The Federal Highway Future

Arthur A. Fendrick
Division Administrator, Federal Highway Administration
Indianapolis, Indiana

It is a pleasure to be on the program today. The title of my presentation implies that I will attempt to foretell the future. I do not have a crystal ball and certainly am not a psychic. A quotation attributed to the great American philosopher Casey Stengel says, "Avoid making predictions—especially when they deal with the future."

INTRODUCTION

I would like to point out some of the problems the highway program faces and some of the possible options that society has to resolve them.

First of all, it must be realized that there are no federal highways except for limited mileage in national parks, forests, and military reservations. What are often referred to as federal highways are actually state or local roads which are eligible for federal assistance in their construction or improvement. The costs of maintaining and operating these highways falls upon state or local governments.

FEDERAL ROLE

I would like to briefly examine the federal role in this total picture. I and virtually the entire Federal Highway Administration (FHWA) staff in all our offices consider ourselves to be conscientious and dedicated professionals. Some of us have moved several times with exposure to various states, while others have spent a career in one state. In each case, however, our job is to insure that federal laws and regulations are followed but to attempt to do so in a manner that will maximize benefits in the state to which we are assigned. I believe the regulations provide sufficient flexibility to do this.

What makes our job enjoyable is the feeling that we are performing an important function and that there is indeed a federal role in highway transportation. This role has changed drastically over time, but in each case the change was dramatic and designed to solve a problem. Real national progress has always been made through programs based on a national vision rather than deep-seated conservatism.

An example of federal leadership is the creation and means to build the Interstate System. This system is rightly recognized as perhaps the single-most important civil works built by man. Many persons take this for granted and do not fully realize the federal role in its existence.

In July of 1954, President Eisenhower introduced his "Grand Plan" for the nation's highways in a speech to the National Governors Conference. This ultimately led to the establishment of the Highway Trust Fund in 1956 and the creation of the "The National System of Interstate and Defense Highways."

What is not well known, however, is that before he gave that speech, a great deal of effort was expended at that same conference to persuade the governors to drop a formal resolution opposing any more federal aid for highways. I believe

that the vision of President Eisenhower and his advisors, which included the Bureau of Public Roads, and their willingness to take a course of action contrary to the combined wisdom of the individual states was responsible for much of this nation's productivity and standard of living today.

I believe there remains today a need for a federal presence and influence in the shaping of this nation's transportation system. I believe that our role involves the medium- to long-term future and not necessarily day-to-day issues which can easily be handled by the state. It can be expected that on occasion our concern for the future will seem to conflict with quick fix solutions to the problems of today.

FUTURE

There is a national effort underway by the American Association of State Highway and Transportation Officials (AASHTO), the Highway Users Federation, and many other organizations to develop a sense of urgency and hopefully a consensus of what the future highway program should look like. The piecemeal approach to highway legislation in recent years needs to be changed. In recent years, the existence of demonstration projects, bickering between urban and rural, between highway and transit, and even between the various states has had a very disruptive and negative effect on the total program. It is widely felt that the time has come for a long-range program with innovation and vision. This undertaking will not be easy.

The country's Interstate System is nearly complete. Although it is being reconstructed in a few areas, it is virtually complete, well used, and serving the public. The current problem is that all highway programs end in 1991, and the trust fund ends in 1993. There is no future highway program except through actions of Congress. The most striking and unbelievable aspect of this is the fact that we do not have a long-term transportation policy.

Concerns for the future of highway systems include new construction materials, damage caused by heavy trucks, older drivers, and tort liability. Our society is becoming more demanding on everyone. There will be new regulations coming out, especially changes in the sizes and reflectivity of traffic signs to better accommodate older drivers. The worker boom and each worker's access to 1.3 vehicles combine to contribute to our population, which is healthy, older, growing bigger, and creating more traffic. During the last 20 years, traffic has expanded at the rate of nearly 3.3 percent. During the next 15 to 20 years, we expect traffic to expand more than 2 percent. Though it is a smaller percentage, it is expanding from a bigger base.

Truck traffic is growing at a rate of 5 percent per year. This means traffic doubles every 14 years. Congestion will be the most visible problem during the next 20 years, and it could bring about a citizen uprising. Political fortunes may be lost over the issue of congestion. Even though politicians may not be able to handle the congestion, they will be blamed. Congestion is going to be a media event from now on. Congestion is hard to define, but it revolves around the word "delay." Delays are doubling, and people do not like parking lots on freeways. We must design projects today that will have the ability to be repaired and widened under traffic.

Another important issue for the future of the highway system is intercity connectivity. There are pressures to build highways to communities that were left

off the Interstate System and to build new crossings of major rivers. Interstate commerce is an important issue.

There is discussion about uniform regulations and systems for motor carriers. There are reasons why commercial drivers licenses should be issued in the same way by every state. There are regulations regarding vehicles and hazardous materials.

If we are not designing projects today that will have the ability to be repaired or widened under future traffic, we are not doing our jobs. If we are sacrificing standards, width of right-of-way, and a basic future flexibility in order to save a few dollars, we will be harshly judged by the next generation of highway engineers. They will have their share of problems without our contributing more.

As engineers, we have new ways of doing business that will become more prevalent in the future. We hear about new methods, certified technicians, random testing, personal computers at the project site, risk management, and value engineering. Although we look forward to new design and construction technology, many of us seem to be waiting for that to happen. No one is promoting research. People are cutting back on development costs, and there is little cooperation between industry and government on this issue.

There is much research underway overseas. It is becoming embarrassing to the United States when we realize the majority of innovative items, ranging from bridge design, materials development, equipment, and certainly computer applications, are not of American origin. In Great Britain, for example, there is testing using real-time data in the operation of large traffic signal systems. In Japan and in the Federal Republic of Germany, there are tests of vehicle displays for traffic information and routing. In Europe, there are studies of smart highways and smart cars.

FHWA is gearing up to greatly increase its level of research and development activity. Hopefully, this will serve as a catalyst to cause a similar action by the individual states and private industry. This cannot be done automatically but will require legislation and certainly an enlightened view of the future. I am talking about a quantum jump in knowledge that can only be obtained through some basic, high risk research in addition to the more applied research that we are undertaking today.

FEDERAL

I see the federal role in research and development to be extremely important. This would involve some internal research efforts in FHWA laboratories in the Virginia suburbs of Washington, D.C. It would also involve some contract research to qualified private firms and think tanks. This would also include universities. It is absolutely essential that future students and graduate students be involved in the study and development of solutions to highway transportation problems. If they are not, these students will not even consider careers in our industry, no matter what pay they are offered.

STATE

I see the state role to be similar with perhaps less involvement in basic research and greater emphasis on applied research. It is essential, however, that the states become involved in research efforts beyond their borders through active par-

ticipation in organizations such as AASHTO and Transportation Research Board (TRB).

Remember the old saying, "Learn from the mistakes of others—you can never live long enough to make them all yourself." Sharing information with other states permits a state highway agency to learn from both failures and successes.

It is also important that states establish long-term, dependable relationships with engineering universities within their borders to insure that both students and faculty are fully aware of problems confronting this industry. The relationship that exists between the Indiana Department of Highways (IDOH) and Purdue needs to continue.

UNIVERSITY

I see the role of universities to be perhaps the most difficult. They need to respond to our problems with a sense of urgency which is not very visible today. It is difficult to achieve their objectives when many of our high school graduates lack what are considered to be minimum qualifications for entrance into engineering curriculums. It is also difficult for civil engineering departments to attract the best of the engineering students when other branches of engineering (i.e., computers, aerospace, ceramics, etc.) are perceived to be more interesting, challenging, and monetarily rewarding. Perhaps a little help from prospective employers of engineering graduates in the form of challenging summer jobs, co-op positions, and even research grants or scholarships to individual students would be of mutual benefit.

SUMMARY

I do not profess to have a crystal ball with which to view the future. The projections made were reached in what was assumed to be a rather calm and stable scenario. No considerations were made for major depressions, war, health epidemics, problems with climatic changes, ozone layer depletion, or energy crisis. What has been discussed is actually a best case scenario, and even then we identified major problems. It can easily be seen, therefore, that the future holds many challenges for the transportation industry, state and federal governments, and ultimately for individual engineers who must have the skill and technology to address them.