

STATEMENT OF HOWARD DUGOFF, ADMINISTRATOR,  
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BEFORE THE SUBCOMMITTEE ON TRANSPORTATION, AVIATION AND COMMUNICATIONS  
OF THE HOUSE SCIENCE AND TECHNOLOGY COMMITTEE, CONCERNING  
H.R. 4678 A BILL TO ESTABLISH WITHIN THE NASA A COMPREHENSIVE  
PROGRAM OF AUTO R&D, JULY 12, 1979

Mr. Chairman and Members of the Subcommittee:

I am pleased to appear before this committee today to discuss your bill to establish a comprehensive program of automotive research and technology development.

As you know, Mr. Chairman, we in the Department of Transportation have devoted a lot of thought and time over the past months to a major new initiative in basic research on automotive technology. Development of this initiative began when Secretary Adams urged the automotive industry, in December 1978, to join the Government in such a program. In mid-May, the President met with the leaders of the American automotive industry and members of the academic community to discuss the best way to implement this major cooperative program. During this meeting at the White House, the President asked Secretary Adams and Dr. Frank Press, his science and technology advisor, to work with the leaders of the auto industry and the academic and scientific communities to prepare a detailed program for the President's review by mid-September. I am pleased to report that the plans for the program are well underway.

The program will be jointly sponsored by government and industry, addressing key areas of basic research related to automotive technology, and bringing previously untapped scientific and engineering talent to bear on these areas. The objective of the program will be to help lay the technological base for the next generation of automobiles. It will result ultimately in more energy-efficient vehicles by: (1) providing

new sources of ideas and innovation in automotive technology through the involvement of a broader community in the automotive research; (2) supporting and stimulating competition in the auto industry through the wide and open dissemination of basic research results; (3) training additional automotive scientists and engineers; and (4) developing the sort of program in automotive research which has contributed to the rapid and innovative development of other industries such as aerospace.

In our view the proper Federal role in this undertaking should be based on principles that include:

- (1) Focus on basic research, which can contribute substantially to improved automotive technology by developing knowledge in such fields as thermodynamics, combustion and fluid dynamics; structures; noise and vibration; materials science and processing; control systems; and friction and wear.
- (2) A pluralistic approach, involving a range of university, industry, and Federal laboratories in performing the research, to insure that there are independent sources of new ideas and an increased supply of automotive engineers.
- (3) Personnel exchanges, especially between industrial and university laboratories, to maintain the flow of information and the transfer of new engineering knowledge.
- (4) Wide and open dissemination of results to all interested parties, subject to appropriate patent provision.
- (5) A level of effort and timing determined by the capacity of the science and engineering community to absorb new funds and the competing demands on Federal and corporate

resources. We will make recommendations on the initial level of effort in the September proposal to the President. The initiative could possibly involve government and industrial funding totaling up to \$50 to \$100 million after three to five years of build-up.

- (6) Industry financial participation that will include mechanisms for industry contributions through direct grants to universities, increases in effort at automotive laboratories, and other arrangements.
- (7) Federal agency participation that will be determined by an evaluation of the policy responsibilities, research management capabilities and the appropriate role of research within each agency. To insulate the program from the political and technological pressures of the various Federal regulatory programs, the initiative will not be managed by a regulatory agency.
- (8) Decentralized project selection mechanisms, within an agreed upon general agenda of research areas, and avoiding specified quantitative technological targets, because of the inherent unpredictability of the results of basic research.

I would like to point out that this initiative is part of the President's commitment to a strong basic research program, which he outlined in his Science and Technology Message to the Congress in March 1979. This program would be in addition to the ongoing basic research programs

supported by the Government, totaling \$4.2 and \$4.6 billion in fiscal years 1979 and 1980 respectively, which address the needs of all sectors of the economy.

In brief, the Federal program that I have outlined has the same goals as your draft bill, but would approach those goals in a different way with a different institutional program that we believe holds greater promise of success.

In our view, the key objective of a government initiative in automotive R&D should be to produce a pool of basic research knowledge that would be available to private industry for further individual development and eventual commercialization. Although the Apollo project is an interesting analogy in some respects, we should not forget that the outputs of this program, unlike Apollo, are intended for a free marketplace application.

Many similarities exist between the conclusions reached by your committee as a result of the recent Automotive Research and Development hearings and the positions being developed by the Administration. I would now like to comment on and react to the general conclusions of those hearings as you described them in your letter of invitation.

I feel we are in general agreement about the necessity for a vigorous national program in automotive R&D, although we differ in some respects as to the means for carrying it out. We consider it essential that the program embody a cooperative approach, utilizing the best-qualified performers from all appropriate groups.

The question of the rate of desirable change raises the ageless arguments associated with the "technology pull" versus "regulatory push" approaches. While good arguments can be made for both approaches, I am firmly convinced that if it had not been for the "regulatory push" provided by the fuel economy standards, we would not have seen anything close to the technological responses made recently and still in the making, to increase the fuel economy of vehicles through 1985. I think we can agree that a mix of approaches is needed. Stimulus for technology in the form of research support, combined with sufficiently demanding regulations, will yield vehicle fleet mixes that are most desirable from an overall societal viewpoint.

The need clearly exists for coordinating automotive R&D. But the program management concept must recognize the statutory responsibilities of each government agency concerned with automotive transportation and define complementary roles for their contributions of the national effort. The approach must allow for a degree of healthy interaction among agencies and organizations, while providing clear responsibility and accountability.

I agree with your conclusion that maximum use should be made of universities, industry, and government labs in conducting the auto research program. I presume it to be implicit in your conclusion, but I believe it warrants explicit recognition, that one important objective of the program is to strengthen and expand the knowledge base of individuals who will be following careers in fields that can provide for personal mobility in the future.

I am doubtful that a viable scheme for retrospective "recoupment" of government expenditures for automotive research can be realized. Identifying the research antecedents of commercialized automotive technology with sufficient precision for a recoupment mechanism appears practically unachievable. Through the planning process organized by Secretary Adams and Dr. Press, I anticipate the development of agreements with the domestic auto manufacturers for direct sharing of the cost of basic automotive research.

We are in agreement that the research program should address all aspects of the auto and its associated technologies. We are dealing here with the whole question of personal mobility, not the auto per se, and the research products I foresee should have broad applicability over the spectrum of transportation technology.

Due to the nature of fundamental research, a need exists for a long-term commitment to clearly established goals. While these goals do not have to be and sometimes cannot be quantified, the ability to assess performance and program resources must be as specific as possible.

After Secretary Adams suggested the need for a major new initiative toward basic research in advanced automotive technology, there was much discussion about whether such research should be carried out within the motor vehicle regulatory agencies. After looking at the short-term needs of, and the pressures on, the regulatory programs, we determined that a major basic research program should not be done within the regulatory agencies.

The regulatory agencies however, need a substantial amount of research, development, and engineering support for their regulatory activities to ascertain the need for rulemaking, to investigate and assess potential improvements that can be made in vehicles and systems to meet regulatory requirements, and to establish and support regulatory test procedures and criteria. This work is intimately tied to the ability of the regulatory agency to carry out its work. Were a basic research program to be placed in a regulatory agency, it is not unlikely that the research capability would be heavily utilized to support the shorter time frame priorities of the agency. Thus, the longer range purposes of the research might not get appropriate attention. If the regulatory agencies were made dependent on NASA for their engineering research and development support, the demands of these agencies would be likely to interfere with the basic research and development work of that agency.

In short, research and development to support a regulatory program is of different character from basic research. The former is oriented toward establishing standards and test procedures, and demonstrating hardware and technologies that can be used to meet the standards. It has a time frame of several years, generally less than a decade. Basic research, on the other hand, provides the technological foundation for the development of vehicles with improved performance. The ultimate results of basic research may be voluntarily incorporated by the auto companies, or could be applied by them to meet regulatory requirements more efficiently or effectively.

Let me conclude by summarizing the DOT position. We agree with this Committee that our Nation is facing a critical situation concerning personal mobility. It is most important that the Federal Government act now to ensure

maximum use and efficiency of the transportation system in the near future and over the long term.

However, I am concerned that some of the key features of your proposed legislation will disrupt the ongoing activities of the various Federal agencies dealing with the problems of conservation, safety, and environmental protection in transportation.

The Department of Transportation is working with both the automotive industry and other Federal agencies to develop an integrated plan for Presidential review by the end of September. It will contain many of the features which you are stressing in your bill including utilization of private industry, universities, and Federal agencies' experience and resources, the use of advisory committees and cost sharing by industry. However, I feel it is now premature to advance specific legislation at this time to support this initiative. We will keep you informed as our efforts progress. By working together, I feel that we can collectively develop a program which will ensure our Nation personal mobility in the future.