TESTIMONY OF HAMILTON HERMAN, ASSISTANT SECRETARY OF TRANSPORTATION FOR SYSTEMS DEVELOPMENT AND TECHNOLOGY, BEFORE THE SUBCOMMITTEE ON ENERGY RESEARCH, DEVELOPMENT AND DEMONSTRATION OF THE COMMITTEE ON SCIENCE AND TECHNOLOGY, ON H.R. 9174, 1109, 5557, 6354, AND 7231, THURSDAY, MARCH 18, 1976.

Mr. Chairman and Members of the Subcommittee:

It is a pleasure to have the opportunity to appear before you and to present the views of the Department of Transportation on several proposed bills dealing with automotive research and development and related matters. I am accompanied by Mr. William Steber, my deputy, and Dr. Richard Strombotne, who is chief of my Energy and Environment Division.

I would like to discuss first some of the Department's automotive R&D and energy conservation programs and activities, then indicate some of the ways in which we coordinate our efforts with other agencies, and conclude with our comments on the proposed legislation.

The Department of Transportation was established to deal with virtually all elements of transportation and to develop policies and programs conducive to the provision of fast, safe, efficient, convenient transportation at the lowest costs consistent with other national objectives. Our basic responsibilities include policy planning, coordination, regulation, and research and development. We deal with conservation of energy within the transportation sector

generally, and with highway vehicles specifically, in a variety of ways.

For example, the National Highway Traffic Safety Administration (NHTSA) establishes safety and damageability standards for new vehicles, conducts an inspection demonstration program, sponsors the automotive research and development programs needed to carry out its responsibilities, and conducts related activities. The Federal Highway Administration (FHWA), in addition to its better-known responsibility for administering the highway construction capital grant program, conducts research on traffic control systems (including investigation of energy saving techniques), gathers statistical data on the usage patterns of the Nation's vehicles, and sponsors the national car pool promotion program to save energy and improve transportation efficiency. The entire program of the Urban Mass Transportation Administration (UMTA) is directed toward improvement of public transportation in urban areas. These improvements are intended to reduce congestion and often help to reduce air pollution and to conserve energy by getting people out of cars and into buses and commuter trains.

The Office of the Secretary (OST) sponsors research and development programs on automotive energy conservation and leads

in-house, interagency, and joint industry-government activities dealing with automobiles and trucks. For example, my office leads the interagency Tast Force on Motor Vehicle Goals Beyond 1980 and leads the voluntary truck fuel economy improvement program which involves EPA, FEA, and truck manufacturers and operators. It also has led the Administration's voluntary program with the automobile manufacturers to achieve a 40 percent improvement in the new car fleet fuel economy by 1980. As you know, the voluntary program has been superseded by the recent Energy Policy and Conservation Act of 1975, under which the Secretary has the responsibility for establishing and administering fuel economy standards for vehicles weighing up to 10,000 pounds.

Since some of the bills under consideration also deal with propulsion systems for rail, light rail, bus, and marine vessels, I believe it would be useful to note that the Urban Mass Transportation Administration (UMTA), Federal Railroad Administration (FRA), and U.S. Coast Guard (USCG) already sponsor research and development on propulsion systems for such vehicles. For example, UMTA recently put into service a rail transit car with a flywheel energy storage system, developed three prototype transit buses (the Transbus program), and is developing a para-transit vehicle with a steam engine. The FRA has supported research and development on linear

induction motors and power conditioning systems for high speed ground transportation. The USCG is investigating the properties of synthetic fuels for use in marine power plants. These are a few highlights of the many energy related activities of the Department.

In each case, the various agencies of the Department sponsor research and development to support their broad responsibilities including the extensive work required to provide sound regulation, as with safety and fuel economy, and for policy recommendations. In addition, our Transportation Systems Center, located in Cambridge, Massachusetts, a substantial R&D organization, carries out many research and development activities for the entire Department. It has developed extensive expertise in the automotive energy conservation area.

Mr. Chairman, in conducting its research and development programs, the Department of Transportation constituent Administrations frequently draw on the expertise, experience, and facilities of other agencies such as Energy Research and Development Administration (ERDA) and National Aeronautics and Space Administration (NASA). For example, the interagency Task Force on Motor Vehicle Goals enjoys the participation of the Environmental Protection Agency (EPA), ERDA, Federal Energy Administration (FEA), NASA, National

Science Foundation (NSF), and other agencies. Our Automotive Energy Efficiency Program has obtained evaluations of various engines from the Jet Propulsion Laboratory of NASA and the Bartlesville Energy Research Center of ERDA through interagency agreements. In evaluating aerodynamic drag reduction techniques for cars and trucks, we have had the assistance of the Jet Propulsion Laboratory and the Flight Research Center of NASA. Similarly, there are many instances in which the expertise of our Department and its Administrations is provided to other agencies.

In general, the various bills under consideration, H.R. 9174, H.R. 1109, H.R. 5557, H.R. 6354, and H.R. 7231, have as their primary purpose either the development of better engines for ground transportation vehicles, particularly for automobiles, or the development of entirely new, advanced automobiles.

Two of the bills, H.R. 9174 and H.R. 6354, would, if enacted, direct the development of actual production prototypes of an "advanced automobile," one described generally as an energy-efficient, low-emission, safe, personal-use transportation vehicle.

We believe federally-sponsored research to explore, test, and evaluate potential energy-saving technology alternatives is desirable. In particular, we believe ERDA's present research and exploratory and advanced development of alternatives to the internal combustion automobile engine are appropriate and necessary.

With respect to advanced automobiles, in contrast to advanced engines, the Department already sponsors several research and development activities which collectively address virtually every aspect of advanced automobiles, as described by the bills.

DOT, as part of its Automotive Energy Efficiency Program, is presently engaged in testing and evaluation to improve the fuel-efficiency of today's automobiles. This research has already identified numerous opportunities for bettering the fuel efficiency of conventionally-powered automobiles through engine modifications, changes in transmissions, aerodynamic redesign, and other design changes.

The Research Safety Vehicle (RSV) program of NHTSA sponsors the development and evaluation of advanced automobiles that will achieve higher levels of safety performance with lower emissions, excellent fuel economy, and reasonable production costs. Designs are now being completed for two versions of advanced automobiles to meet national needs of the 1980's. The program is intended to determine what is technologically feasible in an economically reasonable context through the development and testing of engineering--rather than production--prototype vehicles.

The interagency Motor Vehicle Goals Task Force, chaired by the Department at the request of the Energy Resources Council,

exemplifies this Federal role in automotive energy R&D. The Motor Vehicle Goals Report will describe the extent to which improvements in automobile fuel economy, emissions and safety can be achieved, and will frame the hard policy choices which soon must be made among these variables to influence automobile production beyond 1980. We will share the results of the final report with the Committee as soon as it is completed.

In view of the Department's responsibility for administration of the fuel economy, safety, and damageability regulations, and the requirement to consider the effects of emissions and noise standards in carrying out these responsibilities, we must recognize the inter-relations of all of these aspects in the total vehicle. The research and development activities of the Department, supplemented by those of other agencies, will provide the support needed for our exercise of these regulatory responsibilities. By focusing attention on all of these areas we can avoid subjecting the consumer and industry to excessive cost and conflicting regulations.

In view of the existing DOT and ERDA R&D activities we believe that present statutory authority is fully adequate to permit the Government to carry out its appropriate role in automobile research and development. The requirements in these bills for development of production prototypes would thrust the Federal Govern-

ment into expensive automobile product development and product design engineering areas in which it has little experience or expertise. These activities are more appropriately left to firms in the private sector, especially since that sector has the major function of manufacturing and marketing the vehicles.

A provision of H.R. 1109 requires special comment. That bill would require development of a clean, efficient motor vehicle engine for retrofit into the existing on-the-road fleet of automobiles, as well as for installation in new vehicles. The Department has investigated intensively automobile manufacturing facilities and processes, as well as lead time for development and for tooling. We note that domestic motor vehicle engine production facilities have limited capacity to manufacture retrofit engines while at the same time continuing to supply engines for new cars. The manufacture of significant numbers of engines for retrofit would therefore require extensive investment in new plant and equipment which could only be used for a few years.

Our assessment is that the most effective way to improve the fuel economy of the cars on the road is to increase the fuel economy of the new cars being purchased each year, as is now being done. The massive, large scale retrofit of efficient engines

into existing vehicles could not, in fact, be done in a practical, cost-effective way.

Two bills would require the development of energy-conserving, clean, ground propulsion systems for inclusion in a variety of ground and marine transportation vehicles--H.R. 5557 and H.R. 7231. These bills also require ERDA to establish programs to accomplish this R&D.

We agree that improved ground propulsion systems are desirable. In our experience with propulsion system R&D, we have found that the realistic matching of the propulsion system with the operational requirements of the vehicle it serves is the single most important factor in determining the effectiveness of the development program. Unless the requirements and specifications of the propulsion system are prepared in terms of the whole vehicle and its operatiion in the transportation system, any program for the development of a propulsion system will have only limited success. As I noted earlier, operating administration of the Department now perform R&D on propulsion systems for vehicles within their respective jurisdictions. These mission-oriented agencies are examining needs from a complete systems viewpoint. Their R&D on propulsion for buses, light rail, heavy rail, high speed ground transportation, personal rapid transportation systems, or marine vessels is justified by the requirements of the vehicles and vessels in the overall system.

We agree that coordination of R&D programs is necessary and believe that those of DOT and ERDA are coordinated. To ensure that the R&D programs of the two agencies continue to be smoothly coordinated in the future, we are preparing a memorandum of understanding setting forth our respective roles. Because R&D on ground propulsion systems is now being sponsored and coordinated by agencies of this Department and other agencies, we believe the provisions of the bills that require such coordination are unnecessary.

That completes my prepared testimony.

Mr. Chairman, I have a five minute film clip showing some highlights of the Research Safety Vehicle program. With your permission, I would like to show it to the Committee. Afterward, I will be pleased to respond to your questions.

2