

STATEMENT OF DR. JAMES COSTANTINO, DIRECTOR OF THE
TRANSPORTATION SYSTEMS CENTER, U.S. DEPARTMENT OF
TRANSPORTATION BEFORE THE SUBCOMMITTEE ON TRANSPOR-
TATION, AVIATION, AND COMMUNICATIONS, FIELD HEARINGS
ON AUTOMOTIVE RESEARCH AND DEVELOPMENT, BOSTON, MASS.,
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Mr. Chairman, I am James Costantino, the Director of the Department of Transportation's Transportation Systems Center in Cambridge, Mass. I appreciate the opportunity to appear before this Committee to discuss automotive research and development. Accompanying me today is Dr. Richard John, Director of Energy and Environment at our Center. The Transportation Systems Center reports to Mr. Howard Dugoff, the Administrator of the Department's Research and Special Programs Administration. Mr. Dugoff testified before your Committee last Thursday.

The Transportation Systems Center is staffed with a multi-disciplinary group of approximately 650 technologists, economists, operations researchers, and other professionals who conduct a wide spectrum of technical and socio-economic research involving every element of the Department of Transportation. Our annual budget is over 60 million dollars of which more than half is contracted to private industry, universities and other research institutions. The Transportation Systems Center is uniquely located in the Boston industrial and academic complex, and makes full use of the numerous centers of excellence in this area.

As the Secretary's research arm, we have been involved for the past seven years in all the Department's major automotive programs. In the course of this work, we have developed a unique capability for the assessment of the motor vehicle system and its relation to society.

The Transportation Systems Center has provided the Office of the Secretary and the Department's National Highway Traffic Safety Administration with data and technical assessments on the current and projected energy, environment, safety and economic impacts of the national motor vehicle fleet. We also provide the Department's policy makers with the best possible information on motor vehicle systems to narrow uncertainties in the final decision making process and our approach has been to maintain and continually update the necessary technical data required for the integrated assessment of the motor vehicle system, including its socio-economic impacts. We have gathered extensive technical data, from both our in-house engine laboratories and the industry on the fuel economy characteristics of current and projected auto systems. In addition, we have developed extensive data on the employment levels, manufacturing capabilities and financial characteristics of the major domestic and foreign auto manufacturers and their suppliers.

The Transportation Systems Center serves as a catalyst both inside and outside the Department to stimulate information exchange and to focus attention on pressing issues. Over the past seven years we have developed a unique set of interpersonal relationships with our technical counterparts in other government agencies and the domestic and international auto industries. We utilize in-house expertise to perform the required short and long term assessments, and utilize contractor personnel to augment our own staff to gather and analyze data.

We cooperate with other government agencies, including, for example, the Department of Energy, in a number of technical areas involving the experimental assessment of advanced automotive power trains, evaluation of diesel emission particulate control technology, and the assessment of institutional barriers to electric vehicle development. In addition, we have established the Department of Energy's New England Appropriate Technology program and trained Department of Energy personnel to continue this work nationwide.

For the Environmental Protection Agency, we are evaluating the exhaust characteristics of advanced diesel vehicles, including the Volkswagen 60 mpg turbo charged diesel vehicle. We are also supporting the DOE/NASA-Lewis motor vehicle research and development activities.

We recognize the important role that the automobile plays in the mobility of the American public. In fact, approximately 90% of all passenger miles are completed by private automobile. The automobile and light truck fleet alone uses approximately 6.5 million barrels a day of petroleum of about 35% of the total petroleum used for all purposes. Put another way, 55% of all petroleum used for transportation purposes is consumed by the automobile.

Secretary Brock Adams, recognizing the fragile nature of our petroleum supply and the potential impact of a long-term petroleum shortage on the nation's mobility, delivered a speech at the Detroit Economic Club on December 5, 1978, which called for "the auto industry and Government to stop butting heads and to start working together." He went on to say that:

"The fuel economy standards now posted, as difficult as they may be to meet, will not suffice. I am aware of the school of thought that says energy supplies will be adequate for as long into the future as we can see. I do not have that confidence. And as Secretary of Transportation. I can't take that chance -- nor, in my opinion, can our society."

The Secretary concluded by asking that industry and academia join with Government in an intellectual consortium dedicated to assuring the country's continued mobility.

As the first step in the implementation of the automotive initiative, Secretary Adams asked the Transportation Systems Center to convene a conference in Boston in February, 1979, to establish basic research directions for advanced auto technology. The Conference was attended by more than 700 experts from industry, academia, consumer groups, and the Government.

The consensus of the conferees was that the nation could reduce its dependence on imported petroleum through technology. Further, a leadership role is acceptable, and expected, for the Federal Government in planning and funding a cooperative program of directed basic research appropriate to automotive technology.

At the Conference, research needs and opportunities were identified in the following areas:

- Thermodynamics, Combustion, Heat Transfer, and Fluid Flow;
- Structures and Materials Selection;
- Energy Storage;
- Engine/Fuel Interactions;
- Materials Science and Processing;
- Controls Research;
- Friction and Wear; and
- Acoustics and Vibration.

The Boston Conference participants strongly affirmed the proposition that the development and application of

advanced technology could result in significantly improved motor vehicles, and that such a program is a fundamental prerequisite to the advancement of our ability to deal with motor vehicle-related problems. The goals of the program are to develop the technical base and the new generation of automotive engineers required to produce the "socially responsible" automobile.

During the next several months, Secretary of Transportation Brock Adams and Dr. Frank Press, will work with leaders of the automotive industry, including material and component suppliers, with universities, Government agencies and laboratories, and with other interested parties to develop the details of a cooperative Basic Automotive Research Program, incorporating the principles agreed to at the White House meeting.

Since the Conference, Secretary Adams has led a Federal interagency working group, and in cooperation with the President's Science Advisor, Dr. Frank Press, has held continuing discussions with auto industry leaders and others in an effort to develop the general principles of a cooperative automotive basic research program.

On May 18, 1979, President Carter, accompanied by Secretary Adams, and Dr. Frank Press, met at the White House with the heads of the U.S. automobile industry and other top academic and government leaders and endorsed the

concept of a cooperative basic auto research program.

Mr. Chairman, I have appreciated the opportunity to discuss the research, development, and systems analysis capability of the Transportations Systems Center, and of our role in the development of Secretary Adams' initiative to "reinvent the car".

We are continuing our technical relationships with the Department of Energy, the Environmental Protection Agency, and NASA on motor vehicle programs. Our automotive research and analysis capabilities are well known both nationally and internationally, and we stand ready and able to carry out the Administration's automotive program as it develops.

That concludes my prepared remarks. I and my associate would be pleased to answer any questions you may have.