition of the interrelationship of the matters decided and acted upon. The interrelationship is circular. You can start at any point in the chain and following through, link by link, come back to the beginning.

Since the existence of vehicles is perhaps the first essential of vehicular transportation, suppose we start with the manufacture of vehicles. Motor vehicles are produced by numerous manufacturers. Because of the wide variation of road condition and regulatory laws, manufacturers have not known the conditions under which their product would be used. Each manufacturer has been forced to make decisions upon certain standards of design, especially gross vehicle weight and axle-load concentration and the power-brake-load relationship, that would compromise as well as possible the various conditions of possible usage. These decisions have varied.

These variously designed vehicles have been purchased for intended uses other than those for which they were designed. They have been registered and tax-paid under laws which have established vehicle classifications for such purposes inconsistent with the character, kind and condition of roads, the actual need of revenue for road purposes or any acceptable approximation of equity in taxation; and they have been registered and tax-paid as vehicles of one class and used as vehicles of another class.

The misclassification of use has not been corrected by effective enforcement of the laws, partly because the laws have been unreasonable and unenforceable; but had enforcement been fully effective, no satisfactory adjustment of the road-vehicle-revenue relationship would have resulted because of the irrational quality of the laws.

In the face of an increasing acceptance of the principle that road revenue should be derived mainly from taxes levied on road usage, user tax rates have been fixed without knowledge of the total of revenue required to effect and maintain any standard of road condition. The expectation of revenue has not been realized by reason of various evasions; and the revenue actually raised has been diverted in part to other than road uses. The remainder available for road purposes has been apportioned among units and agencies of government responsible for road administration in accordance with various legal stipulations determined less upon any consideration of the respective revenue requirements than upon considerations of political expediency.

In consequence, the revenue receipts of the several units and agencies of administration has borne a various relationship to any actual or reasonable road requirement; and standards of road design, construction and maintenance have been determined by the possibility of achievement with available revenue rather than by the needs and requirements of efficient usage. Moreover, there has been no common acceptance by all of the various highway authorities of standards requisite for efficient usage. So road conditions remain irrationally varied and largely deficient, and regulatory laws continue to take

cognizance of road variety and deficiency, and so we are back to the original dilemma of the vehicle manufacturer: How to design vehicles for use under road conditions and regulatory laws so various?

The existence of these conditions during the earlier periods of road and vehicle development was practically unavoidable. When the mere extension of all-weather surfacing was the prime necessity and virtually complete preoccupation of road improvement effort the achievement of an efficient balance of road design and function was a matter reasonably postponable to an eventual future. While the preponderance of road condition was primitive and frail, vehicle and traffic regulatory laws were properly directed to the maintenance of a tolerable condition of road usage rather than to the encouragement of more efficient usage. At a time when the revenue producing ability of road usage was less than sufficient to pay for the bare essentials of first-stage highway improvement it was too early to think of the creation and perpetuation of a balanced development of entire highway systems with funds paid in proportion to benefits by users of the systems. And when motor vehicle design was yet undergoing constant major change and betterment by fundamental invention even an approximate anticipation of eventual forms and designs was a practical impossibility.

But these are recognized now as the circumstances of periods that are past. There is growing realization of the need to alter and correct the conditions which I have described. There are differences of opinion as to how best to set about the correction. Some observers,

perceiving that the conditions have developed within a legal and administrative environment created by the States and local subdivisions of government, and have not been promptly corrected by these governments, have looked to the possibility of acts of Federal Government intervention and aid as a more hopeful corrective. Others have held that effective action by the States is to be preferred and is not beyond the probability of reasonable expectation. Recent occurrences, I believe, give substantial encouragement to this view.

Recommendations of maximum limits of the size and weight of motor vehicles advanced by the American Association of State Highway Officials after adoption by vote of its State members, have been recognized by representative spokesmen for vehicle manufacturers and most organized groups of road users as an acceptable basis for at least a present adjustment of the road-vehicle relationship.

In California an interim committee of the State legislature, after extended hearings held in all parts of the State, and with the advice of able consultants, has prepared for consideration by the legislature in special session convened by the Governor for that purpose, a remarkable legislative program. It is a program based upon a detailed appraisal of the highway improvement needs of the State and all its subdivisions, both counties and cities, and intended to provide financial means for the meeting of those needs in balanced proportion. It is a most hopeful example of a sound approach to solution of the problem of highway finance on a Statewide basis, which is a substantial segment of the larger planning problem here under discussion.

It is to be hoped that this gallant effort will receive the sympathetic consideration it deserves at the hands of the legislature and people of the State; and that similar effort already gathering headway in other States may embrace all other elements of the whole problem comprised within the concept of a planned system of highway transportation.

Such efforts, I venture to suggest, will have the best hope of success if they can enlist from the outset the active interest and support of appropriate committees of the State legislature, the State highway department, State motor vehicle administration and police authorities, all municipal and county authorities, and last, but by no means least, the manufacturers of vehicles, the producers of motor fuel, and the several groups of highway users through their qualified designated representatives.

It will be a mistake to assume that a problem so complex will yield to durable solution by any hurried study and decision. Much of the information essential for a proper solution has been collected by the highway planning surveys which, as they were originally designed, were addressed to that purpose as one of their important objectives. But the surveys were not carried through in all States as originally planned, and in most States current revision of the data has been prevented by a suspension of survey activity during the war. Some time will now be required for the revision and completion of a factual basis for the desired solution. Time, and a substantial strengthening of the analytical staff of the surveys will be required for a satisfactory weighing and application of the data. Some further time

will be required for the completion of basic research needed for the more precise determination of certain criteria, especially for the establishment of standards of vehicle performance and for a better understanding of the economics of transportation as affected by the relations between size and weight of vehicles and the corresponding requisite dimensions and strengths of roads and bridges. Until these criteria are established in mutual acceptance by vehicle operators and highway authorities, there can be no reasonably durable adjustment of the road-vehicle relationship, the first essential of any long-term planning of public highway design policies and financing.

But if a durably acceptable solution is not immediately possible, it does not follow that immediate effort toward a solution is hopeless, or that effective partial measures consistent with a sound ultimate solution cannot now be taken. What follows is precisely the contrary. An organized and determined process of investigation, legislation, and constructive action, uniformly directed, should be set in motion in every State, at once.

As at least a partial prescription of the essential steps in such a process and an approximate order of such steps, I offer the following:

1. States in which the present legal limits of size and weight of motor vehicles are below the limits recommended by the American Association of State Highway Officials should adopt the recommended limits by immediate legislation. These limits are reasonably consistent with the capacity of existing highways in every State. They are necessary for the protection of highways and safe highway usage under conditions presently prevailing in most States. They are accepted as reasonable for present adoption as a floor of limitation by national representatives of the affected groups of highway users.

2. Designation of the national system of interstate highways should be completed at once. This will probably be accomplished in a matter of weeks by settlement of the few remaining points of interstate dispute.

3. All construction hereafter undertaken on routes of the interstate system and on other highways and streets of traffic importance commensurate with routes of that system, under whatever authority such construction is undertaken, should be planned to conform to the standards of design recommended for routes of the system by the American Association of State Highway Officials, either by outright immediate accomplishment or by provision for subsequent stage development.

4. Tests by the Public Roads Administration in cooperation with the automotive industry to determine the performance in hill-climbing and braking ability of vehicles of various types and gross weights should be

completed promptly. These tests, well advanced in 1941, have been suspended during the war.

5. The automotive industry, by conference of its constituent producers, should prepare itself for consultative agreement with public officials upon feasible standards of hill-climbing and braking ability for application in the design of vehicles of future production, corrective of the determined deficiencies and inequalities of present vehicles, and consistent with the requirements of safe and efficient vehicle operation on highways conforming to definite and feasible design standards. The National Committee of State Officials, recommended by the President's Highway Safety Conference and now in process of organization, could appropriately represent the national public in such conference with selected representatives of the automotive industry.

6. Specific requirements of hill-climbing and brake performance, agreed upon nationally in the manner suggested, should be imposed uniformly by law in every State.

7. Laws should be enacted uniformly in every State requiring all manufacturers of motor vehicles for sale in the State to certify the gross vehicle weight for which each vehicle is designed, in its frame and structure, and in its power and brake equipment, to perform as required by law. The laws should further require manufacturers to affix to each vehicle produced in a conspicuous place a plate or other device bearing the essential elements of the required certificate.

8. Laws should be enacted uniformly in every State establishing the gross vehicle weight of a motor vehicle, as certified by the manufacturer of the vehicle, as the basis of registration classification and singly or in combination with other factors as the basis for the license fee to be paid for the right to operate the vehicle.

9. Studies and tests now being planned by the committee on Economics of Size and Weight of Motor Vehicles of the Highway Research Board should be promptly carried through to acceptable conclusions with the complete cooperation of motor vehicle manufacturers, vehicle users, Public Roads Administration, and State highway departments as required. The membership of this committee is adequately representative of the several interests named. The purpose of the proposed studies and tests is to determine, without regard to present or presently proposed legal limits of the size and weight of motor vehicles, the ultimate maximum limits of size and weight, so far as these can now be foreseen, observance of which in vehicles of standard power and brake capacity would make for an optimum economy and efficiency of highway transportation as measured by the total cost comprised of related costs of highway provision and maintenance and vehicle ownership and operation.

10. The legislature of each State should create a special joint committee of its two houses, empowered and adequately financed to conduct public hearings and, with the aid of an Advisory Highway Transportation Commission, to consider continuously and finally to formulate and propose all legislation deemed essential to promote, and provide for a progressive improvement of all rural roads and city streets in the State,

directed toward the eventual achievement of a rational and feasible balance of condition and function throughout the entire road and street system. The legislature should authorize and direct the creation of the Advisory Highway Transportation Commission, and appropriate funds sufficient for its proper and adequate functioning. The membership of the Commission should include, as a minimum, representation of the State highway Department, the State department of motor vehicle administration, the State police, the State public service commission and representation of the governments of counties and cities, and of the principal classes of road users and suppliers of motor vehicles and motor fuel.

The fixing of a date for completion of the work of the special legislative committee and its advisory commission is desirable, but the period allowed should be sufficient to permit due deliberation upon the complex problems to be considered, and should be extended if necessary to that end.

11. The committee and commission staffed largely by the highway planning survey organization, should consider the existing condition and improvement needs of all roads and streets in the State, their present administrative classification and desirable revision of the present classification. Highway deficiencies and needed improvements should be determined in maximum feasible detail, in relation to future usage estimated in volume of traffic and optimum size and weight of vehicles, by the application of design standards agreed upon for various classes of usage. The probable time and amount of requisite future capital investment and current costs of highway administration and maintenance should be estimated with all

possible accuracy, resulting in an estimate of the revenue required year by year over an extended future period to meet capital and current costs in accordance with sound measures of finance. The proportion of the total revenue requirement constituting a reasonable charge against road users as a class should be determined, and tax measures for raising the remainder should be considered and appropriately recommended.

12. The proportion of road user revenue to be raised by taxation of motor fuel should be decided upon and a rate of tax per gallon that will yield the required annual amounts should be determined.

13. Means of apportioning the balance of road user revenue, collectible as license fees, among vehicles of various classes and weights should be studiously investigated. The road-cost increment method and the ton-mile method have been widely considered. The former involves some thorny problems of estimation. The latter, though attractively simple in application and supposedly fair, actually involves some elements demonstrably inequitable. Another method, recently suggested by G. P. St. Clair of the Public Roads Administration, by which license fees for the various classes and sizes of vehicles would be established in approximate proportion to the average ton-mile operating cost of each class and size of vehicles might combine merits of equity and practicality not joined in either of the other methods.

The schedule of license fees recommended, whatever its method of derivation, should be applicable to vehicles registered by legally prescribed classes in accordance with the proposed gross weight certification by manufacturers. It should be applied, in accordance with reciprocal interstate compacts, under which vehicles of all classes, predominantly

used in one State, would be required to pay the license fee of that State only, without further payment for the right of infrequent use of the roads of other States. Vehicles regularly used in interstate commerce should be licensed in each of the States in which they are regularly operated, upon payment to each State of fees feasibly determined to constitute a proportion of the annual fees payable by vehicles of the same classes and sizes operated predominantly intrastate, equal to the ratio of their annual mileage use of the roads of that State to their total annual mileage of operation in all States.

14. Having determined the total of road user revenue to be raised and formulated taxing measures for its collection concordant with principles approximating those enunciated, the legislative committee and advisory commission should then further formulate measures for the apportionment of the total revenue among the administrative systems of roads and streets as appropriately revised, and among the State and its several governmental subdivisions, for expenditure under controls likewise to be formulated for incorporation in law. Such controls should probably include a required cooperative designation of specific systems or groups of roads and streets to which the expenditure of road-user revenue would be limited, and some supervision of the expenditure by the State highway department, exercised either directly by its own forces, or indirectly by a required approval of expenditures made by the governments and forces of subdivisions of the State.

15. Additionally, the committee and Commission should consider the need for, and propose such new statutes and amendments of existing laws as may be found necessary to provide for the establishment of

effective cooperative relations between the State and its cities and counties in matters concerned with the development of main highways through metropolitan areas now embarrassed by difficulties of unified decision by several wholly independent governmental units.

16. The proposal of new and amended legislation to provide for the expropriation of abutters' rights of access to highways under appropriate conditions and to facilitate the acquisition of highway rights of way should also be considered.

17. Further, the committee and Commission may properly and advisedly take under review all existing laws providing for State grants in aid of highway improvement by subdivisions of the State, and propose measures designed to bring such policy of State aid as may be favored into line with other measures proposed.

18. And, finally, it may be desirable for the committee and Commission to consider and propose the establishment by law of specific machinery and processes for the initiation of changes in legal limits of the size and weight of motor vehicles now established when and as such changes, up to optimum limits yet to be discovered, are rendered feasible by the further improvement of highways.

These, at least, are elements that should be considered for incorporation in a new legal charter for the development of a planned system of highway transportation. Possibly there are others of some importance. The list is long enough. I shall make it no longer.

19. With the foregoing, or similar provisions woven into the structure of pertinent law, there will remain the necessity for intelligent administration by competent and efficiently organized

executive departments of the State and subdivisional governments and for sound and informed decision upon the physical planning, construction and maintenance of highway systems and projects. I shall claim your attention to no bill of particulars in this regard. One essential only I shall mention, because of its determinant bearing upon the evolution of an eventual harmony and balance in highway improvement: The essential of widespread agreement upon standards of highway design appropriate to defined conditions of highway usage.

I said when I began that I would speak to you of the substance of a dream. This, then, is the dream. It is a dream of a planned system of highway transportation, and some - not all - of the elements and complexities of such a planned system. I surmised that you might think it only a dream.

I repeat that it is, in my sober judgment, a dream that the awakened intelligence of a people that has staked more than any other upon the upbuilding of a system of highway transportation, with no insuperable difficulty, can make to come to pass.