

Chapter 1

INTRODUCTION

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BACKGROUND

During this century, the automobile has become a central feature of American society. The overwhelming proportion of personal travel in this country is now by auto. There are now over 100 million passenger vehicles in the United States—about one for each two people. Every year automobiles accumulate over 1 trillion miles of travel over a paved road and street network of nearly 4 million miles. The automobile influences personal decisions about where to live, work, and shop and about hundreds of other activities and pursuits. It has become fundamental to our way of life.

The emergence of the automobile as the predominant form of personal transportation has been fostered by a wide variety of public policies. These include policies that provide direct support of automobile transportation, such as taxes to finance the vast roadway network, and those that provide indirect support, such as price controls to ensure low-cost gasoline. Other public policies have encouraged urban and suburban development patterns that are geared to extensive automobile use. At the same time, public transportation services, which provide alternative modes of urban and intercity travel, have been allowed to deteriorate. The combined result of these policies—intentional and otherwise—has been increasing reliance on the automobile for personal transportation.

In recent years, it has become evident that continued dependence on the automobile gives rise to conflicts with other needs or goals of our society. It is recognized that automobile use produces degradation of the environment. Automobiles consume a large share of increasingly scarce petroleum supplies. Automobile crashes are a principal cause of death and injury.

Clearly, the problems related to automobile use are important from the standpoint of public

policy. Equally important are the opportunities and benefits that the automobile affords. These include the major role of the automobile manufacturing, supply, and service industries in the American economy and the extensive personal mobility that the automobile provides. The challenge confronting the policy maker is how to preserve and extend the benefits of automobile transportation while guarding against the adverse effects brought by present and future automobile technology.

The automobile transportation system is both large and complex. It encompasses not only the vehicle and the associated manufacturing, service, repair, fuel, and insurance industries but also the highway system, which includes construction, maintenance, policing, and traffic management. The highway system serves more than just private passenger vehicles. It also serves trucking and the various modes of mass transportation that use the public way. This assessment, however, concentrates on the passenger car and the industries, facilities, and services that support its *use* as a mode of personal transportation. Other modes of travel are considered only insofar as they represent alternatives to the automobile as means of personal transportation. For the purposes of this assessment, the automobile is defined as a vehicle designed primarily for private passenger use.¹

Even with this limited definition of the automobile transportation system, the number of concerns that could be addressed is still quite large and some selectivity is necessary to

¹Technically, the automobile is defined here as a four-wheeled passenger vehicle with a gross weight of less than 6,000 pounds. Coupes, sedans, and station wagons of all sizes are considered automobiles. Light trucks and vans, even though used as passenger vehicles, are not included. Motorcycles and mopeds are also excluded.

achieve a proper focus. This assessment concentrates on five groups of issues that now confront, or may confront, Congress in formulating policies relating to the automobile. They are:

- **Energy**—conserving petroleum as a motor fuel and making a transition to alternate energy sources.
- **Environment**—protecting the environment from the adverse effects of automobile use.
- **Safety**—reducing death and injury on streets and highways.
- **Mobility**—providing adequate personal mobility for all, either by automobile or other modes of transportation.
- **Cost and Capital**—controlling the consumer and public costs of automobile transportation and assuring the capital resources to support the evolution of the automobile transportation system.

ISSUES

Energy

Over the last **50 or 60** years, trillions of dollars have been spent structuring our transportation system, our cities, our jobs, and our lifestyles around the automobile. The dominance of the automobile has been made possible by a plentiful and inexpensive supply of fuel from petroleum. We now have **25 to 50** years (if current estimates of world reserves are accurate) to make the transition to alternate sources of energy. This period will be characterized by increasingly higher gasoline prices as the supply of petroleum diminishes.

The energy problem is complicated by uncertainties of both supply and demand. A point of particular uncertainty is how much time is available to make a transition to alternate energy sources before petroleum supplies are severely depleted or become prohibitively costly.

The problem is compounded by several factors. For example, the development of new energy supplies requires leadtime. Conservation measures can help in this regard, but implementation of these conservation measures also requires leadtime. In addition, petroleum will be required as fuel in the effort to develop alternative energy sources. Finally, the environmental and safety effects of alternate fuels and engines add considerable risk that industry investments may prove unwise in the light of future events and emerging conditions.

The energy issues explored in this assessment address the two fundamental ways of reducing

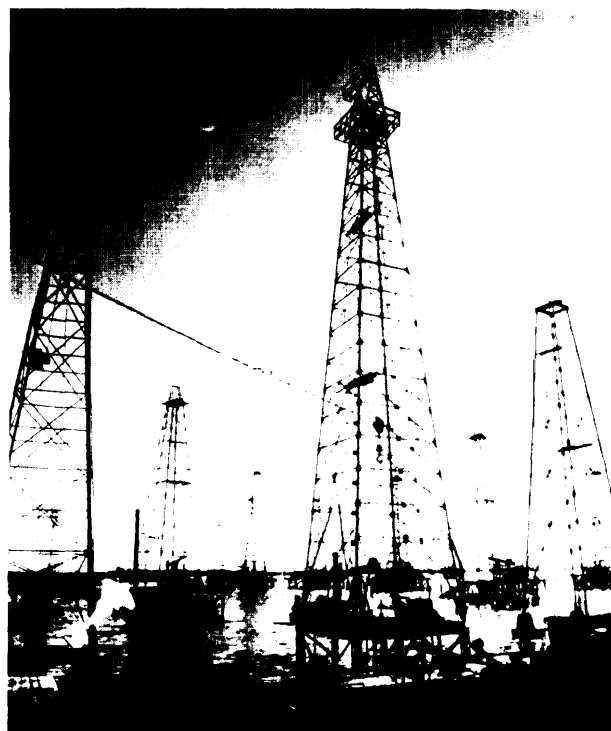


Photo Credit: U.S. Department of Energy

the dependence of the automobile on petroleum: expanding alternate energy supplies and limiting petroleum demand.

Since the gasoline shortage of 1973-74, the Federal Government has adopted policies to accomplish both petroleum conservation and development of new energy supplies. The regulation of the automobile, which now consumes **30** percent of the petroleum used in this country, has been an important part of the effort. Policies

intended to reduce automobile fuel consumption have included regulation of automobile fuel economy, imposition of a nationwide 55 mph speed limit, and encouragement of ride sharing. In addition, the Federal Government now has programs for development of *new* engine technologies, for supporting the development and demonstration of electric and hybrid vehicles, and for the development of synthetic fuels from oil shale and coal.

With the clear prospect of diminishing petroleum supply, the need to pursue both conservation and the transition to alternate sources of energy is apparent. The pressures created by an energy shortage could alter many facets of American life, including the use of the automobile for personal transportation. These issues, and their important implications for this country and its citizens, form one of the focal points of the assessment.

Environment

There are two major trends in modern industrialized society that create concern about the environment. The first is the increasing amount of wastes produced by growing populations and

expanding industrial and technological activities. The second is the changing nature of pollutants, many of which are hazardous to human health and the ecological systems that support human life. Although opinion in the scientific community is sharply divided about the danger of specific pollutants and the overall seriousness of the environmental problem, it is widely agreed that continued emission of increasing amounts of pollutants could cause grave, and perhaps irreparable, damage to the air we breathe, the water we drink, and the land where we grow our food.

Within the last two decades, attention has been drawn to the automobile system as a major source of pollution. The environmental effects of the automobile—most notably atmospheric pollution—have become subjects of widespread concern to the scientific community, governments, and the general public. This concern culminated in the passage of the Clean Air Act (and its subsequent amendments) and the National Environmental Policy Act.

With this legislation, particularly the 1970 amendments to the Clean Air Act, Congress embarked on a major program to reduce atmospheric pollution caused by automobile emis-

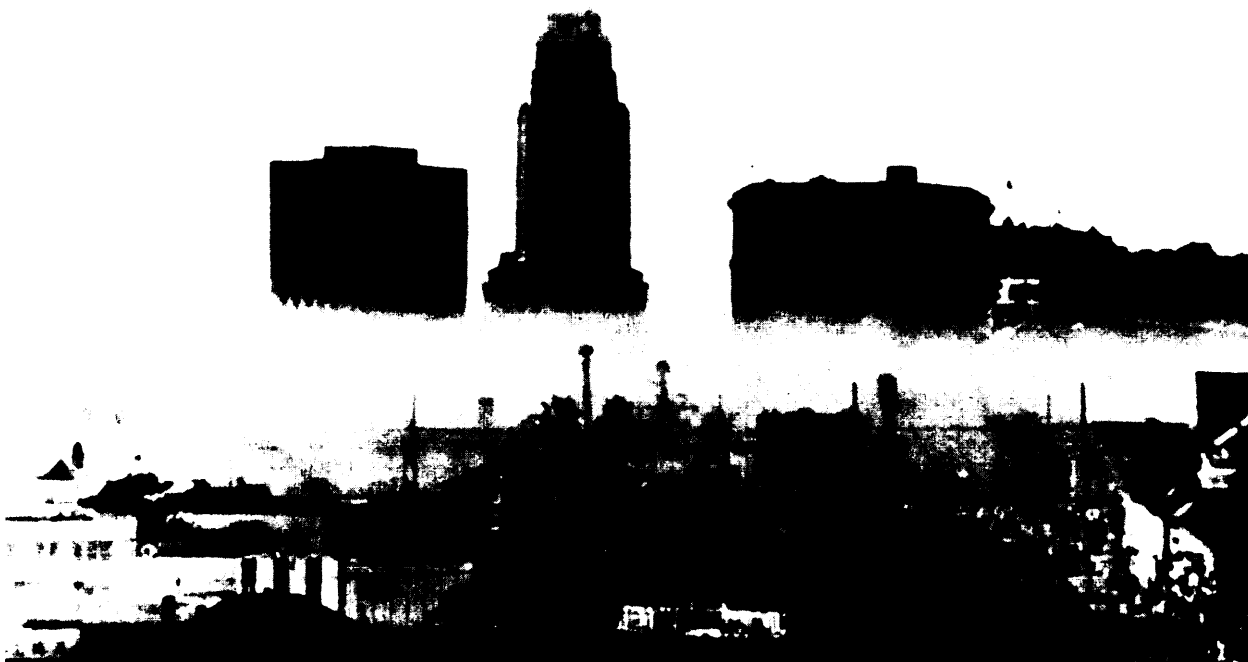


Photo Credit: U.S. Department of Transportation

sions. The administration of the Clean Air Act and the modification and extension of its provisions in 1977 have generated deep controversy among the Federal Government, the automobile industry, and the public concerned about the environment.

The environmental effects of the automobile system are not limited to atmospheric pollution. The noise of vehicles, the disposal of solid wastes (scrap vehicles and major parts, such as tires and batteries), the contamination of water by spilled lubricants, spilled fuel and road salt, and the adverse impacts of automobiles and highways on cities, rural areas, and natural preserves are problems that also require attention.

The issues that emerge from the general problem of how to prevent environmental damage by the automobile system are highly controversial. Public health and well-being are at stake. But so, too, is the economic health of an industry that constitutes a major share of the economy and provides the dominant mode of personal transportation for American workers and families. The Federal Government has a clear responsibility to protect the public interest, but in so doing it must be mindful of the equity of the measures it adopts.

Thus, the issues of how to protect the environment from the adverse impacts of the automobile, and the policies available to the Federal Government to accomplish this, have an important place in this assessment.

Safety

Despite significant improvements in safety over the years, the automobile remains a principal cause of death and injury in the United States. The number of automobile deaths in this country since **1900 (2 million)** is 3 times the number of battle deaths (**652,000**) suffered by the United States in all wars. In **1977** nearly **48,000** Americans died as a result of motor vehicle crashes, and over 4.4 million were injured.²

The earliest Federal response to the highway safety problem came in 1924, with the First National Conference on Street and Highway Safe-

ty. The conference dealt with matters such as traffic control, construction and engineering, education, and motor vehicle design. Many of these subjects are still controversial issues in highway safety today.

Additional conferences were held over the following three decades, but little specific action by the Federal Government resulted. Beginning in the 1950's, however, a more intense interest in highway safety was displayed by Congress and the executive branch, and several programs were initiated.

The Federal Government did not become heavily involved in automobile safety, however, until 1966 when Congress enacted the National Traffic and Motor Vehicle Safety Act and the Highway Safety Act. The former established safety standards and mandatory inspection programs for motor vehicles used in interstate commerce. The latter provided financial assistance to the States for highway safety programs.

At the present time, there are more than **50** Federal Motor Vehicle Safety Standards in force. Most of these apply to passenger cars. There are also 18 Federal Highway Safety Program Standards, dealing with highway design, driver licensing, police and medical services, and the like. This regulation of vehicle and highway safety features is considered to be partially responsible for the reduction in the rate of highway deaths that has occurred in the past decade. The rate, expressed in deaths per hundred million vehicle miles of travel, dropped from **5.7** in **1966** to **3.3** in **1977**,

There are problems that may impede further safety improvements. The Federal Highway Administration claims, for example, that the highway safety problem is "aggravated by the diffusion of responsibility for safety."³ Another problem which is cited is the reluctance of consumers to bear the increased costs of safety features. Also, there is a tug-of-war between consumers who are resisting mandated safety equipment as an infringement of civil rights and some citizen groups and insurance companies who are pushing hard for development and mandated use of more safety devices in cars.

²U. S. Department of Transportation, Fatal Accident Reporting System, 1977 data (republication); U.S. Public Health Service, Division of Vital Statistics, 1977 data (republication).

³U.S. Department of Transportation, Federal Highway Administration, *The Role of FHWA in Highway Safety, 1964-1976* (Washington, D. C., August 1977), p. 8.

In addition to these concerns, there is the potential for conflict between improved safety and automobile energy conservation. Smaller cars, which are desirable because of their fuel economy, may offer less protection for occupants in crashes. The introduction of features to improve crashworthiness may add to the weight of the vehicle and entail a penalty in fuel economy.

Safety is a complex problem that involves driver behavior, vehicle characteristics, roadway features, and driving conditions. Safety must be approached both as a question of vehicle and roadway design and as a question of use—driving habits, traffic regulation, law enforcement, risk management. Safety is not just an individual concern. Industry has an important part to play. All levels of government—local, State, and Federal—are involved. There is no single, simple solution to the problem of highway deaths and injuries, and the public policy questions relating to the safety of the automobile transportation system are among the thorniest that must be faced.

Mobility

One of the goals of society is to enable citizens to take part in activities that improve and maintain their social and economic well-being. Essential to the attainment of this goal is the ability to reach jobs, services, consumer outlets, recreation sites, and other locations. To this end, the Federal Government has acted as a major provider and regulator of transportation services. The challenge today is to find new technological and institutional solutions that will improve the individual's ability to reach desired and necessary activities in a way that is compatible with other national goals such as energy conservation, environmental preservation, and public safety.

Federal policies supporting automobile use date back to the beginning of this century. The first act providing Federal aid for highways was passed in **1916**. The series of highway acts which followed have provided increasingly greater Federal support and have expanded the extent of Federal involvement. In 1956, Con-



Photo Credit U S Department of Transportation

gress enacted legislation that established the Interstate Highway System and provided a source of financing—the Highway Trust Fund. In recent years, Federal policy has imposed numerous conditions on the use of highway funds, such as requirements for comprehensive planning and for environmental impact assessment. Also, the types of activities that may be financed with Federal highway funds have been expanded considerably; for example, highway funds may now be used for certain types of public transportation projects,

Auto use has also been supported by Federal policy in less direct ways. Price controls on gasoline have kept fuel costs low. Suburban and exurban development, which is heavily dependent on auto use, has been encouraged by Federal mortgage assistance policies. Until recently, there was essentially no Federal support for public transportation. Transit systems in many urban areas deteriorated badly. Service levels were reduced, costs rose, private entrepreneurs went bankrupt, and local governments were forced to assume ownership and operation. Public transit, which could have provided an alternative to auto use, declined further and became even less attractive.

Several factors have come into play recently to force a reevaluation of Federal policy toward personal transportation in general, and auto use in particular. Concern about future energy supply and environmental protection has focused attention on the automobile as a contributor to these problems. There is increasing awareness that mobility itself is deteriorating as a result of traffic congestion. Finally, there is concern that some segments of the population cannot share in the mobility provided by the automobile. These include those who cannot afford to own and operate a car, handicapped persons, some elderly persons, and those who are too young to drive. The decline of public transit and the growing dominance of the automobile often deprives these persons of the mobility enjoyed by others.

The consideration of mobility in this assessment focuses on the future role of the automobile in providing mobility and on the broader issue of the role of the Federal Government in providing adequate personal mobility for all, either by automobile or by alternate modes of transportation.

Cost and Capital

The automobile has a far-reaching impact on the U.S. economy. The automobile transportation system, when defined in its broadest sense, accounts for approximately 10 percent of the gross national product and is the direct employer of about 1 out of every 18 American workers.⁴ The employment opportunities created by the automobile transportation system are not only vast, but widely varied. Jobs exist in both the public and private sectors and require such skills as production and manufacturing, maintenance and repair, law enforcement, regulation, research and development, traffic management, international finance, economics, and construction.



Photo Credit U.S. Department of Housing & Urban Development

One of the most complex issues concerning the automobile is the cost of the system, on both a national and an individual scale. Along with food and housing, automobile transportation is one of the three major items in the average household budget. It amounts to an annual total outlay of **\$130 billion** and represents about 13 percent of personal consumption expenditures.⁵

⁴Transportation Association of America, *Transportation Facts and Trends*, Thirteenth Edition, July 1977, pp. 1, 3, 5, 23, A-2 and A-13.

⁵U.S. Department of Transportation, *National Transportation Trends and Choices (to the Year 2000)* (Washington, D.C.: U.S. Government Printing Office, 1977), pp. 85 and 87.

Thus, policies that change the costs of automobile ownership and use will have wide-ranging effects on the American consumer.

On a national level, the public cost of the automobile transportation system is most visible in expenditures for roadbuilding. The Federal Highway Administration estimates that approximately **\$30 billion** was spent for highway purposes by all levels of government in 1976. Federal aid, which was applied to 950,000 miles of road carrying about three-quarters of all vehicle traffic,^a amounted to about \$7 billion.

The Federal Government's investment in the automobile transportation system is not limited to road construction. Support is also given to

the fuel and materials industries, *in the form* of depletion allowances. In addition, the types of highway projects that are eligible for Federal assistance have progressively been expanded. Federal aid is now available for relocation assistance for residents and business establishments displaced by road construction. Federal highway monies may also be used for research and development, land acquisition, highway beautification, safety programs, emergency relief, construction of parking facilities, education and training, noise abatement, and more.

The issues of cost and capital could have a powerful influence on the future development of the automobile transportation system. The assessment focuses on those areas where Federal policy could influence the economics of the system and the course of future technological development.

^aEllis L. Armstrong, ed., *History of Public Works in the United States 1776-1976* (Washington, D.C.: American Public Works Association, 1976) p. 54.

