

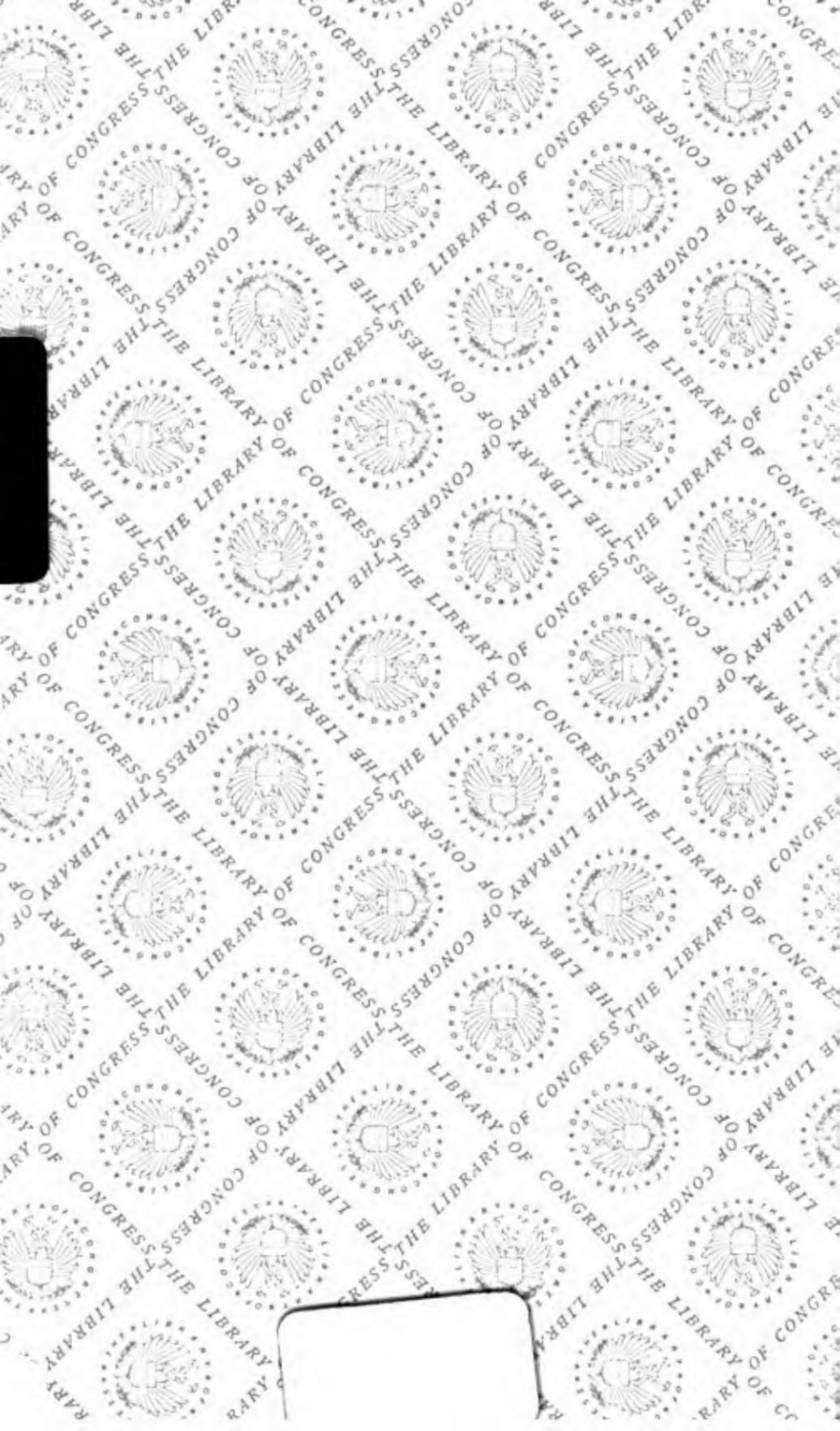
KF

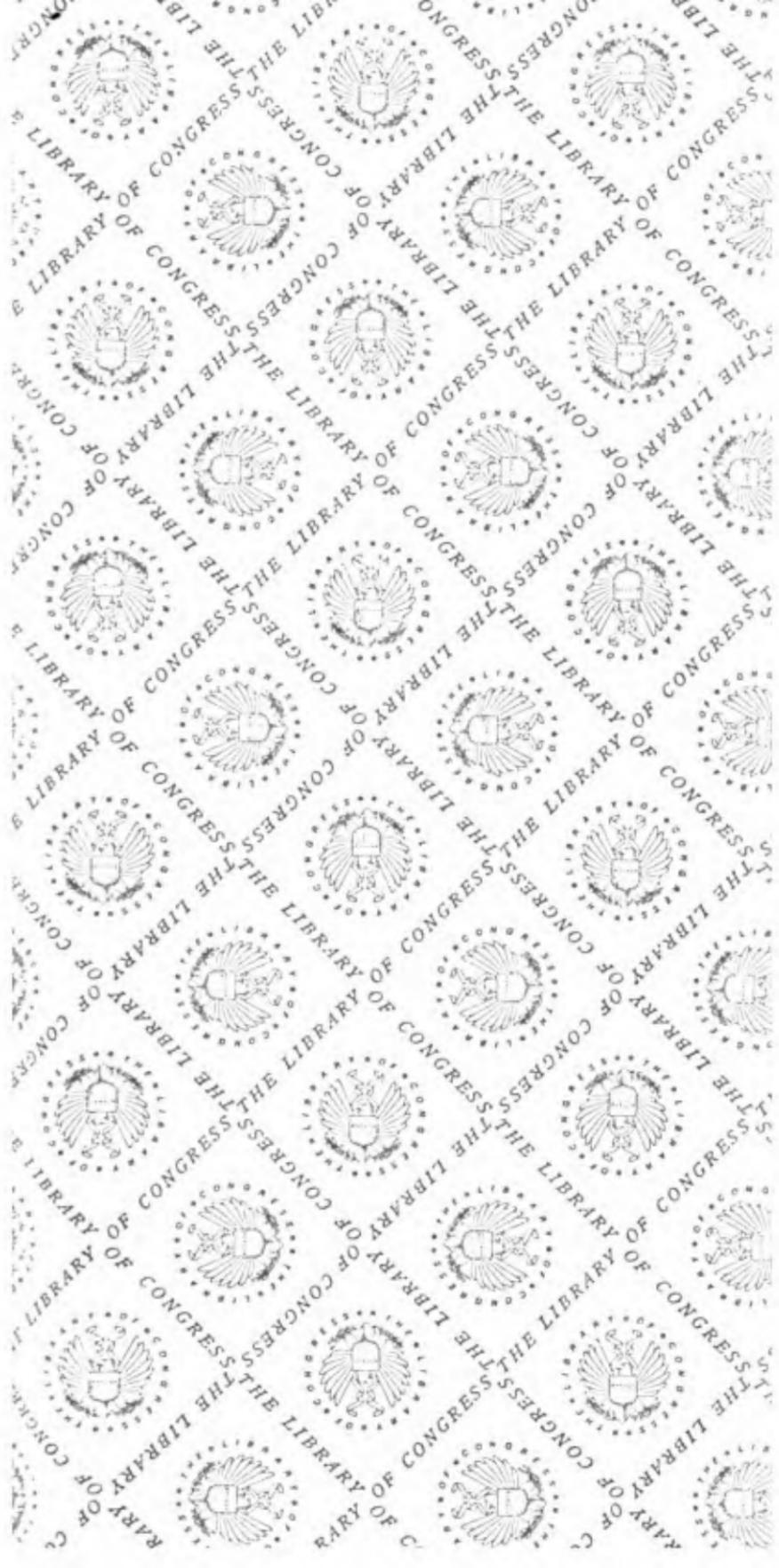
27

.I5587

1965c

copy 2







4 - AUG 13
1965

HEARING

BEFORE THE

SUBCOMMITTEE ON TRANSPORTATION
AND AERONAUTICS

U.S. Congress, House OF THE

COMMITTEE ON

INTERSTATE AND FOREIGN COMMERCE

HOUSE OF REPRESENTATIVES

EIGHTY-NINTH CONGRESS

FIRST SESSION

ON

H.R. 5863

A BILL TO AUTHORIZE THE SECRETARY OF COMMERCE
TO UNDERTAKE RESEARCH AND DEVELOPMENT IN HIGH-
SPEED GROUND TRANSPORTATION, AND FOR OTHER
PURPOSES

(And Identical Bills)

MAY 19, 25, AND JUNE 20, 30, 1965

Printed for the use of the Committee on Interstate and Foreign Commerce

Serial No. 89-17

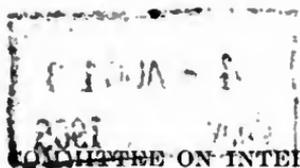
5-62324



U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 1965

KF27
I5587
1965c
C442



COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE

OREN HARRIS, Arkansas, Chairman

- | | |
|--------------------------------------------|-----------------------------------------------------|
| HARLEY O. STAGGERS, West Virginia | WILLIAM L. SPRINGER, Illinois |
| WALTER ROGERS, Texas | J. ARTHUR YOUNGER, California |
| SAMUEL N. FRIEDEL, Maryland | SAMUEL L. DEVINE, Ohio |
| TORBERT H. MACDONALD, Massachusetts | ANCHER NELSEN, Minnesota |
| JOHN JARMAN, Oklahoma | HASTINGS KEITH, Massachusetts |
| LEO W. O'BRIEN, New York | WILLARD S. CURTIN, Pennsylvania |
| JOHN E. MOSS, California | GLENN CUNNINGHAM, Nebraska |
| JOHN D. DINGELL, Michigan | JAMES T. BROYHILL, North Carolina |
| PAUL G. ROGERS, Florida | JAMES HARVEY, Michigan |
| HORACE R. KORNEGAY, North Carolina | TIM LEE CARTER, Kentucky |
| LIONEL VAN DERLIN, California | HOWARD H. CALLAWAY, Georgia¹ |
| J. J. PICKLE, Texas | ALBERT W. WATSON, South Carolina² |
| FRED B. ROONEY, Pennsylvania | |
| JOHN M. MURPHY, New York | |
| DAVID E. SATTERFIELD III, Virginia | |
| DANIEL J. RONAN, Illinois | |
| J. OLIVA HUOT, New Hampshire | |
| JAMES A. MACKAY, Georgia | |
| JOHN J. GILLIGAN, Ohio | |
| CHARLES P. FARNSLEY, Kentucky | |
| JOHN BELL WILLIAMS, Mississippi | |

W. E. WILLIAMSON, Clerk

KENNETH J. PAINTER, Assistant Clerk

Professional Staff

- | | |
|-------------------------|-----------------------------|
| ANDREW STEVENSON | JAMES M. MENDER, Jr. |
| KURT BORCHARDT | WILLIAM J. DIXON |

SUBCOMMITTEE ON TRANSPORTATION AND AERONAUTICS

HARLEY O. STAGGERS, West Virginia, Chairman

- | | |
|----------------------------------------|-----------------------------------------------------|
| SAMUEL N. FRIEDEL, Maryland | SAMUEL L. DEVINE, Ohio |
| JOHN JARMAN, Oklahoma | GLENN CUNNINGHAM, Nebraska |
| J. J. PICKLE, Texas | HOWARD H. CALLAWAY, Georgia¹ |
| DANIEL J. RONAN, Illinois | ALBERT W. WATSON, South Carolina² |
| JOHN BELL WILLIAMS, Mississippi | |

¹ Resigned June 23, 1965.
² Appointed June 23, 1965.

CONTENTS

	Page
Hearings held on—	
May 19, 1965.....	1
May 25, 1965.....	39
June 29, 1965.....	101
June 30, 1965.....	139
Presidential message.....	2
Text of H.R. 5863.....	4
Report of—	
Bureau of the Budget.....	4
Commerce, Department of.....	6
Defense, Department of.....	6
Federal Aviation Agency.....	7
Housing and Home Finance Agency.....	6
Interstate Commerce Commission.....	5
Statement of—	
Bridwell, Lowell K., Deputy Under Secretary for Transportation, Department of Commerce.....	39
Brown, Hon. Virginia Mae, Commissioner, Interstate Commerce Commission.....	111
Connor, Hon. John T., Secretary of Commerce.....	39
Giamo, Hon. Robert N., a Representative in Congress from the State of Connecticut.....	19
Gilman, Roger H., Port of New York Authority, representing Amer- ican Society of Civil Engineers.....	171
Harris, R. A., treasurer, Railway Progress Institute.....	130
Helstoski, Hon. Henry, a Representative in Congress from the State of New Jersey.....	17
Henderson, Hon. David N., a Representative in Congress from the State of North Carolina.....	34
Irwin, Hon. Donald J., a Representative in Congress from the State of Connecticut.....	23
Keith, Hon. Hastings, a Representative in Congress from the State of Massachusetts.....	12
Kirby, Robert E., group vice president, industrial group, Westing- house Electric Corp.....	162
Lennartson, N. A., president, Railway Progress Institute.....	130
Lich, Richard L., chairman, Committee on Passenger Traffic, Railway Progress Institute.....	130
Longhurst, Howard R., Assistant Director, Bureau of Railroad Safety and Service, Interstate Commerce Commission.....	111
Martin, C. D., Jr., Under Secretary for Transportation, Department of Commerce.....	39
Monagan, Hon. John S., a Representative in Congress from the State of Connecticut.....	31
Nelson, Robert A., Director, Transportation Research, Department of Commerce.....	39
Olsen, Hon. Arnold, a Representative in Congress, from the State of Montana.....	33
Patten, Hon. Edward J., a Representative in Congress from the State of New Jersey.....	26
Pell, Hon. Claiborne, a U.S. Senator from the State of Rhode Island.....	8
Pfahler, Robert D., Director, Bureau of Railroad Safety and Service, Interstate Commerce Commission.....	111
Reuss, Hon. Henry S., a Representative in Congress from the State of Wisconsin.....	104

Statement of—Continued	
Rhodes, Dr. Robert G., Assistant Director, Bureau of Economics, Interstate Commerce Commission.....	Page 111
St. Onge, Hon. William L., a Representative in Congress from the State of Connecticut.....	36
Saunders, Stuart T., chairman of the board, the Pennsylvania Railroad Co.....	139
Seifert, William W., assistant dean of engineering, Massachusetts Institute of Technology.....	122
Siekles, Hon. Carlton R., a Representative in Congress from the State of Maryland.....	32
Walsh, Marvin E., vice president and general manager, Safeway Trails, Inc.....	167
Webb, Hon. Charles A., Chairman, Interstate Commerce Commission.....	111
Additional material submitted for the record by—	
Aerospace Industries Association, statement.....	180
AFL—CIO, letter from Andrew J. Biemiller, director, department of legislation.....	192
Air Transport Association, letter from S. G. Tipton, president.....	191
Amalgamated Transit Union:	
Letter from John M. Elliott, international president.....	188
Proposed amendment to H.R. 5863.....	189
American Machine & Foundry Co., letter from Carter Burgess, chairman.....	187
Boston Chamber of Commerce, Mass Transportation Committee, statement by Robert M. Jenney.....	177
Bureau of the Budget, letter from Raymond T. Bowman, Assistant Director for Statistical Standards.....	186
Commerce & Industry Association of New York, Inc., letter from Garrard W. Glenn, chairman, commuter transportation committee.....	191
Commerce Department:	
Delegation of authority, duties, and responsibilities of the Under Secretary of Commerce for Transportation, order of May 11, 1965, from Federal Register of May 25, 1965.....	102
Ground transportation study, explanatory statement on, conducted by transportation research staff.....	46
Letter from Alan S. Boyd, Under Secretary for Transportation.....	184
Letter from Hon. John T. Connor, Secretary.....	101
Letter from Clarence D. Martin, Under Secretary for Transportation.....	95
Connecticut Development Commission, statement.....	178
Eastern Railroad Presidents Conference, letter from.....	187
Garrison, Prof. W. L., letter from.....	188
Housing and Home Finance Agency, letter from Hon. Robert C. Weaver, Administrator.....	183
Interstate and Foreign Commerce Committee:	
Letter from Hon. Oren Harris, Chairman, to Hon. Robert C. Weaver, Administrator, Housing and Home Finance Agency.....	182
Letter from Hon. Harley O. Staggers, chairman, Subcommittee on Transportation and Aeronautics, to Dr. Raymond T. Bowman, Assistant Director for Statistical Standards, Bureau of the Budget.....	185
National Planning Association, statement by Sumner Myers.....	179
New England Council for Economic Research & Development, letter from Gardner A. Caverly, executive vice president.....	189
Pennsylvania Railroad, Co.:	
Letter from Stuart T. Saunders, chairman of the board.....	162
Summary of commuter projects.....	143
Railway Labor Executives' Association:	
Proposed amendment to H.R. 5863.....	182
Statement by Donald S. Beattie, executive secretary-treasurer.....	181
Railway Progress Institute:	
Letter from Nils A. Lennartson, president.....	161
Position of the committee on passenger traffic.....	132
Volpe, John A., Governor of Massachusetts, letter from.....	187

COMMERCE DEPARTMENT TRANSPORTATION RESEARCH

WEDNESDAY, MAY 19, 1965

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON TRANSPORTATION AND AERONAUTICS
OF THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to call, in room 2123, Rayburn House Office Building, Hon. Harley O. Staggers (chairman of the subcommittee) presiding.

Mr. STAGGERS. The subcommittee will come to order.

The Subcommittee on Transportation and Aeronautics this morning is opening hearings on H.R. 5863 and identical bills having to do with the authorization of transportation research and development by the Department of Commerce into methods of improving the national transportation system. The identical bills are H.R. 5944, introduced by Mr. Patten, of New Jersey; H.R. 6088, introduced by Mr. Monagan, of Connecticut; H.R. 8155, introduced by Mr. Giaimo, of Connecticut; and H.R. 8316, introduced by Mr. Helstoski, of New Jersey.

The legislation was prepared by the Secretary of Commerce to carry out the intent of the Presidential message of March 4, that strides be taken in the field of rail transportation similar to those in the fields of air and highway transportation, with particular attention to the densely populated northeast "corridor" between here and Boston.

The language of the bill is extremely broad, and I am sure that we shall look forward with interest to the discussion of the actual program envisaged by the Secretary of Commerce to accomplish the Presidential purpose and to be authorized by this proposed legislation.

This morning we are hearing from Members of Congress who are interested in the legislation, and next Tuesday we shall hear from the Secretary of Commerce and his associates concerning the sponsorship of the program, and next Wednesday we shall hear from the Interstate Commerce Commission and others who are interested in this subject.

At this time we will have inserted into the record the Presidential message, a copy of H.R. 5863, and also the reports of the different agencies involved in this.

(The documents referred to follow:)

[H. Doc. No. 101, 89th Cong., 1st sess.]

PROPOSED LEGISLATION FOR HIGH-SPEED GROUND TRANSPORTATION RESEARCH AND DEVELOPMENT

Communication from the President of the United States transmitting a draft of proposed legislation entitled, "A bill to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation, and for other purposes"

THE WHITE HOUSE,
Washington, March 4, 1965.

HON. JOHN W. MCCORMACK,
Speaker of the House of Representatives,
Washington, D.C.

DEAR MR. SPEAKER: I am pleased to transmit to Congress proposed legislation for high-speed ground transportation research and development. This legislation will help us to bring scientific and technical talent to bear on an increasingly important area of transportation not previously subject to intensive, continuing inquiry.

The life of every citizen is influenced by transportation service. This vast economic activity not only absorbs one out of every five GNP dollars; it shapes the environment in which we live and work. Advances in our transportation system must constantly be made if we are to continue to enjoy growth and prosperity—and if America is to be a livable Nation.

The last three decades have produced great technological achievements in air and highway transportation. Commercial planes today fly three times as fast as they did in the 1930's. Automobiles speed along modern highways at greatly reduced traveltime. The progress of our rail transportation system, unfortunately, has not matched these strides.

I believe the power of science and technology, demonstrated so well in the evolution of air and highway travel, can be utilized in the solution of other transportation problems, especially rail transportation.

Striking advances in intercity ground transportation—advances in speed, reliability, comfort, and convenience—are needed and possible. In the last 50 years, intercity freight tonnage has risen 4 times, and passenger travel has increased 25-fold. In 1960, Americans traveled over 600 billion passenger-miles, exclusive of local movement. That figure will more than double by 1980.

We face an imminent need for improved intercity transportation in the densely populated area along the east coast—between Washington and Boston—where travel is expected to increase by 150 to 200 percent between 1960 and 1980. Freight shipments during the same period may nearly double. Other such "corridors" can be identified throughout the Nation. Advances in the transportation of goods and people safely, reliably, and economically in one densely populated area will be directly applicable to other regions.

It is clear that we should explore the feasibility of an improved ground transportation system for such heavily traveled corridors. The program outlined by the Secretary of Commerce calls for research on materials, aerodynamics, vehicle power and control, and guideways. Information requirements for regional studies and evaluations are to be defined and the necessary data collected. We must learn about travel needs and preferences, in part through the use of large-scale demonstration projects. New methods of analyzing the problem will be developed to give adequate consideration to the large number of regional and local characteristics which influence the performance, acceptability, and cost of all kinds of systems.

The task is large and complex. Evolutionary improvement in the existing railroad system must be compared to much more radical and longer term developments. Systems proposed must be compatible with urban transportation plans. The research and development activity will require the services of many outstanding scientists, engineers, administrators, and business executives. But I know that we will find the skills in industry, in the universities, and in government—both national and local—to do the job. The consequences of beginning now will be vital, for experience has demonstrated to us that dollars spent in sound research and development produce benefits many times over.

Sincerely,

LYNDON B. JOHNSON.

A BILL To authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of Commerce is authorized to undertake research and development in high-speed ground transportation for the purpose of improving the national transportation system. In exercising this authority, the Secretary may lease, purchase, develop, test, and demonstrate new facilities, equipment, techniques and methods, and conduct such other activities as may be necessary to accomplish the purposes of this Act.

SEC. 2. The Secretary is authorized to collect transportation data, statistics, and other information which he determines will contribute to the improvement of the national transportation system.

SEC. 3. In carrying out the purposes of this Act, the Secretary is authorized to enter into agreements and to contract with public or private agencies, institutions, organizations, and individuals, without regard to sections 3648 and 3709 of the Revised Statutes (31 U.S.C. 529; 41 U.S.C. 5). The Secretary is further authorized to appoint, subject to the civil service laws and regulations, such personnel as may be necessary to enable him to carry out his functions and responsibilities under this Act. The Secretary is further authorized to procure services as authorized by section 15 of the Act of August 2, 1946 (5 U.S.C. 55a), but at rates for individuals not to exceed \$100 per diem, unless otherwise specified in an appropriation act.

SEC. 4. In carrying out the purposes of this Act, the Secretary shall consult and cooperate with the Administrator of the Housing and Home Finance Agency and such other departments and agencies as he deems appropriate.

SEC. 5. There are hereby authorized to be appropriated such sums as may be necessary to carry out the purposes of this Act. Such appropriations when so specified in appropriation acts shall remain available until expended.

STATEMENT OF PURPOSE AND NEED FOR LEGISLATION TO AUTHORIZE THE SECRETARY OF COMMERCE TO UNDERTAKE RESEARCH AND DEVELOPMENT IN HIGH-SPEED GROUND TRANSPORTATION AND FOR OTHER PURPOSES

The purpose of the proposed legislation is to authorize the Secretary of Commerce to carry out activities relating to the development of high-speed ground transportation, thereby contributing to the improvement of the national transportation system.

Efficient surface transportation has always been a vital force in promoting the economic growth of our Nation. The President has emphasized that we must improve ways of transporting people and goods safely, reliably, and economically over relatively short distances in densely populated areas.

The northeast corridor and other densely populated areas face critical intercity transportation problems which require the application of advanced technology to ground transportation systems. The proposed legislation would authorize research and development activities which could be expected to result in the development of more efficient and economical intercity transportation systems. It should be emphasized that the proposed legislation is not limited to a consideration of the transportation needs of the northeast corridor, nor should it be regarded as being for the sole benefit of one particular region of the Nation. On the contrary, the activities to be conducted would be beneficial for the Nation as a whole, and would assist during the coming years in the solution of the transportation problems of densely populated regions in the Nation.

The proposed legislation is not designed to benefit or to concentrate solely on one particular type of transportation. Wholly new kinds of vehicles, guideways and operational and control systems may evolve from concentrated technological research in high-speed ground transportation. Such results can be foreseen within the scope of present and foreseeable technology. A new high-speed ground transportation system would differ radically from passenger trains and railways as we know them today.

The research and development activity which would be carried out under the proposed legislation would be accomplished in cooperation with all relevant elements of our present transportation system, whether privately or publicly owned and operated.

Initial demonstration projects utilizing present railroad technology would be conducted with Federal participation. Such projects would involve relatively low-cost improvements in present rail service, for the purpose of measuring market response to higher rail speeds, variation in fares, greater travel comfort and convenience, and more frequent service.

In order to determine the demand for transportation and to evaluate the relative economic efficiency of different systems, section 2 of the proposed legislation would authorize the collection of transportation data and statistics. This data is essential in arriving at sound policy decisions in the future regarding high-speed ground transportation as well as other decisions on the improvement of the national transportation system. Present statistical programs do not fully meet these needs. For example, origin and destination data on travel and more complete and accurate information on travel patterns during periods of peak use are needed. Also needed are standard statistical definitions and location codes.

It is anticipated that work performed during the next 3 years will be sufficient to permit decisions to be made concerning future activities in high-speed ground transportation. Clearly there will continue to be need for carrying on fundamental research and development in ground transportation systems as well as to continue collection of adequate transportation statistics. There may also be a basis for pioneering development of new ground transportation systems in the northeast corridor and in other areas of the Nation.

[H.R. 5863, 89th Cong., 1st sess.]

A BILL To authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of Commerce is authorized to undertake research and development in high-speed ground transportation for the purpose of improving the national transportation system. In exercising this authority, the Secretary may lease, purchase, develop, test, and demonstrate new facilities, equipment, techniques, and methods, and conduct such other activities as may be necessary to accomplish the purposes of this Act.

SEC. 2. The Secretary is authorized to collect transportation data, statistics, and other information which he determines will contribute to the improvement of the national transportation system.

SEC. 3. In carrying out the purposes of this Act, the Secretary is authorized to enter into agreements and to contract with public or private agencies, institutions, organizations, and individuals, without regard to sections 3648 and 3709 of the Revised Statutes (31 U.S.C. 529; 41 U.S.C. 5). The Secretary is further authorized to appoint, subject to the civil service laws and regulations, such personnel as may be necessary to enable him to carry out his functions and responsibilities under this Act. The Secretary is further authorized to procure services as authorized by section 15 of the Act of August 2, 1946 (5 U.S.C. 55a), but at rates for individuals not to exceed \$100 per diem, unless otherwise specified in an appropriation Act.

SEC. 4. In carrying out the purposes of this Act, the Secretary shall consult and cooperate with the Administrator of the Housing and Home Finance Agency and such other departments and agencies as he deems appropriate.

SEC. 5. There are hereby authorized to be appropriated such sums as may be necessary to carry out the purposes of this Act. Such appropriations when so specified in appropriation Acts shall remain available until expended.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D.C., May 18, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives,
Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your request for our views on H.R. 5863, a bill to authorize the Secretary of Commerce to undertake research

and development in high-speed ground transportation, and for other purposes. The bill would authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation and to collect transportation data and statistics for the purpose of improving the national transportation system.

H.R. 5863 is identical with the draft bill which the President forwarded to the Congress on March 4, 1965. In his letter accompanying the bill, the President stressed the need for increasing the speed, reliability, comfort and convenience of intercity ground transportation and stated his conviction that the power of science and technology can be utilized to improve ground transportation.

Enactment of H.R. 5863 would be in accord with the program of the President.

Sincerely yours,

PHILIP S. HUGHES,
Assistant Director for Legislative Reference.

INTERSTATE COMMERCE COMMISSION,
Washington, D.C., May 17, 1965.

HON. OREN HARRIS,
*Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.*

DEAR CHAIRMAN HARRIS: In response to your request of the Commission's views on the bill, H.R. 5863, introduced by you, to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation, I am authorized to submit the following comments:

H.R. 5863 would authorize the Secretary of Commerce to conduct demonstration projects to test the feasibility and effectiveness of new ground transportation facilities, equipment, and techniques. We understand that the projects contemplated would include all forms of ground transportation, and would take into consideration the transportation needs of all parts of the country. It appears that the initial project would be directed at improving rail service within the northeast corridor.

The activities contemplated by H.R. 5863 are very broad and in all phases of these contemplated activities we will no doubt have a mutual interest. For example, in the *Railroad Passenger Train Deficit* case, 306 ICC 417 (1959), the Commission recognized that the preservation of intercity rail passenger service was an important element of our national transportation system and that much further development and improvement is essential to the economic growth of the Nation. In that proceeding the Commission also recognized the desirability of continued experimentation with new types of equipment, service, and fares designed to improve rail passenger transportation.

The Commission realizes that our expanding economy and increasing population places a burden on all forms of transportation, and it recognizes the necessity for research and development in all modes of surface transportation. Accordingly, we favor the general objectives of the bill.

We wish to point out, however, that even though some demonstration projects, using new rail equipment or fare innovations may be able to get underway within the next 2 years, it may be several years before the useful results of these projects can be adopted for normal operating purposes. Also some research and development projects designed to explore transportation facilities not in operation today, if successful, may take many years before they become operational. We mention this to point out that the program authorized by this bill should not be regarded as a substitute for the immediate and pressing problem of providing adequate transportation by rail and other modes particularly within the congested urban areas of the Nation. Since H.R. 5863 does not specifically exempt any activity which it proposes for the Department of Commerce from the provisions of the Interstate Commerce Act, we assume that all such activities would be subject to the provisions of the act. If the Secretary of Commerce desires certain of the proposed activities to be exempt from our jurisdiction, then we suggest that specific exemptions be included in the bill. We would be happy to cooperate with the committee and the Department of Commerce in drafting specific amendments to the bill that would accomplish this purpose.

The Commission is willing to supply transportation statistics or other information at its disposal, and it will certainly cooperate with the Secretary of Commerce in the research and development projects undertaken under H.R. 5863 or wherever our help is needed.

Since the program would be administered by the Department of Commerce, the Commission offers no comments respecting the adequacy or reasonableness of the specific provisions contained in the bill.

Sincerely yours,

J. W. BUSH,
Acting Chairman, Committee on Legislation.
JOHN W. BUSH.
LAURENCE K. WALRATH.

GENERAL COUNSEL OF THE DEPARTMENT OF COMMERCE,
Washington, D.C., March 29, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives,
Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your request for the views of this Department concerning H.R. 5863, a bill to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation, and for other purposes.

H.R. 5863 is for the same purpose as the draft bill transmitted to the Congress by the President on March 4, 1965. The Department of Commerce urges early enactment of H.R. 5863 for the reasons set forth in the President's letter and in the statement of purpose and need for the legislation submitted with the President's letter.

We have been advised by the Bureau of the Budget that enactment of H.R. 5863 would be in accord with the program of the President.

Sincerely,

ROBERT E. GILES.

HOUSING AND HOME FINANCE AGENCY,
Washington, D.C., May 24, 1965.

Subject: H.R. 5863, 89th Congress (Representative Harris).

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives,
Washington, D.C.

DEAR MR. CHAIRMAN: This is in further reply to your request for our views on H.R. 5863, a bill to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation, and for other purposes.

This Agency recommends enactment of H.R. 5863.

As the President has pointed out, the research and development authority proposed in the bill would help to bring scientific and technical talent to bear on an increasingly important problem area of our national transportation system.

We are pleased to note that the bill provides for consultation and cooperation between the Secretary of Commerce and the Housing Administrator. The proposed research and development will be closely related to intraurban transportation research and development assisted by this Agency under the Urban Mass Transportation Act of 1964. We anticipate that the two programs would be able to provide each other considerable mutual benefit.

We have been informed by the Bureau of the Budget that the enactment of this legislation would be in accord with the program of the President.

Sincerely yours,

ROBERT C. WEAVER, *Administrator.*

GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE,
Washington, D.C., April 6, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives,
Washington, D.C.

DEAR MR. CHAIRMAN: Reference is made to your request for the views of the Department of Defense with respect to H.R. 5863, 89th Congress, a bill to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation, and for other purposes.

The purpose of the bill is to authorize the Secretary of Commerce to carry out activities relating to the development of high-speed ground transportation thereby contributing to the improvement of the national transportation system.

The Department of Defense is interested in a strong, reliable national transportation system for both freight and passengers. Accordingly, the enactment of H.R. 5863 is recommended.

The Bureau of the Budget advises that the enactment of H.R. 5863 would be in accord with the President's program.

Sincerely,

L. NIEDERLEHNER,
Acting General Counsel.

FEDERAL AVIATION AGENCY,
OFFICE OF THE ADMINISTRATOR,
Washington, D.C., May 29, 1965.

HON. OREN HARRIS,
*Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives,
Washington, D.C.*

DEAR MR. CHAIRMAN: The following are the views of the Federal Aviation Agency on H.R. 5863, H.R. 5944, and H.R. 6088, bills to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation and for other purposes.

We favor the enactment of this legislation. It represents a part of a major effort on the part of the Government to see to it that a transportation system is developed which will be adequate to meet the needs of the people and the commerce of this Nation.

The high-speed ground transportation project will not be in competition with our efforts to foster and encourage air commerce. The contrary is true. Ground transportation supports and complements our air transportation system. In fact, the usefulness and attractiveness of air transportation is coming more and more to depend on ground transportation systems capable of moving the air passenger quickly between the airport and the city. The ground traveltime for the air passenger on a given trip sometimes equals or exceeds the air traveltime.

Of all the modes of transportation comprising the national transportation system, high-speed ground transportation is the most undeveloped. The progress we have made in air transportation during the relatively short span of its existence has been due in large part to a heavy emphasis in our industry on research and development programs. The R. & D. program which these bills would authorize would begin such a program for high-speed ground transportation, and we recommend a substantial R. & D. program as essential to provide a basis on which to build a high-speed system.

There are, of course other research projects underway which will contribute to a solution of the problem of moving people quickly from city center to city center. We have been working on the development of vertical and short takeoff aircraft. A complete answer to the problem will not be found in the utilization of only one mode of transport and these research projects should proceed simultaneously.

Section 2 of these bills authorizes collecting of transportation data for the improvement of the national transportation system. There has never been adequate information or data available to properly assess and evaluate the country's total transportation system. We do not know, for example, the exact volumes of people and goods moving from point to point and the characteristics of this traffic, nor the reasons why it moves, nor the costs involved. Unless we obtain answers to these and a host of other questions, we run the risk of funding, designing, and developing systems with characteristics which do not best meet the needs of our traffic. With adequate facts, we have a much better prospect of developing the most efficient and effective air, highway, rail, and water transportation systems.

The Bureau of the Budget has advised that there is no objection from the standpoint of the administration's program to the submission of this report to your committee.

Sincerely,

N. E. HALABY, *Administrator.*

Mr. STAGGERS. The first witness this morning will be our colleague, a member of this committee, the Honorable Hastings Keith from Massachusetts.

Mr. KEITH. I would be glad to defer to our colleague from the other side, if you like, Mr. Chairman.

Mr. STAGGERS. We will be very happy then, at this time, since our colleague has agreed to defer his time, to hear from the Honorable Claiborne Pell, Senator from Rhode Island.

Senator, will you come forward?

STATEMENT OF HON. CLAIBORNE PELL, A U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator PELL. Thank you, Mr. Chairman. Thank you very much, Mr. Keith.

I have another committee in which I am supposed to make the quorum on the other side. I am most grateful to you for this opportunity.

Mr. Chairman, I appreciate very much this opportunity to appear before your subcommittee to testify in favor of H.R. 5863 which authorizes the Secretary of Commerce to undertake research and development and demonstration projects in high-speed ground transportation.

I have a longstanding interest in this project, and I therefore fully support the bill before you today. Back in 1962, I first suggested that steps should be taken to provide high-speed intercity rail service in the densely populated megalopolis stretching from here to Boston.

I introduced at that time, and reintroduced in the 88th Congress, a bill authorizing the negotiation of an eight-State public authority to provide such service, and the same bill again has been introduced in the 89th Congress as Senate Joint Resolution 16.

In 1963, the Department of Commerce was directed to undertake feasibility studies of my plan. The first phase of these studies were completed last summer and led to the recommendation for the substantially expanded program of experimentation and development which is envisioned in H.R. 5863.

Under the immediate experimentation phase of the administration's program, I am advised that we may see a partial realization next year of my initial proposal of 100-mile-per-hour intercity rail service in the Nation's first megalopolis. I am particularly hopeful that this phase of the program be fully supported so that it will yield meaningful results on which to base future Government policy.

I cannot emphasize too strongly the very special interest which the whole New England area, and in particular my home State of Rhode Island, has in this demonstration phase of the program.

We are faced with the possible discontinuance of rail passenger service altogether by our principal trunkline, the New Haven Railroad, which has been in receivership since 1961.

While I realize that the demonstration program contemplated in H.R. 5863 would in no sense be a permanent Federal relief program for the New Haven Railroad—nor should it be—it does seem to me that the Federal demonstration project would be of inestimable assistance as a guide to future public policy regarding public carriers like the New Haven.

The demonstration program could, in fact, show whether and to what degree the public will return to rail service which in our area has deteriorated so badly that patrons have actually been driven to use other modes of transportation.

Our State governments are now being asked to underwrite the deficit of this intercity rail service in our area, but they are understandably reluctant to do so under existing conditions.

The introduction of new, improved equipment on a trial basis under the Federal demonstration program could, I believe, help us all immeasurably to gage the public response to such service and to formulate public policy accordingly. I am especially hopeful that a portion of the demonstration project will take place between Providence and Boston.

The second, long-range phase of the administration program goes considerably beyond my original proposal and authorizes a farsighted and comprehensive program of research and development which could lead to entirely new concepts of very high-speed ground transportation, designed especially to service large areas of high population density where it will become increasingly difficult to provide adequate transportation for an expanded population by existing modes of transportation.

The time is fast approaching, Mr. Chairman, when our crowded megalopolitan areas will be running out of ground space on which to build superhighways and airports, except at prohibitive costs, and we therefore must start the search now for imaginative alternatives.

I therefore fully support the long-range phase of this administration program as well as the immediate demonstration phase.

Finally, I believe that the administration's program has universal meaning for the whole country, far beyond its immediate application in the northeast megalopolis.

The northeast megalopolis, which now has about 20 percent of the Nation's population living on less than 2 percent of the Nation's land, is the prototype of some 21 other superurban complexes which are already developing in other parts of the Nation.

In each of them, we are going to be faced with difficult questions of public policy as to how to insure mobility for great masses of people on the most economic and efficient terms. The quality of everyday life in the Great Society of the future will depend on how effectively we plan now to met these problems.

I thank you very much, Mr. Chairman.

Mr. STAGGERS. Thank you, Senator, for giving time to us, and for the benefit of your views, and since you do have another committee meeting, we will not hold you. I would just like to say that in your statement there you say that you are in favor of the Government making a demonstration, and that you are not in favor of taking over from private enterprise the development of our rail systems.

Senator PELL. No, the proposal here is one not of who will run the railroads but of the research. My own strong preference would have been that private enterprise and private carriers had engaged in this fundamental research.

The fact of the matter is that the railroad industry, particularly the passenger side of it, has devoted a smaller percentage of its gross revenue to research than virtually any other major industry. The

research must be done and if private industry won't do the research, this leaves only the Government left to do it.

Mr. STAGGERS. Just one thing to get clear on that. You do not mean that the Government would make a contract with private industry which enables you to do this?

Senator PELL. My hope and proposal is that there will be private corporations, particularly on the transportation of the future, that would be given competitive contracts and would be asked with particular grants to come up with a system.

I think if United Aircraft, General Motors, or General American Transportation or a variety of these great companies were put in competition with each other with some financial help from the Government we would find we would achieve a breakthrough.

I would prefer, naturally, if the private carriers themselves carry the cost and not the taxpayers, but I do not see that happening.

Mr. STAGGERS. Thank you very kindly for a very clear statement on the need of this transportation.

Do you have any questions Mr. Callaway?

Mr. CALLAWAY. Just one question. On this bill which is rather broad in its language on the demonstration phase, how do you perceive this? Will they actually set up high-speed trains and test them with passengers in the demonstration?

Senator PELL. Right. As I understand this bill, there will be \$2 million for general pulling together of transportation statistics that have been collected by a half dozen Federal agencies. No more studies are necessary; we have had enough studies; it is a question of using them.

The next point is this \$8 million for demonstration projects as you question me and this would be for the actual railroad service between here and Boston.

My understanding of this is that quick service, of 2 hours or 2¼ hours between here and New York or New York and Boston, might come along.

I think that is some time off and for the immediate future there will be a few trains put on schedules of maybe 2½ hours, or a little under 3 hours between here and New York. Between Providence and Boston, the straightest stretch of track that exists north of New York, there may be some new types of trains put on where you could do the round trip in under an hour.

Mr. CALLAWAY. And that is to be done during the demonstration phase?

Senator PELL. Exactly. That involves wheels and rails somewhat along the Japanese model. The other money is more for the future to see how a whole new ground transportation system might be developed. My own view is that with the growth of our population, its demands, its needs, there is going to be room for 100-mile-per-hour transportation now whatever systems may emerge from the MIT studies or others in the future.

Mr. CALLAWAY. This is to be done for \$8 million?

Senator PELL. I feel that the demonstration of it could be done for the \$8 million. I think to effectuate the 100-mile-an-hour service it will cost a great deal more than \$8 million, but the \$8 million could

demonstrate that people like to ride rails when they are given decent, clean, quick service where they are not rattled around.

Mr. CALLAWAY. Thank you, Mr. Chairman.

Mr. STAGGERS. We have with us the chairman of the full committee, Mr. Harris.

Mr. HARRIS. Mr. Chairman, I would like to thank you for the honor in extending welcome to the distinguished Senator. We observe that you and other of our colleagues were interested in the problem and made a special effort today that you might be permitted to give the benefit of your knowledge of the subject to the committee.

Senator PELL. Thank you.

Mr. HARRIS. And you have given us the benefit of your study. I have been for a long time concerned about the lack of development to meet the needs of transportation in this country. I was advised recently that research in this field by the transportation systems has been lacking.

It appears to me that the passenger transportation is doing fairly well between major cities except, of course, your way. It also appears to me that in some other areas in the country the transportation industry is trying to get out of it. I assume that means that they are trying to give way to the airlines. I have not come to any conclusion as to how we might change this trend.

The airlines cannot accommodate all of our transportation responsibilities and I do not know what the answer to it is.

It seems to me it would be in the Nation's interest if we would take the real problem, and that is from New York to Boston, if we really want to see what can be done. How to do it is something else.

Mr. SAUNDERS, chairman of the board of the Pennsylvania Railroad Co., said that company was going to have 125-mile-speed passenger transportation facility available between Washington and New York.

If I recall in the report, he told his stockholders that within a relatively short time, I have forgotten how many years, that they would have transportation at 150 miles an hour. Now if the Pennsylvania Railroad Co. or any railroad company can do that, I do not see why they do not do it. Why have they not proceeded? What is all the delay, especially in an area that needs it?

Senator PELL. I think the reason here is that the top speeds have been mentioned, the average speeds would be a little bit less. It could be done with the expenditure of some funds, the question is whether it is worth it. The Japanese railroad is a wonderful example.

Mr. HARRIS. Have you seen that operated?

Senator PELL. I have not seen the Japanese railroad. I have seen the movies and studied it. I have become impressed. Those who have ridden on it and have seen it find it completely satisfactory and very good, indeed.

The railroads in Europe approach it in speed and more important, approach it in comfort.

As I see the problem that you raise so skillfully, it is that it is a declining spiral; the poorer the service, the fewer the railroads; the bumpier the trip, the fewer people will ride it and then the fewer the railroads to service them.

What we have to do, like the poverty program, is to try to reverse the spiral and the only way I can see it being done is by a pretty sub-

stantial infusion of research. We can get along without the passenger railroad for a period of time, there is no question about it. But then as our society advances further, the areas will be too densely crowded as you say, to permit the airplane to do the whole job, and there simply will not be enough ground for enough cement to be laid out for highways. Los Angeles is a wonderful example of this where more than 60 percent of Los Angeles is now devoted to the care, maintenance and parking of automobiles.

Mr. HARRIS. I am sure if you go out to Washington National Airport on certain occasion, you do not have to go to Los Angeles to see what confusion prevails.

I would like to see some real experiment. I voted for the bill to provide Government guaranteed loans and got criticized from some of my friends, and maybe it was justified, I do not know. I was willing to take a chance on that but I do not think it worked out well. I am sorry to acknowledge that that effort did not succeed.

Senator PELL. The beauty of this bill is that it actually would promote changes in the cycle and cures, and for that reason it is not like a loan.

Mr. HARRIS. Thank you for your appearance here. We are glad to have you.

Senator PELL. I thank you very much, Mr. Chairman, for the opportunity to be here.

Your support, Mr. Staggers, would mean a tremendous amount to the success of this bill.

Mr. STAGGERS. Mr. Williams, do you have questions?

Mr. WILLIAMS. No.

Mr. STAGGERS. Our next witness will be Mr. Hastings Keith, a member of the committee.

Mr. Keith?

STATEMENT OF HON. HASTINGS KEITH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MASSACHUSETTS

Mr. KEITH. Thank you, Mr. Chairman.

Mr. Chairman, as I trust you will recall, I am Hastings Keith, Congressman from the 12th District of Massachusetts, one end of the line that has been proposed by Senator Pell and supported in certain respects by the administration and included within the confines of the Harris bill.

Mr. Chairman, it was about 10 years ago that planners, realizing the evolutionary nature of our highway network, persuaded the Congress to support the interstate highway program which is gradually nearing completion, and yet, already traffic is bumper to bumper on beltways that were only on the drawing boards a decade ago.

We are now enjoying an era of unprecedented prosperity, and that prosperity is accompanied by a boom in the automobile business which threatens to glut our Nation's highways.

Throughout our Nation, literally billions of dollars are being spent to accommodate the traveling public—and still they come. Relief can only be found in other forms of transport. The airlines and the buses have been assuming larger and larger shares of the load—the popularity of the railroads has not matched that of other modes of transportation.

The Federal Government has helped to put the railroads into the position which they now find themselves. We have spent billions on the Federal highway program which has substantially aided the trucking industry. We provide subsidies for local service airlines as well as subsidizing other services to the airports.

The economic well-being of many areas of our Nation depend heavily on the availability of an economic transportation system for both passengers and freight. In my view, if they are given a second chance, they can play a most important role, they, in that case, being the railroads.

Members of Congress have historically recognized the responsibility of the Federal Government to help private enterprise serve the public. The proposal contained in the Harris bill can be that vehicle. Inasmuch as this bill deals primarily with interstate travel, we have a legitimate interest and responsibility.

The increasing urbanization of the northeast area of the United States makes it mandatory that land use be most efficient and that our transportation systems be so planned that maximum use is made of space.

We have what will be called high density living space, most of it centered around our urban metropolitan areas. The program in this bill is to study the feasibility of high-speed ground transportation between these centers.

As we all realize, the results of these experimental demonstration projects will not be confined to solving only the problem of intercity transportation. They will undoubtedly provide valuable insight into the technological changes that can be made for mass transportation and commuter systems and, in addition, provide impetus to the renewal of feeder services which are so badly needed in many areas.

As I understand the proposal by the administration, there are many types of ground transportation that will be studied and experimented with. The technology of transportation needs updating. Larger cars, lighter weight engines, more efficient engines with higher available speeds should certainly be the subject of prime concern in this era in which we spend so much time on wheels and wings.

There is no reason why this country, the most prosperous in the world, cannot be also the most advanced when it comes to providing an efficient economical low-cost transportation system.

It may well be that some of our present ideas about ground transportation will have to be discarded as a result of the demonstration projects that will be carried on and the research that will be done under this bill. We will not know the answer to this until we try.

With the state of the art as it now stands in highway development, we are rapidly approaching the time when expressways will have maximum speeds of 75 to 100 miles an hour. This creates a very difficult problem for a large segment of our population who have the time, the inclination and, frequently, the money to travel.

I am speaking of the retired segment of our society. What will be their position in traveling on these high-speed highways? Will there be restrictions or age limits placed on drivers who will be allowed on these highway roadways? What alternative can we offer to these people who may not want to fly—who want to visit sons and daughters in cities hundreds of miles away?

It would appear to me that the development of high-speed ground transportation on an economic basis could provide a genuine solution to this singular problem.

I have the good fortune to represent Cape Cod. This area, as you know, provides recreational facilities not only for New Englanders, but, also, for those living in other parts of our country. I have been advised by the New Haven Railroad that the seasonal service from New York to Hyannis which they had operated during the summer months, will not be reintroduced this summer. This was the last vestige of passenger service to Cape Cod.

Years ago, the service between Boston and the cape, and Providence and the cape on a regular basis, was suspended.

We have done a good job in Massachusetts in providing modern highways to the cape, as well as to other parts of the Commonwealth. Despite this progress, the traffic jams that are experienced, particularly during the summertime, indicate we have much more to accomplish.

If the experiments envisioned by this bill prove to be successful—and I feel that they will—I see no end to the possibilities for the rejuvenation of feeder services to such areas as the cape. The movement of passengers to and from terminal points like Providence will take on added significance and the burden on our highways will be lightened.

Now the Congress should make an effort to equalize this situation by strengthening our railroads. The tremendous increases in population that we are experiencing require us to take a solid look at the future of ground transportation.

We are a productive society; we are, to use a phrase, "an affluent society." Retirement ages are lowering, more leisure time is becoming available—Americans during their retirement years want to see the country that they helped to build.

I believe that many of our transportation problems today might well have been avoided had there been an organized and planned approach to studying our needs a few years back. It is my hope that even at this late date we can study the problems we will be faced with and cope with them before the pressures of the times require patchwork answers and not long-range solutions.

Again, Mr. Chairman, I appreciate this opportunity to appear before your subcommittee to urge that favorable action be taken on H.R. 5863. The stability of our economy requires the existence of a viable and economic transport system. High-speed ground transportation is an integral and important part of that system.

I might say, Mr. Chairman, that over the years I have been interested in this problem because of its direct relationship to my district, and I have shared this concern with other Members of our Congress.

You may recall Mr. Sibal who served on this committee in past years. I have discussed this matter with him very often, only as recently as yesterday. He pressed for an approach of this sort during his years in the Congress and he asked me to advise the committee of his continuing interest in it.

I have also talked with Mr. Lindsay who, as you know, is a prominent Member of the Congress, and very much concerned with the problems of the megalopolis on the eastern seaboard and he, too, shares my concern and also would like to support the Harris proposal.

Thank you, Mr. Chairman.

Mr. STAGGERS. Thank you, Mr. Keith.

I certainly want to thank you for your interest in taking the time to come here and to tell us your ideas on the urgency of this legislation and the need for it at this time, especially in the area of the country which you represent, and certainly you should know conditions, having lived with them in your area.

Mr. HARRIS?

Mr. HARRIS. I wanted to say I am glad to have the comments from our esteemed colleague. I appreciate the continuing interest that he has shown on this subject matter. He is to be congratulated for his efforts on behalf of not only his own district and constituency but of the entire country.

Mr. KEITH. Thank you, Mr. Chairman.

Mr. STAGGERS. Mr. Callaway.

Mr. CALLAWAY. No questions, Mr. Chairman. I just would like to add to the congratulations of our colleague for a very concise and well-thought-out and well-prepared statement.

Mr. STAGGERS. Mr. Williams.

Mr. WILLIAMS. Thank you, Mr. Chairman. I, too, want to join others in commending the gentleman for doing a fine job of representing his constituents. I think all of us recognize the pressing need for some means to move great masses of people with rapidity, particularly in this eastern area.

I do not have any real strong feelings about this, but I would like to ask you this question.

What have the States of New York, Massachusetts, New Jersey, Pennsylvania, Maryland, and the District of Columbia done on their own initiative to try to work out this problem?

Mr. KEITH. Well, they have in the first instance, tried to solve the problem by improving the highway network because they felt that is what the people wanted, and inadvertently they perhaps have compounded the problem.

This proposal called for in the Harris bill recognizes the interstate nature of this problem. The Governors, although they have met in an effort to assist the railroads and they are continuing to do so, have indicated a willingness to make substantial adjustments in the tax burden of the railroads, they have not unfortunately, been able to do the research, that is required by such a major project as is contemplated in this bill.

This kind of research is beyond the capacity of an individual railroad or an individual State.

There are, as Senator Pell mentioned in his statement, many areas throughout the country that will be faced with this interstate problem in the years ahead because if we continue to grow as we have in the last 20 years, the living space will be at a premium and therefore there is a national need.

It is not a question that can be solved by an individual State, it is beyond their capacity, I regret to say.

Mr. WILLIAMS. I quite agree with you. My thought is this, though: I agree with you that no individual State could do the job. I wonder, however, whether the matter of entering into an interstate compact has been considered by the several States.

Mr. KEITH. There are two bills that have been filed on this subject creating an interstate compact. One approach on the Senate side provides for a stronger Federal role. A similar proposal, but with

emphasis on the State participation, State control, has been filed in the House for a New England compact, adding to that New England area, I believe for transportation purposes, New York.

I must admit that the political problems of bringing about this desired objective are almost insurmountable because of the pressure for immediate answers to more pressing local problems.

The Governors, serving for short terms, with interests in matters that have current appeal are not able to lead their constituencies in facing up to problems that are 25 and 30 years in the future; they are concerned with balancing the budgets and aid to education, redistricting of congressional delegations and so forth. The public just can't get excited about the long-range problems.

I think that the very nature of Congress makes it possible for us to approach a problem which they have been forced to shunt aside because of the current conditions.

Mr. WILLIAMS. I thank you for that explanation. That is the one thing that concerns me about this legislation; whether it is properly a Federal concern to the extent that people of Mississippi, Arkansas, Tennessee, and the many other States who do not have this problem, should be obligated to assist in its financing?

Mr. KEITH. I am glad you raised it, Mr. Williams, you have given me a chance to reflect upon it and to respond to it.

In my study of such similarly extraneous matters as oceanography and fish protein concentrate, I have found that in the foreseeable future, in the generation that belongs to our children and their children, we are going to be faced with population pressures in every portion of the country.

Within the next 50 years there will be such an increase in the population of this country that all except the most arid of areas (and with, of course, desalination of water, we may have an abundance of water for even those arid areas) there is going to be a population problem.

We in the Congress have a responsibility to recognize that as it shapes up.

Mr. WILLIAMS. I hope that question will be explored fully in these hearings.

Mr. KEITH. Thank you.

Mr. STAGGERS. Mr. Pickle.

Mr. PICKLE. Mr. Chairman, I listened with interest to the fine testimony of the able and articulate Member who I am privileged to serve with. I listened to the gentleman from Mississippi make the statement that this high-speed road makes provisions from Washington to Boston—did I understand Boston or Austin?

Mr. KEITH. You heard correctly.

Mr. PICKLE. I say that not too lightly because this may be a problem. There will be many cities wondering why they cannot be touched on this that also would be equally interested as Cape Cod.

Indeed, we might see an action someday from Boston to Austin. It is good to have you before the committee.

Mr. KEITH. If I may respond to Mr. Pickle's comment, I would think it might be reasonable to expect that any railroad which would acquire the capital improvements that had been brought to their route by reason of this experiment could be required to pay for that capital

improvement at the time it reverts from Federal control to the individual railroad control.

It might be something that would be an answer to the question that you have raised and it might be equitable.

Mr. PICKLE. Thank you, Mr. Chairman.

Mr. STAGGERS. Thank you, Mr. Keith. We appreciate your taking the time for coming and being with us. Thank you.

Mr. KEITH. Thank you.

Mr. STAGGERS. The next witness is our colleague from New Jersey, the Honorable Henry Helstoski. Mr. Helstoski, we will be glad to hear you at this time.

STATEMENT OF HON. HENRY HELSTOSKI, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. HELSTOSKI. Mr. Chairman and members of the Subcommittee on Transportation and Aeronautics, I am very grateful to have this opportunity to testify before this committee on H.R. 5863 and related bills on legislation which would authorize the research and development in high-speed ground transportation. Among the several bills which have been introduced on this subject is my bill, H.R. 8316.

I am sure that the members of this committee and the membership of the entire Congress are well aware of the necessity for rapid transportation. The rapid expansion of suburban areas has shown us a definite need for high-speed transportation from these areas to other sectors of the various communities for the residents of these suburbs.

It has been definitely shown that our present transportation difficulties will multiply substantially in the future and we must take action now to alleviate this situation. The needs of our Nation for getting from place to place keep growing just as the population of this country is growing. We must keep pace with every aspect of this growth and provide relief for this spread of population.

President Johnson, in his state of the Union address on January 4, 1965, stressed the need for development of rapid transportation into the northeastern area of the United States. At that time he said:

I will ask for funds to study high-speed transportation between urban centers. We will begin with test projects between Washington and Boston. On high-speed trains passengers could travel this distance in less than 4 hours.

The United States is suffering from a gap in the transportation field, and a large gap at that. This gap exists because we are not coordinated as to the solution of the problem with the existence of it. I think that the proposed legislation will provide the means of formulating the program for the high-speed transportation we require.

If the transportation difficulties of this Nation are to be unraveled we must provide the means to do so and this legislation is the solution to these difficulties.

A strong, efficient transportation system is essential to the well-being of our Nation; and the economic stability and growth of the Nation is threatened unless satisfactory solutions can be found to provide it.

I suggest to this committee that it give this legislation the highest priority for the planning of high-speed, comfortable, convenient rapid transit of a quality that should exceed any now available in the United States.

The urban planners that would normally form a part of the group pressing for better highways now realize that mass transportation must be improved and expanded to unclog the highways and expressways.

Some committees are already in operation on the planning of rapid transit systems. Among the many presently active in this type of planning are the Bergen County (N.J.) Transit Association and the Intermunicipal Group for Better Rail Service, another New Jersey group.

In the proposal of President Johnson, for a rapid Washington-Boston transportation system, my congressional district, the Ninth District of New Jersey, could be an integral part of this overall scheme. With a major station stop in northern New Jersey, a rapid transportation system could well bring into this area much new industry and thus raise the economic level of the people residing in the vicinity of such a system. Northern New Jersey has the necessary acreage for expansion of its industrial potential, but the problem at the present time is the saturation point of the highways carrying people to and from work. A well-operated rapid transportation system would open vast areas for U.S. industry. It would permit a worker to reach his place of employment within less time and arrive home much sooner.

But much more is at stake than merely the opportunity to get to work and back a few minutes faster or for a few cents less each day. The entire future of our American cities hangs in the balance.

There is an increasing number of people today who look at our blighted central cities and traffic jams and have come to the conclusion that large cities are obsolete. They therefore see a future in which all of us will live and work in suburbs surrounded by vast parking lots and linked together by some type of rapid mass transportation system in which we can travel in comfort in uncongested private car luxury.

It is my honest belief that the proposal contained in H.R. 5863 and in my bill, which deals with the problem of high-speed ground transportation on a national scale, is a practical solution and a definite approach to the problem. Transportation is most urgently needed in the urban and suburban areas, and the solution proposed in this legislation would make such transportation possible.

If this problem is delayed for any length of time, the transportation problem will become more acute and nearly all parts of the country will suffer economically. Industry will suffer, retail business will suffer, the public will suffer additional inconvenience, and whole communities will feel the effect of an inadequate transportation medium.

This committee should not ignore nor postpone any consideration of the legislation before it at this time. I am sure that the committee is concerned with this problem and will take early and favorable action in reporting a bill which will be far reaching in its effects toward finding a solution to this problem.

Mr. Chairman and members of the committee, I wish to thank you for the time you have given me to present my views on the many aspects of rapid transportation which is of concern to all the people of all areas of the United States.

Mr. STAGGERS. Are there any questions? If not, we thank you for your testimony, Mr. Helstoski.

Mr. HELSTOSKI. Thank you for the opportunity, Mr. Chairman.
Mr. STAGGERS. Our next witness will be Mr. Robert Giaimo.

**STATEMENT OF HON. ROBERT N. GIAIMO, A REPRESENTATIVE IN
CONGRESS FROM THE STATE OF CONNECTICUT**

Mr. GIAIMO. Mr. Chairman and members of the committee, it is a pleasure to appear before your subcommittee this morning to express my support of your distinguished chairman's bill, H.R. 5863.

Mr. HARRIS. May I interrupt and say to our distinguished colleague and our other colleagues who are here that I join the members of this committee in welcoming you? We appreciate the contribution you are making for the record.

I regret I am going to have to go to the Rules Committee on the call of the committee on a bill that we have reported. I will not be able to stay for your entire presentation, but I did want you to know I am interested in your problem, and to the extent possible I shall be glad to cooperate trying to work out some practical, reasonable approach to it.

Mr. GIAIMO. Thank you, Mr. Chairman.

No blueprint for the Great Society can be effective as a building guide without some provision for moving the masses of people in the great metropolitan areas becoming more densely populated with each passing year.

The legislation before you offers this Congress similar opportunity to strike at several desirable goals which have long eluded us as a nation. In the first place, the national transportation policy, or at least guidelines for a national transportation policy, may emerge from the collection of the mass of data and from the research and development projects to be undertaken by the Secretary of Commerce.

Demonstration projects authorized under this legislation will serve as models for high-speed ground transportation on systems not only in the Washington-Boston corridor where recurring crises and present rail service cry for immediate action but in other metropolitan areas of the country fast becoming giant megalopoli through mushrooming urban sprawl.

Thirdly, whole new concepts in high-speed ground transportation will have to be found and made workable in order to assure the safe, efficient movement of the national population expected to exceed 200 million by 1975.

These research and development programs hopefully will do this. In that same context we know as a nation that economic growth and prosperity can be maintained only if we have dependable high-speed ground transportation geared to constantly changing needs of a dynamic society.

In terms of dollars spent and its effect on the lives of all Americans, transportation is our most important industry today.

Finally, such information as we may gain from the research and development projects authorized under this legislation can help to revitalize faltering rail lines to a point where hopefully they will become self-sufficient and put an end to the state of request for Federal guarantees of lifesaving loans by these carriers.

That is not to say that we are turning our backs on vital rail lines in financial trouble, far from it. What we are doing instead is tryin'

a new method of approach, giving them solid alternative means of remaining in business and thus the Federal Government will have lived up to its responsibility.

There is one recommendation that I would offer this honorable committee. The distinguished Senator from Rhode Island, the Honorable Claiborne Pell, whom I have been pleased to join in sponsoring other rail transportation bills, has already commented on it publicly and that is to request that the Secretary of Commerce place a major portion of the research and development work in the hands of private industry on a competitive basis.

There were several reasons for doing this. The Department of Defense has had remarkable success in its design and development program for aircraft and missile systems by giving grants to several competing industries which can come up with the best product at reasonable cost.

This can be done in the transportation industry, I am sure. A number of manufacturers in the field have already done considerable work on the technology of high-speed ground transportation of the future.

Research grants will speed this work and hasten the time when new systems are in operation. In addition, I believe the Government can get the most from its research dollars by stimulating private competition for new breakthroughs in transportation.

There is an anomaly in transportation today. Science and technology have rejuvenated air and highway travel so air travelers can span the continent in 3 hours and motorists can speed between distant points in no time on superhighways, and yet our rail transportation has marked time offering the same travel time between stations as a generation ago.

I firmly believe that modern technology can produce new modes of ground transportation that will make possible 100-mile-an-hour intercity service in the near future. Experts have said existing rights-of-way can handle such speeds. What is needed is the new vehicle and controls.

The President has recognized the urgent need for intercity ground transportation and I am happy to commend him for asking for the introduction of legislation calling for the development of new systems.

In his message to Congress, the President dramatized the growing urbanization of this Nation. He reminded us intercity passenger travel has increased 25-fold since 1915 and that freight tonnage increased fourfold in that time.

The transportation problem, of course, is acute in the Northeast megalopolis. This area stretching from Boston to Washington, and soon to include the land down to Norfolk, is the home of 47 million people, 20 percent of the Nation's population living on 2 percent of the land.

Similar problems are arising throughout the country with increased urbanization but the problems facing the Northeast are typical of the urgency of this crisis.

Almost 30 percent of the Nation's manufacturing is done in this area. It includes 21 percent of our retail establishment. The headquarters of our whole financial community is in the Northeast. It

is the most important single industrial area of the United States and the most valuable piece of its real estate. It provides 27 percent of our Federal income tax. If there ever was an industrially and economically important area in the United States where transportation facilities should be expanding and improving, it is in the Northeast.

We must keep open the vital supply lines from the heartbeat of the Nation's economy.

The New Haven Railroad is one of these and with help in the form of development programs and demonstration projects, this line can be made healthy once again.

What we do to revive the New Haven Railroad can be applied to other key service lines all over the country. The New Haven Railroad is the principal line between New Haven and the huge New York transportation center. New England is an area of 17 million people. Connecticut and Massachusetts alone account for over 10 percent of all prime military contracts. Connecticut is fourth in space contracts and high in individual military contracts.

More than 70 percent of the work of the United Aircraft Corp., for example, is for the Government. The New London Submarine Base, Otis Air Force Base, and Quonset Point Naval Station are located in New England.

I say there is wisdom as well as longrun economy in doing something now to help the existing rail lines. Transportation officials who have made studies of the problem agree that it costs much less to save these lines than to build completely new rights-of-way stations, maintenance facilities, and operating equipment.

This Nation has long needed a national transportation policy and approval of this legislation would be a good start in that direction. There is no better place to start our record of developing a new high-speed ground transportation system than in the Northeast megalopolis where the need for this service is so urgently needed and so patiently awaited.

Mr. STAGGERS. Thank you very kindly for your statement and going over the needs in this area. I also want to congratulate you for your attention to the need for this which I am certain today is urgent.

You mentioned the fact of it being a model. Now if this is acute in your area at the present time, if this is the model, you say it could be used across the Nation in other areas as it develops for the rest of the country or perhaps even now of their needs?

Mr. GIAIMO. I think it is important that we get started in this program and recognize it as a national problem, not just a local problem or a northern problem, because, although we are having the emergency immediate at the moment, I think it is just a matter of a very short time before we are going to be confronted with this in many other areas.

Whatever we learn in one area, and certainly whatever we can learn in a critical area such as the Northeast, is going to inure to our benefit throughout the country and to the entire national interest.

Mr. STAGGERS. This would contribute to the national welfare?

Mr. GIAIMO. I think it would. We have got to get started on this problem because it is a national problem and it is rapidly mushrooming on us.

Mr. STAGGERS. At least it is the forerunner of the conditions we can foresee.

Mr. GIAIMO. In the very near future.

Mr. STAGGERS. Thank you very kindly.

Mr. Williams?

Mr. WILLIAMS. Mr. Chairman, I simply wish to echo the comments which you made to the witness and to say that I congratulate him on his splendid statement.

Mr. GIAIMO. Thank you, Mr. Williams.

Mr. STAGGERS. Mr. Devine.

Mr. DEVINE. Thank you, Mr. Chairman.

Mr. Giaimo, I think the last point you made in response to our chairman's question that this is a national problem is probably important to the success of legislation of this nature. Many people across the country are not necessarily sympathetic with providing fast transportation from Boston to New York or from New York to Washington or in this particular New England area, but if this can be sold on the basis that this is a forerunner of high-speed transportation nationwide, I think it would meet with more success because a lot of people are not particularly sympathetic with the failures of the New Haven Railroad.

A lot of people seem to feel, "Well, if they could not get it this way they try to get it another way." The question recurs whether or not this is a national responsibility or something which can be done by the free enterprises system or by the States involved.

Mr. GIAIMO. I agree with you, Mr. Devine. I think the peculiar significance of the New Haven Railroad and the New England area is that it is pointing out very dramatically what is going to happen in other areas, in San Francisco and certainly in the Los Angeles area: in the areas around the Chicago industrial complex, in the Middle West.

Right here in the District of Columbia there is a great need for example, for mass transit. We are rapidly approaching the point where highways are not going to be able to service the 200 million or more Americans that we are going to have, not in the far future but within the next 10 or 15 years.

If we do not have a modern rail system capable of moving large numbers of people to and from large metropolitan areas where people are congregating more and more, then we are going to certainly be in a very difficult position.

Yet in this particular industry, the railroad industry, there has been very little progress for many years, more than a generation, in fact. We are still progressing along the lines that we did a generation and more ago.

Mr. DEVINE. Are you aware of any efforts by the existing transportation companies, the railroads particularly, or independent or private research industries?

Mr. GIAIMO. I am aware of private research that is going on, some with railroads, but other research which is going on with large industries, for example, aircraft industries who have directed a great deal of attention and research to the possibility of modern rail transportation systems.

When we speak of future modern type transportation systems, you know there is the far out type of future trains, for example, traveling

through tubes, underground and all of that. Then there is the less far out type of research trying to utilize existing roadbeds with some adaptation and modification and improvement, trying to use existing roadbeds and to have trains that can use them at speeds of 100 or 125 miles an hour rather than the concepts that we have all heard about and read about of trains, for example, that can travel in excess of 200 and 300 miles an hour.

I am aware of research on the research directed toward utilizing existing roadbeds rather than the futuristic projects which will call for more sophisticated type of railroad equipment.

Mr. DEVINE. The monorail?

Mr. GIAIMO. The monorail, the tubular methods and the like.

Mr. DEVINE. Thank you, Mr. Chairman.

Mr. STAGGERS. Mr. Pickle.

Mr. PICKLE. I do not believe I have any questions, Mr. Chairman, except to express appreciation of the fine testimony of the gentleman from Connecticut.

I would like to ask this question of the Chair. This bill as I read it, is authorized to undertake research and development in this high-speed ground transportation. This is of a national nature, it does not designate anywhere in the measurer a specific point-to-point cover, does it?

Mr. STAGGERS. That is right.

Mr. GIAIMO. I might say to the gentleman that there is presently power in the Secretary of Commerce to conduct the study for the northeastern corridor which was approved sometime ago.

Mr. STAGGERS. Mr. Callaway.

Mr. CALLAWAY. I have no questions. I just would like to join in congratulating our colleague on a very fine statement.

Mr. STAGGERS. Thank you, Mr. Giaimo, for contributing to our hearings here this morning. Again, I want to congratulate you on this fine statement.

Mr. GIAIMO. Thank you, Mr. Chairman.

Our next witness will be Mr. Donald Irwin, of Connecticut. We want to welcome you to the committee. You may proceed.

STATEMENT OF HON. DONALD J. IRWIN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CONNECTICUT

Mr. IRWIN. Thank you, Mr. Chairman.

I am especially pleased to appear before you and the colleagues that are here today. I have a brief statement and I will be pleased to answer questions as soon as I get finished with my statement.

I am here in support of Chairman Oren Harris' legislation and I can't say that my appearance here is not somewhat related to the problems of the New Haven Railroad which goes right through my congressional district, in fact runs along it, and we have some very immediate commuter problems which I have been concerned with for many years.

We are not here though asking the Congress to help us out with that local type of problem, in fact, we are working hard now at developing techniques to finance and work out a local solution to that problem.

I do believe that it is proper to say that the problem the New Haven Railroad has, it is a bankrupt railroad with a short haul responsibility in the northeast which has lost freight traffic to other forms of transportation which has a great responsibility for passenger service and which does not pay, is perhaps the harbinger of things to come on other railroads.

I think the thing has been for railroads to turn their backs on passenger transportation. They do not make the money there; they make more money on freight. What we are having here can start to show itself in other railroads in other parts of the country.

I think it does not take too much to realize that one of the best ways to transport people speedily, cleanly, efficiently and safely is by train.

Mr. Keith earlier spoke about the dangers of older people driving on our thruways. I think this is a very real problem. There are already demands for very, very strict health tests, medical tests for older people and for people generally who drive, because we all know, if you read a paper a week, that there are terrible road accidents all the time.

This, I think, is going to increase.

So I think that more and more we have to consider how we can move people at high speeds and safely. Some of the proposals which have been considered in this field, for example, have ideas of actually transporting automobiles and allowing people to travel this way and taking their cars from, say, Connecticut to Ohio, and when they get to Ohio they take them off and they tour around that beautiful State.

This kind of thing is going to increase tremendously in the years ahead. With more and more leisure time, more and more people retired, there is going to be a tremendous growth of this kind of thing.

I believe that this committee will see that there is a valid reason for going ahead with this program. I, myself, have not put in for example, this year, any kind of a bill for Federal subsidies to commuter transportation and so on. I do not think it is the right attitude. I believe we should go after the Federal money that is available now under the Urban Mass Transportation Act. I do think, though, that we have a responsibility to encourage the railroads to action perhaps by making passenger transportation more attractive. They have been delinquent too; they have not done all they should have done, they have not looked to the future with the care they should have.

We have at times created the climate in which they consider what they are going to do. We are trying to create a climate which will cause free enterprise railroads to see that "yes," there is a possibility of good profits in passenger transportation and help them bring this about.

I travel back and forth every weekend from Connecticut. I love to do it by train but my experience has been unfortunate. The trains are not reliable; they are dirty, they do not get here on time and they are slow. So I drive to La Guardia and catch the plane and fly into National Airport. Well, quite frankly, if National Airport were ever closed to that kind of plane and we had to go to Dulles, I would have to go back to consider the possibility of going by train.

It seems to me that the general trend would be we are sliding backward; we are not improving our techniques of transportation.

Now, it would be possible for a train to go from Boston to Washington in 4 hours, this is no great technological achievement. Around the

world this is already being done; in Japan, in Europe, in many areas. So the technological problems are not serious.

I think it might be possible to look at some other alternatives before we plunge into a solution, although I suspect there is a good chance we will end up with rails.

Out in San Francisco they are planning a program and they started from scratch saying what is the best way to move a lot of people in a hurry? They have come back to the idea of metal cars on rails and they are actually buying back rights-of-ways that were abandoned in the twenties and thirties to do this.

I might say that this is all being done by financing that is done locally; that is, the city of San Francisco and the surrounding counties have floated a bond issue to do this.

With that, I have finished my statement and I would be delighted to answer any questions, Mr. Chairman.

Mr. STAGGERS. Thank you for your contribution.

You mentioned San Francisco. That would be a local problem within the city? You are talking about transportation within the city?

Mr. IRWIN. No, it is transportation from the city out to the surrounding counties. They have a metropolitan area there where people are traveling 25, 30, 50 miles into the city daily to work.

Mr. STAGGERS. Something similar to the subway system of New York?

Mr. IRWIN. In a way, Mr. Chairman, but it seems to go further. You know, they are looking to the future. In fact, this is our problem where I am. The subway system of New York was conceived perhaps in the twenties when they had no idea of how fast and large the metropolitan area was going to be, and this San Francisco approach, I think, is a more contemporary approach and they are looking to the future a little more effectively than others of us have.

Mr. STAGGERS. Your predecessor who testified ahead of you mentioned the fact that in a short time we are going to have 2 million people. That is predicted for the near future.

Mr. IRWIN. That is right.

Mr. STAGGERS. I believe the present census in New York is 7 million right now.

Mr. IRWIN. Yes.

Mr. STAGGERS. That is all.

Mr. PICKLE?

Mr. PICKLE. I want to thank the gentleman for his fine testimony and particularly for his forthright statements that this is a matter of national significance in Federal and State and private industry.

Mr. IRWIN. Thank you, sir.

Mr. PICKLE. That is all.

Mr. STAGGERS. Mr. Devine.

Mr. DEVINE. I have no questions, Mr. Chairman. I just want to compliment our colleague from Connecticut.

Mr. IRWIN. I want to encourage my people to go out and visit you in Ohio.

Mr. STAGGERS. Mr. Callaway.

Mr. CALLAWAY. I have no questions, Mr. Chairman. I also would commend our colleague for a very fine statement. I am sure he intends a visit in my State as well.

Mr. IRWIN. I certainly do. I think the metropolitan area is growing in such a fashion that you, too, will be interested in this problem.

Mr. CALLAWAY. Thank you, Mr. Chairman.

Mr. STAGGERS. Thank you for your contribution for the record.

Mr. IRWIN. Thank you, Mr. Chairman.

Mr. STAGGERS. Our next witness is the Honorable Edward Patten, Congressman from New Jersey.

Mr. Patten?

**STATEMENT OF HON. EDWARD J. PATTEN, A REPRESENTATIVE
IN CONGRESS FROM THE STATE OF NEW JERSEY**

Mr. PATTEN. Thank you, Mr. Chairman.

Mr. STAGGERS. We welcome you to the committee. You may proceed.

Mr. PATTEN. We are busy over there with military construction and I think they deal with big figures.

I appear before you this morning not only as one of the cosponsors of the bill that would authorize a broad program of research and development in high-speed ground transportation by the Federal Government, but more important, I appear as a citizen who has been, and is, extremely concerned about the past and present decline of rail facilities in this country—and as one who is deeply interested in the future prospects of attaining high-speed ground transportation.

I tell you, Mr. Chairman, as the Secretary of State in New Jersey in the last 10 or 11 years, we did a tremendous amount of work on trying to solve our mass transportation problem so I am no neophyte on this problem.

We have been in the mill of it for over 30 years and I am most sincere about the fact that this appropriation will go a long way toward solving our problem and using these wonderful facilities where we see nothing but the passengers dropping off and the cars go by empty.

Now there are about 250,000 passenger trips made in railroads to New Jersey every day. The decline has been heavy. The weekend decline is 50 percent and only recently the decline has been another 20 percent.

If you can visualize this great mass of people using auto roads, we get into absolute chaos. One train will take a thousand people into New York, but if we are going to have a thousand automobiles instead of one train, we are licked on this whole mass transportation problem.

Now a partial solution to this frustrating and costly problem would be to enact the administration's proposal to authorize a comprehensive \$20 million Federal research and development program. This would not be a panacea, but it would enable the railroads in the eastern corridor to be in a better position to compete with air travel, and of course, the automobile.

Now this is the heart of my statement.

In connection with areas being considered for high-speed rail experimentation, I would like to recommend the 25-mile stretch of track on the Pennsylvania Railroad from New Brunswick, N.J., to Trenton, N.J., which I think is most suitable for this purpose, and I know the railroads have this in mind and I could bring you newspaper clippings where the Pennsylvania Railroad would like to get some help to carry on this research.

They feel that soon, say by next year, they can have trains running in this area at 150 miles an hour. Many discussions have been held and I think this would be ideal.

Now I have confidence in the success of the high-speed ground transportation. About a month ago I witnessed a film on the new Tokaido Line in Japan and I was very much impressed.

This remarkable and widely heralded line operates between Tokyo and Shin-Osaka, Japan, with speeds ranging up to 125 miles an hour. It is a tremendous improvement over the old line in speed, comfort, capacity, and safety—and basic fares have remained the same. The seating capacity is 60-percent greater than the old Tsubame Line.

We now have a great opportunity to help improve the declining rail facilities of our Nation, especially in the heavily populated eastern corridor. Faster, more comfortable and safer rail service must be provided now, or passenger service will end.

I saw in my area, the B. & O. and the Lehigh Valley give up their passenger service, and this hurts because I know as a man in Government the ideal is not to spoil all our cities by roadbuilding and more parkways and thruways and things like that when it is so much more economical to use these great railroad assets.

The answer is a little research will enable you to move.

Now if I come from my hometown, I am right on the main line of the Penn. I have never come to Washington by railroad. Now, why would I choose to drive my own car or come down by plane? If I leave here at night at 7:30 out of Washington, I get home about 2 o'clock in the morning by railroad and I am riding in an old, dirty car with no dining facilities or no comforts, and I can go home by automobile in 3 hours or less.

Now one thing about this research we have to consider, is my great concern for the safety factor and this is one thing these researchers will have to study.

On May 10, just a couple weeks ago, the Pennsylvania Railroad predicted speeds up to 125 miles per hour in 1966, that is next year, and 150 miles an hour shortly thereafter. I certainly hope that adequate safety precautions would be included in any high-speed transportation system because we want our trains to be safe as well as fast, attractive, and comfortable.

I am looking forward eagerly to the day when the dream of high-speed ground transportation will become a reality. By passing H.R. 5863, Chairman Harris' bill, this dream would become a reality.

I recommend this urgently needed measure and hope it will be reported favorably and passed by the Congress.

I thank you for this opportunity.

Mr. STAGGERS. Does this conclude your statement?

Mr. PATTEN. Yes.

Mr. STAGGERS. We want to thank you very kindly for contributing to our hearing for the record.

I want to congratulate you on your interest in this national issue—looking at the future, it is going to be nationwide—of travel up to speeds of 125 miles per hour and some of the plans for this could speed to 300 miles an hour.

Mr. PATTEN. Oh, yes, but I am talking about next year. You give us this help. If you go through with this research project, within

a year we can have speeds of 125 to 150 miles an hour, according to the Pennsylvania Railroad.

If you can come down from New York to Washington in 2 hours, this will be a great step forward.

Mr. STAGGERS. You recognize, Congressman, that this is not just a local issue, that we have these problems even in West Virginia, and I am sure every other State does.

Mr. PATTEN. I know you are an old railroader.

Mr. STAGGERS. Transport from one area to another and highways.

Mr. PATTEN. You know, all your people from West Virginia that move up our way are old railroaders. You know that. We have quite a few of them.

May I say this, Mr. Chairman? When I was a kid, my mother used to pack those big lunchboxes, you know, when they go up to Lehigh, Pa., for coal for 3 days, and I can picture her making those boxes up for five in our house who worked on the railroad. I know what the railroads did during the war. I commuted by train for many years to school and to college, going to Newark to the State college, going into Newark to law school.

In my day, the railroad station was jammed, and today it is practically empty. It hurts a little bit and I know economically this is a shame because my God, this morning's New York Times has a picture of a rabbi, and a few other prominent persons, laying on a road up in New York to try to prevent them from widening another parkway up there, I think it is the Mount Vernon section.

We have the greatest opposition in our town to the U.S. highway program, and politics, local considerations, have blocked one of the biggest roads feeding the Verrazanno Bridge. I never took part in it, but it is a hard thing in the town when you go chopping it up for the highways. You know all these problems.

Thank you ever so much.

Mr. STAGGERS. Mr. Pickle.

Mr. PICKLE. Mr. Patten, you presented some very interesting and very colorful testimony here today, and I am glad to hear it.

You made a statement, if I understood you properly, that you would like to see an appropriation of some \$20 million. Now the act as I read it says such sums as may be necessary to carry this out.

Where did you get that figure, or did I misunderstand you?

Mr. PATTEN. I said \$20 million. I thought that was the figure of Mr. Harris' bill.

Mr. PICKLE. Well, I do not find that in here. I was wondering if this was just general conversation or what is anticipated?

Mr. STAGGERS. It is a figure which has been mentioned at this time. We are going to have to resolve that in our committee.

Mr. PATTEN. I did not do the research personally, my aid did. Right along we have been talking about \$20 million for research.

Mr. PICKLE. We will consider that later.

Thank you, Mr. Patten, and Mr. Chairman.

Mr. PATTEN. Thank you.

Mr. STAGGERS. Mr. Devine.

Mr. DEVINE. Thank you, Mr. Chairman.

Mr. Pickle put his finger right on the key problem here. We would like to know the source of this \$20 million figure because it is obviously an open-end type of thing.

In order to complete the record, Mr. Patten, you made some remarks on the time element it takes you to travel from Washington to your district. I reside in Ohio, roughly 400 miles up here. I can drive that in about 8½ hours, I can fly it in about 1 hour and 15 minutes, but it takes 13 hours to go by train.

That again points out one of the differences in our transition in transportation today. Of course, we do have the mountains between my district and the District of Columbia.

Mr. PATTEN. Mr. Devine, I probably should tell you, you may not be familiar with the fact, that this stretch between New Brunswick and Trenton is of sufficient length and is just open country; it is level; it has all the attributes necessary to carry on research.

For instance, you would not want to do it through the city of Philadelphia. Primarily everything else seems to be built up. North of New Brunswick is one big urban area. I am not guessing; my statements are based on statements made by engineers and railroad men who have stated this is where they would like to try out some new equipment and try a few little things and see where they are going.

Incidentally, you know the trains today on that good roadbed of the main line can go over a hundred miles an hour. The only reason they don't go more frequently is because by statute and by local ordinances and the like, we limit their speed and so they have not embellished their safety signals and everything else as a practical matter. They are limited, they are going over bridges or through an urban area, sometimes through a statutory speed.

Mr. DEVINE. Is it your thinking they would utilize the existing right-of-way?

Mr. PATTEN. Immediately; yes. They are going to increase their speed by next year.

Mr. DEVINE. That is all, Mr. Chairman.

Mr. STAGGERS. Mr. Callaway.

Mr. CALLAWAY. Thank you, Mr. Chairman.

Mr. Patten, as I understand it, you were speaking of this experiment through New Brunswick and Trenton that the Pennsylvania Railroad is ready to initiate almost immediately; is that correct?

Mr. PATTEN. Yes.

Mr. CALLAWAY. Senator Pell earlier this morning used the figure of \$8 million for a demonstration. We have not yet had testimony from the Department of Commerce and I am sure they will spell out in some detail the program, but I assume this is what you are speaking of, this \$8 million demonstration.

Would part of that be used in this 25-mile stretch? I am just asking for information; I do not have any information on how this would be done. Do you have a feeling of what the Pennsylvania Railroad proposes with the Federal Government putting in new roadbeds for higher speed? Would they buy modern cars and run them back and forth on this, or what kind of demonstration are we talking about; do you know?

Mr. PATTEN. I would like to avoid that. There have been a hundred suggestions but with existing facilities it is the same as if you had a certain type aircraft and now you go into something a little bit bigger and a little bit faster.

So maybe you have got to have a wider bed or you have to have a new signal. Every time the Air Force comes out with a new plane,

they want a longer runway and they want to shelter blast along the side because there is more noise and more power and two engines where there was one.

The same way in the space program. The first pad down there at Cape Kennedy was a little thing. The last pad was something the world had never seen—that new pad for the Saturn V. Everything has to get bigger, wider, heavier.

When you talk to these engineers and the manufacturers of the railroad business, it is just a step forward. It will be a little different equipment, but you must look at the roadbed and all the bridges and overpasses and make adjustments.

Every time we build a new road we make it wider and it means a curve has to take a half a mile. In the city here you turn around a quarter 90-degree angle in 40 feet, but on our big parkways when we turn around it takes a half mile to make a 90-degree turn. So little configurations like that, and they are not major—I mean they are not thinking of monorail. There will be no great major departure from present facilities. With present equipment and some of the ideas they have been checking, they can immediately go up to 150 miles an hour instead of averaging 60 miles.

Mr. CALLAWAY. Senator Pell was commenting on the fact the public would use railroad transportation if it were clean. I was just wondering how on this 25-mile stretch they could get to modern, clean, fine equipment or whether the Government would put in some new equipment for this operation?

Mr. PATTEN. They want to buy equipment to carry on the research. If we do not give them help the research will not be done.

You can talk at great length about whether the railroad industry has carried on the research like other industries to keep abreast and make progress. I think the consensus is that the railroads have not put the money into research comparable, say, to the automobile industry.

Now the railroads are in such poor shape financially, we read critically all the time that the New York, New Haven & Hartford is going to discontinue, it is bankrupt. I know our New Jersey Central Railroad has been in bankruptcy I think from 1930, and is asking our State for \$5,000,000 to continue passenger service. I know for about 25 years it was operated by a receiver and every month you get a threat they are going to stop, they are going to quit.

That has been the story of the railroad business. They have not put the money in research that the electronic industry has or the telephone company or the others. I think if we give them this little stimulus it will be a lot better than going out and spending another billion for better highways.

I will ride the railroad, I will tell you that, and so will a great many other people.

Mr. CALLAWAY. Thank you, Mr. Chairman.

Mr. STAGGERS. That is all. We want to thank you for your contribution to the record and we hope that this will get underway. We do not know what is going to happen, of course.

Mr. PATTEN. Thank you, Mr. Chairman.

Mr. STAGGERS. At this time we will hear the Honorable John S. Monagan, Congressman from Connecticut. Mr. Monagan, we welcome you to the committee.

STATEMENT OF HON. JOHN S. MONAGAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CONNECTICUT

Mr. MONAGAN. Mr. Chairman, I appear in support of my bill, H.R. 6088, which proposes to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation.

It is clear that we have reached a national crisis in our obligation to provide reasonably priced and rapid public transportation in this country. The current status of our New England railroads, whose locomotives have been compared to "The Little Engine That Could," is a national shame. Needless to say, it is also a source of great discomfort, frustration, and loss of time and money among thousands of people in my own State of Connecticut who daily are compelled to use the service of the New Haven Railroad. It is a sad commentary on our national ingenuity that we can fly men to the moon and produce rockets that span continents, but we are unable to provide trains that run on time and transport our people in comfort.

It is true, of course, that our transportation needs have to a great extent been satisfied by the automobile and the airplane, but it is plainly clear that in both of these fields we are reaching an area of diminishing returns. Our highways and parking lots will not be able to accommodate a further increase in automobile traffic and our airways are already crowded to the danger point.

That it is possible to provide proper and competitive transportation can be seen from a glance at other countries. The well-known Japanese bullet train which runs between Tokyo and Osaka is an excellent example. I placed the story of this train in the Congressional Record of January 26, 1965. Anyone who has visited the Moscow subway can understand that it is possible to have urban transportation that is clean, pleasant, and efficient.

The prospect of high-speed transportation from Boston to Washington, which has been urged by President Johnson, is a welcome one to those who are now compelled to travel this route by the current means of transportation. I suggest too that a development of this sort is essential if the economy of the New England region is to grow and prosper as it must if it is to regain a position comparable to that of other parts of the country.

The staggering weight of regulations, prohibitions, and requirements of various sorts under which the railroads labor has contributed to making research and development impossible. It is for this reason that some program of assistance by the Nation as a whole is appropriate. With this sort of stimulation it would be possible to return the railroads to private management and an infinitely higher level of performance and service.

Travel along the northeast corridor will double within 15 years. It is time now to prepare transportation facilities to meet this increased demand which can be predicted with certainty. The bill which I have filed would permit the Secretary of Commerce to lease, purchase, develop, test, and demonstrate new facilities, equipment, tech-

niques, and methods for the improvement of our national transportation system.

I urgently request the committee to take favorable action on this bill so that we may promptly set above this necessary and difficult job. Surely we who have been able to eliminate tuberculosis and infantile paralysis by a national effort can solve this more superficial problem by a national dedication to its solution.

Mr. STAGGERS. Are there any questions? If not, we thank you for your appearance, Mr. Monagan.

Mr. MONAGAN. Thank you, Mr. Chairman.

Mr. STAGGERS. The next witness is our colleague from Maryland, the honorable Carlton R. Sickles. Mr. Sickles, welcome to the committee.

STATEMENT OF HON. CARLTON R. SICKLES, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MARYLAND

Mr. SICKLES. It is a pleasure to testify this morning in support of H.R. 5863. Along with Senator Pell, I sponsored the compact bill to create an interstate authority for improving transportation in the northeast corridor.

I have ridden the Tokaido line in Japan and am convinced of the technical feasibility of such a "bullet train" operation here.

At the present time, I am drafting Federal legislation based on my experience negotiating an interstate compact for the operation of a mass transit system in the Washington metropolitan area which should stimulate thought regarding creation of a compact agency to provide for the operation of a "bullet train" in the corridor.

Increased population, increased urbanization, and increased intercity travel have combined to make the enactment of this type of legislation a necessity.

In my home county of Prince Georges, adjacent to Washington, D.C., 750 people a week are moving in. By 1980, 8 out of 10 Americans will live in urban areas. Between now and 1980, it is estimated that intertraffic between Washington, D.C., and Baltimore will rise from 33,800 trips daily to 98,900 trips daily, almost a threefold increase.

This legislation has tremendous implications for Maryland and the other States in which clusters of urban areas are beginning to form the equivalent of supersize cities. While I endorse fully all three programs contemplated under H.R. 5863, I am particularly interested in the demonstration projects that are envisioned under this bill.

It is my understanding that over the next 3 years there will be a combined \$50 million public and private investment in demonstration projects to improve existing rail transportation in the so-called northeast corridor between Washington and Boston.

Under the present legislation, it is contemplated that new rolling stock, including a fleet of 28 new self-propelled cars, will be acquired and a demonstration project will be inaugurated between Washington and New York which will cut the existing travel time by rail to below 3 hours.

At the present time, the fastest train covers this distance in 3 hours and 35 minutes. These demonstration projects will begin in the middle of next year and based upon them we can make further de-

cisions as to the feasibility of additional investment and the scope of the investment that will be required.

In these demonstration projects 100-miles-per-hour rail service will be inaugurated in the corridor.

Regarding the R. & D. programs under the bill, it seems to me that research and development in high-speed ground transportation could be done in connection with the actual physical situation of congestion as it exists in the corridor rather than taking a hypothetical city or group of cities and setting up a model transportation system for a paper operation.

If a tremendous investment in improving the railroads in the corridor is to be authorized by subsequent legislation, it must be done with full knowledge that this is the best technological way to approach the problem and it seems to me that research and development studies on alternate systems within the corridor would be most useful.

Also, regarding the statistical program, perhaps a part of the project could deal with improvement of transportation statistics within the corridor and this information could also be used at a later point in time if a billion dollar investment is to be made in improved rail service.

This legislation has national significance and it is not designed for simply one area of the country or to promote one mode of transportation.

The results proceeding from this investment will aid millions of Americans who populate our urban areas. We cannot wait until the intercity transportation problem has approached the strangulation stage before we act.

Mr. STAGGERS. We appreciate your appearance and testimony, Mr. Sickles.

Mr. SICKLES. Thank you, Mr. Chairman.

Mr. STAGGERS. The next witness is our colleague from Montana, the Honorable Arnold Olsen. Mr. Olsen, you may proceed.

STATEMENT OF HON. ARNOLD OLSEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MONTANA

Mr. OLSEN. Mr. Chairman, I am Arnold Olsen, Representative of Montana's First District. I serve on the Post Office and Civil Service Committee's Subcommittee on Census and Statistics. I served as chairman of this subcommittee during the 88th Congress and as you know, am continuing on the subcommittee in the 89th Congress as ranking majority member.

I appear in support of H.R. 5863. Although I support this entire bill, my statement is directed principally to section 2 of the bill which would authorize the Secretary to collect transportation data, statistics, and other needed information.

Mr. Chairman, the Subcommittee on Census and Statistics has made a number of studies and reports on the availability of basic information and statistics in land, sea, and air transportation. In our report to the 87th Congress, "Improving Federal Transportation Statistics" (H. Rept. No. 1700), we recommended that (and I quote) :

A clearinghouse for transportation data be established in the Department of Commerce, the clearinghouse to be responsible for giving leadership to the

statistical programs of the Federal agencies, both regulatory and nonregulatory, concerned with collecting and compiling transportation and travel data.

Mr. Chairman, for one reason or another, no action has been taken to date on our committee's recommendation. The transportation industry, which contributes over \$100 billion annually to this Nation's gross national product, continues to be handicapped by fragmented and incomplete data, on the one hand, and with excessive paperwork and duplicated reporting on the other. To quote again from our report: "At present, no one can begin to define the statistical dimensions of the transportation universe."

Mr. Chairman, we have all been concerned with the lack of a national transportation policy, but how can sound policy determinations be made on transportation, or on anything else, until a meaningful body of facts is assembled. In my opinion, the authorization of a national transportation statistics program, as proposed in H.R. 5863, will furnish the Secretary of Commerce with the basic information and statistics essential to the development of a sound national transportation policy. I hope your committee will give favorable consideration to this legislation now before you.

Mr. STAGGERS. Mr. Olsen, we thank you for your appearance.

Mr. OLSEN. Thank you for the opportunity, Mr. Chairman.

Mr. STAGGERS. The next witness is our colleague from North Carolina, the Honorable David N. Henderson. Mr. Henderson, welcome to the committee.

STATEMENT BY DAVID N. HENDERSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NORTH CAROLINA

Mr. HENDERSON. Mr. Chairman, I am David N. Henderson, a Member of the House from North Carolina. One of my committee assignments is to the Committee on Post Office and Civil Service. As a member of that committee I had the privilege of serving as chairman of the Subcommittee on Census and Government Statistics. I stress my assignment to that committee because the testimony I am about to give bears directly on my past chairmanship of the Subcommittee on Census and Government Statistics.

I am here today to indicate strong support for H.R. 5863 introduced by Mr. Harris, of Arkansas. I would like to recommend that this committee give favorable consideration to this legislation.

My testimony bears most strongly on that portion of the legislation that requests authorization for a national transportation statistics program. While I was chairman of the Subcommittee on Census and Government Statistics, we issued a report entitled, "Improving Federal Transportation Statistics." The report indicated an urgent need for coordinating all transportation information in the Federal Government. It recommended that, since the Secretary of Commerce has responsibility for the Nation's overall transportation policy, the Department of Commerce be given the responsibility to undertake such coordination.

The legislation that is before you represents implementation of a substantial part of the recommendations made by the subcommittee in its report to the 87th Congress.

Many Federal agencies are currently engaged in the collection of transportation statistics. At least seven agencies conduct major pro-

grams. Despite this not inconsiderable effort, the information that is needed for a comprehensive understanding of the transportation universe and for adequate transportation policymaking is not available.

Billions of dollars are spent annually in the transportation field. Yet many policy decisions that involve the expenditure of these funds have to be made without adequate data. Many studies that are undertaken in support of transportation policymaking in the Federal Government must begin over again the tedious and costly task of bringing together information from many different sources.

Under the program for which authorization is requested here, a beginning would be made immediately on the coordination of transportation statistics that are now collected by different Federal agencies. The purpose of such coordination is a twofold one. First, it will achieve consistency in the statistical programs themselves. Consistency with respect to definitions of geographic areas, comparability of items of information that are collected, and levels of reliability are an absolute essential if transportation data are to be of maximum usefulness.

Second, in line with the recommendation of the subcommittee, the latest information systems technology will be used to establish an information system in which as many of the existing data are brought together and standardized as possible. For the user of transportation statistics, both within and outside the Government, this means that these statistics will be available in one place and will be readily accessible.

Moreover, it will be possible to extract from many different source data files, precisely those statistics that are necessary for a particular study.

Under the program that is proposed here, the Department of Commerce would also undertake collection of new data that are needed for policy oriented research programs such as the northeast corridor transportation project. Studies of this kind and scope are new. Detailed information is needed on the movement of goods and persons. Similarly, information is also needed on the population and economic characteristics of the region.

Thus, transportation data will indeed be associated with more general socioeconomic information for the purpose of this type of comprehensive transportation study.

In expressing my strong support for this legislation, in its entirety, and particularly for that portion that deals with national transportation statistics, I would like to make it very clear that this is not a program that will benefit any one region alone. A large regional transportation study is now underway in the State of California, and it is not unreasonable to expect that many more such studies will be made in the coming years. The problems of information will become more severe.

The national transportation statistics program that is proposed here will benefit all parts of the country and will lead to more well reasoned transportation policymaking everywhere.

Thank you.

Mr. STAGGERS. Are there any questions? If not, we thank you, Mr. Henderson.

Mr. HENDERSON. Thank you, Mr. Chairman.

Mr. STAGGERS. The next witness is our colleague from Connecticut, the Honorable William L. St. Onge. Mr. St. Onge, you may proceed.

**STATEMENT OF HON. WILLIAM L. ST. ONGE, A REPRESENTATIVE
IN CONGRESS FROM THE STATE OF CONNECTICUT**

Mr. ST. ONGE. Mr. Chairman and members of the subcommittee, I am very grateful to you for this opportunity to present my views regarding the bill, H.R. 5863 and related bills, which your committee now has under consideration. Your committee is acting with wisdom in considering this legislation and I feel certain it will reach a wise decision and recommendation.

This legislation would authorize research and development in high-speed ground transportation in order to improve our national transportation system. There is no question that improvement is needed; we are all agreed on that. The longer we wait, the more our transportation system appears to deteriorate. As the process of urbanization grows more rapid, the less our transportation appears to satisfy the needs of the Nation.

I am sure there is no need for me to retell to this committee the problem we have in New England and the northeastern part of the country, particularly in regard to the transportation difficulties encountered by the New Haven Railroad. To date we have still not solved these problems and there is no way of knowing when and if they will ever be solved.

In the last Congress, several Members of Congress introduced a resolution to grant the consent of Congress to eight Northeastern States to enter into a compact for the setting up of a multistate authority to operate fast passenger rail transportation service from Boston to Washington, by way of the State of Connecticut. I was one of the co-sponsors of that resolution, but unfortunately no action was taken at the time.

This year, four of us in the House have reintroduced the resolution: the Honorable Robert N. Giaimo, of Connecticut, the Honorable Fernand J. St Germain, of Rhode Island, the Honorable William B. Widnall, of New Jersey, and myself. Senator Claiborne Pell, of Rhode Island, introduced the resolution in the Senate.

In his state of the union address on January 4, 1965, President Johnson referred to the need for rapid transit in the Northeast. He said:

I will ask for funds to study high-speed transportation between urban centers. We will begin with test projects between Washington and Boston. On high-speed trains, passengers could travel this distance in less than 4 hours.

I believe that the proposal contained in our resolution and the proposals in H.R. 5863 and related bill, which deal with the problem on a national scale, constitute a far-reaching approach and a practical solution to the problem of public transportation. The solution proposed in these measures would make possible fast and dependable rail transportation for the urban areas, where the need for this transportation is greatest. It would also help solve the constant problems and losses sustained by the existing lines operating in these areas, problems and losses with which they seem to be unable to cope.

Adequate passenger transportation service is essential to the welfare of the Nation, as well as to the areas directly involved. Unless this

problem is solved quickly, unless fast and adequate transportation service is provided soon, the railroad crisis in this country will grow worse and all parts of the country will suffer economically. Industry will be affected. Retail business will be hurt. The whole business community will suffer. The public will be inconvenienced. In New England we may be threatened with the loss of more industries and with greater unemployment. This may be equally true in other sections of the country.

We cannot and we should not ignore this situation. For this reason, I wish to commend this committee for its timely consideration of these measures. I look forward to your early and favorable action in reporting a bill which will be a definite step in the direction of a solution to the problem.

Mr. STAGGERS. Thank you for your appearance, Mr. St. Onge.

Mr. ST. ONGE. Thank you, Mr. Chairman.

Mr. STAGGERS. For the record, on Tuesday we will hear from the Secretary of Commerce, Mr. John T. Connor.

That completes our witnesses for this morning.

The committee will stand adjourned until next Tuesday.

(Whereupon, at 11:30 a.m., the subcommittee recessed, to reconvene at 10 a.m., Tuesday, May 25, 1965.)

COMMERCE DEPARTMENT TRANSPORTATION RESEARCH

TUESDAY, MAY 25, 1965

SUBCOMMITTEE ON TRANSPORTATION AND AERONAUTICS
OF THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room 2123, Rayburn House Office Building, Hon. Harley O. Staggers (chairman of the subcommittee) presiding.

Mr. STAGGERS. The subcommittee will come to order.

This hearing is a continuation of the public hearings which were started last week on H.R. 5863 and related bills having to do with research and development by the Department of Commerce into methods of improving the national transportation system. And we have as our first witness this morning the Honorable John T. Connor, Secretary of the Department of Commerce.

Mr. Secretary, we welcome you to the committee. We are glad to have you here to give us your testimony. You may proceed.

STATEMENT OF HON. JOHN T. CONNOR, SECRETARY; ACCOMPANIED BY C. D. MARTIN, JR., UNDER SECRETARY FOR TRANSPORTATION; LOWELL K. BRIDWELL, DEPUTY UNDER SECRETARY FOR TRANSPORTATION; AND ROBERT A. NELSON, DIRECTOR, TRANSPORTATION RESEARCH, OFFICE OF UNDER SECRETARY FOR TRANSPORTATION AND MANAGER, NORTHEAST CORRIDOR, TRANSPORTATION PROJECT, U.S. DEPARTMENT OF COMMERCE

Secretary CONNOR. Mr. Chairman and members of the subcommittee, I have with me this morning Mr. Clarence D. Martin, Jr., the Under Secretary of Commerce for Transportation, Mr. Lowell K. Bridwell, Deputy Under Secretary for Transportation, and Dr. Robert A. Nelson, Director, Transportation Research, Office of Under Secretary for Transportation and manager of the northeast corridor transportation project.

I appreciate this opportunity to testify before you on H.R. 5863 and similar bills focusing on crucial transportation needs of our Nation in this period of exploding urban growth.

These bills are intended to carry out the President's program for developing high-speed ground transportation between densely populated urban areas of the country.

The President has pointed out that in the remainder of this century urban population will double and we will have to build homes, highways, and other facilities equal to all those built since the country was

first settled. We are challenged to see that transportation growth proceeds along orderly and efficient lines.

Modern transportation is vital to our national growth. It is essential that we help our private transportation system keep abreast of and fully utilize fast-developing technologies from other fields.

We must acquire knowledge and data which will enable us, and more particularly, the private operators of our transportation systems, to arrive at sound decisions in order to keep the Nation's economic curve on a constant rise.

Through research, we must seek out knowledge and data that today are simply not available to us. Lack of reliable information has been a major obstacle to transportation progress.

Three basic programs would be authorized by the proposed legislation. They are:

1. Research and development of different forms of high-speed ground transportation, including railroad;

2. Demonstration projects to measure public response to improvements in intercity rail passenger service utilizing present technology; and

3. A national program to improve the scope and availability of transportation statistics.

The President's fiscal 1966 budget includes an estimate of \$20 million for these programs.

Today I would like to state briefly some of the considerations which make improvement in this transportation area vitally essential, some of the difficulties that must be overcome before that improvement is possible, and how the proposed legislation will provide the means for improvement.

There is increasing public concern over the present and prospective deficiencies in intercity transportation in densely populated areas of the country, one of which is the so-called northeast corridor extending between Maine and Virginia.

This concern has already found expression in various bills and resolutions aimed toward improved rail service in the northeast corridor.

However, the problems of this corridor are fundamentally no different from those developing in other thickly tenanted metropolitan complexes which are merging in other regions of the country. Research findings would have substantial application nationally.

The problem arises from the pronounced shift of population toward metropolitan areas that has taken place in the United States in the last two decades and seems destined to continue as our population soars towards the 200 million mark in 1967.

In the northeast corridor today, for example, population density is 854 per square mile, and is expected to rise to about 1,100 by 1980. In some major areas of the corridor population densities presently exceed 4,200 per square mile. Other regions of the Nation will have become almost as densely populated by 1980, when as much as 75 percent of our population may live in metropolitan areas.

The increasing density of population coupled with greatly increased travel will result in serious overburdening of our intercity transportation facilities. This is already happening in many urban areas when peak volumes overload existing systems. An interagency task force assigned by President Kennedy in 1962 to survey the problem in the

northeast corridor found that a systematic evaluation of the transportation needs of the northeast corridor should be made considering trends in demand and transportation technology before any sizable capital investment funds were committed.

This study contemplated a careful weighing of social benefits against economic costs for various proposed systems, and combinations of systems, in the northeast corridor.

The U.S. Department of Commerce was asked by President Kennedy to carry on these studies. Preliminary results of these studies revealed a number of problem areas. For one thing, we learned that there are major gaps in the available information about how people and goods move, including lack of data concerning the demand for a high-quality intercity rail service. It also became apparent that the development of high-speed ground transportation technology has lagged badly.

The term "high-speed ground transportation" comprehends the movement of people and goods, by land, on special purpose rights-of-way, along which vehicles will be guided. The important characteristic of this kind of transportation is its capability for moving large volumes of people and goods, while imposing relatively low requirements for space. Another advantage is its high reliability under adverse weather conditions. The conventional railroad is the only existing form of high-speed ground transportation now in commercial operation, under this definition of the term.

The store of experience in research and development is particularly inadequate in this kind of transportation. For example, while suppliers of transportation equipment of all kinds spent over \$1 billion on research and development annually from 1960 to 1962, railroad equipment suppliers accounted for less than 2 percent of those amounts. And during the same period, the railroads which account for about 44 percent of all ton-miles spent about \$6 million annually on research and development, or only about 10 percent of the total spent by all common carriers.

To put the matter in another way, while aircraft and parts manufacturers devoted 24 percent of sales to research and development in 1961, less than 2 percent of sales of the railroad suppliers went for this purpose. The transportation research and development expenditures of the Federal Government applicable to the civilian sector have been almost as unbalanced. In fiscal year 1963, \$275 million was spent for aviation, \$24 million for highways, \$15 million for water, and only \$7 million for rail. And even as to the rail expenditure, demonstrations of local metropolitan mass transport facilities by the Housing and Home Finance Agency accounted for a substantial part of the figure.

No criticism of these research and development investment decisions is implied; the point is simply that the dramatic possibilities in high-speed ground transportation have received relatively scant attention, as compared with other transportation modes. In recognition of the transportation needs of the future alluded to earlier, more research and development in high-speed ground transportation is needed.

H.R. 5863 would authorize the Department of Commerce to conduct research and development in high-speed ground transportation. This would supplement the Department's authority under section 596 of title

5 of the United States Code to foster, promote, and develop the transportation facilities of the United States by providing clear congressional recognition of the importance of the program and support for the expenditures involved.

The bill would also provide for a national program for the improvement of transportation statistics. It is necessary to acquire knowledge of present transportation patterns and preferences in order to predict future transportation needs and ascertain the most efficient ways of meeting them. A fundamental requirement in any effort to develop an efficient and productive national transportation system is that the needs of the travelers and shippers must be defined and measured. Reason dictates that these tasks must be approached before the Government or private investors commit large amounts of capital.

Presently, seven Federal agencies carry on major transportation statistics in some form. These programs are conducted largely to fulfill the regulatory or operating missions of the collecting organizations. It is not suggested here that they be replaced or duplicated. It should be recognized, however, that these programs in their present form do not meet the requirements of a large number of using agencies, especially users having public investment policy responsibilities.

We recommend, therefore, a program which would (a) coordinate data collection by diverse Federal agencies, (b) make on-going activities more broadly useful, (c) collect new data to fill specific information voids, and (d) systematize and make accessible to a broad range of users transportation statistics of many different kinds.

Let me emphasize that the statistical work necessary for these purposes will be done in the Department of Commerce only to the extent that needed data are not available from other Government agencies or private sources.

Also, it is important to recognize that by a carefully and systematically developed information system we should be able to reduce data reporting requirements presently imposed upon the public.

The proposed legislation also provides for demonstrations which will permit the measurement of public response to varying levels of speed, cost, comfort, and convenience of improved rail passenger service.

This project is essential before commitments are made to major public investment for transportation in the northeast corridor. For a relatively modest investment by the Federal Government and by the corridor railroads, rail service in terms of comfort and convenience can be greatly improved, and elapsed time enroute can be reduced considerably for the period of the demonstration. This should give a good indication of the results of more far-reaching improvements.

Demonstration projects are under consideration on both the Pennsylvania and New Haven Railroads. While not yet certain, it appears likely that, on the Pennsylvania, schedule time between Washington and New York (226 miles) can be reduced to below 3 hours, and on some stretches speeds substantially higher than 100 miles per hour can be attained. This would be a measurable improvement over present schedules ranging from 3 hours and 35 minutes to over 4 hours.

The demonstrations on the Pennsylvania Railroad would involve the acquisition of a fleet of up to 50 new individually motored, elec-

trically propelled cars incorporating advanced standards in riding quality, passenger amenities, and rate of acceleration and braking, and capable of speeds up to 150 miles per hour. The equipment to be acquired for the demonstration north of New York on the New Haven Railroad is still under discussion.

In view of the experimental nature of the demonstration project, present equipment on the corridor routes will not be replaced in its entirety. The new equipment would be operated at varying times of the day to test the effect of scheduling.

The demonstration project reflects the immediacy of the need to determine ways in which the increasing demand for intercity passenger transportation can be met in the northeast corridor.

A relatively high level of passenger traffic remains on the main north-south routes of the railroads in the corridor. The railroads operating in the corridor, however, lack the economic incentive themselves to make the improvements in the quality of service needed to test public response adequately.

If improved rail passenger service offered on existing corridor railroads proves economically viable, a significant need will be met, and an important transportation resource given greater utilization.

In addition, we expect that the demonstrations will provide a basis for statistical projections of response to further improvements which will result from the research and development effort. In that sense, the demonstrations will provide an important source of information about travel behavior and the demand for transportation in general.

The demonstrations are intended only to be tests of the market for transportation and will not involve the Federal Government in any commitment to furnish or subsidize intercity rail passenger service, or the plants and equipment of the railroads. They would be carried on by the railroads as a regular part of their service; Federal funds would be expended only on equipment, and for statistical operations necessary to measure public response.

Proposing demonstration projects and a major effort to improve transportation statistics should not suggest that the research and development is premature. It is clear that the state of the art in ground transportation must be subjected to fundamental scientific exploration and evaluation. The research and development effort can be expected to have significant results for rail transportation everywhere—both freight and passenger, and what may flow from rail transportation as a result of research and development. Thus, the research and development will be directed not only to the revolutionary advances which we must have if the Nation is to continue its economic growth, but also to the improvements which in the immediate future can help the rail system more adequately meet the particular demands placed upon it, and which it can most efficiently serve. Much can be done, too, to improve the means of achieving coordination among the modes of transportation. This kind of research and development the carriers are often not motivated to do themselves.

We propose also to experiment with a wide range of other possibilities for high-speed ground transportation. Our preliminary studies show that new concepts of guided ground transportation may be feasible. As you know, historically, important advancements in applied technology have often resulted from such departures from

earlier concepts. For example, powered aircraft did not evolve from improvements in land vehicles, and plastics were not developed by the wood industry, but by chemists looking for answers to quite unrelated problems. Similarly, the atomic bomb was not a development of the explosives industry, but was created by basic research scientists seeking a new source of energy.

Perhaps I may say at this juncture that the findings of a distinguished panel of scientists, businessmen, economists, and engineers, which has recently submitted a report to me, has confirmed earlier findings of serious shortcomings in our knowledge and understanding about transportation, and the importance of research in hitherto neglected areas of technology.

The new forms and concepts of high-speed ground transportation which appear to merit investigation in some detail include mass transport of automobiles on rail "ferries," vehicles which are supported in their route-path by a layer of air, and rail-guided and supported systems which differ from the conventional two-rail track structure. Private manufacturing interests here and abroad have done some preliminary development work on these concepts, but a Government contribution to this effort is needed. Private capital is inhibited by the large risks involved in the development of systems which must by and large depend upon public decisions for their adoption. In addition, we need to study basic alternatives applicable to a number of modes of transportation—such as power source and location of guideways. Thus, the accelerating costs of acquisition and use of surface land, with the parallel decreases in the cost of tunneling, suggest that study of the feasibility of constructing guideways underground is worthwhile. Such guideway locations could solve the problem of access of an intercity system to the core of congested urban areas.

A flexible and receptive attitude is necessary to avoid any non-technical barriers against departures from existing concepts and modes of transportation which may be imposed by tradition, regulations, the need for compatibility of interchange, and limitations of capital resource. Certainly these considerations must ultimately be weighed against technological findings, but it is important that they not inhibit the process of innovation at the start. The need for vastly improved methods for carrying our people and products within the densely populated corridors of the Nation will become acute within the next few decades and the development of high-speed ground transportation as a solution merits serious attention.

A railroad between Detroit and Milwaukee, for example, or between Pittsburgh and Chicago uses no more land than one of today's modern superhighways—yet the rails could carry a substantially greater number of passengers. Therefore, it is in the national interest to have an efficient, modern system of rail transportation just as it is in our national interest to have such a highway system.

Improvements in speed, convenience, cost, and comfort are basic to economic levels of operation. All-weather dependability is another key factor.

Enactment of the proposed legislation will provide a forceful statement that cooperation by the Federal Government in research and development of high-speed ground transportation is in the public interest.

The issue is more than a quest for lower cost and greater efficiency in our national transportation system; it is a question of insuring that America's lifelines flow freely so that our entire economy prospers.

The administration bill will generate measures to meet the challenge which will be both creative and practical.

Our transportation represents nearly one-fifth of our gross national product. Measured against this huge contribution to our economic wealth, the fiscal 1966 estimate of \$20 million for the high-speed ground transportation program would be a modest but meaningful investment that will yield a very significant return to our country.

This project represents a testing ground that can widen our knowledge in a critical field and point a course to transportation progress.

Mr. STAGGERS. Thank you very much, Mr. Secretary. I want to thank you for a very good presentation in your report to the committee on the proposed legislation. I would like to ask you, if I may, at this time some questions.

What do you mean by "high-speed transportation" as you have called it in your testimony—what speeds did you envision in this high-speed transportation?

Secretary CONNOR. We are thinking, initially, of speeds over 100 miles per hour, on an average but so far as we can see there is no ultimate limit. We can think in terms of railroads or rail systems that run up to 200 miles per hour and beyond, assuming that the technological advances that have been made in other fields can be adapted to high-speed ground transportation. And we think this is entirely feasible.

Mr. STAGGERS. Do you know at what speeds the railroads in Japan run—what the average speed is there?

Secretary CONNOR. Well, the average speed, as I remember it, is 107 miles an hour, although it is geared to run up to 125 miles per hour.

Mr. STAGGERS. Do we have the technical knowledge to do this in our country and have we made use of it?

Secretary CONNOR. As we understand, Mr. Chairman, the technology that is used in that system, by and large, was developed in the United States. There is no fundamentally new concept incorporated in this system that we do not already have in our technology and which cannot be applied in the United States.

Mr. STAGGERS. Is it operated by a private corporation in Japan?

Secretary CONNOR. No; that is the Japanese national railroad system.

Mr. STAGGERS. In your prepared statement you talk a great deal about the New Haven Railroad and the northeast corridor—you covered that in your paper rather thoroughly. Do you envision that these companies will be the only ones in this experiment?

Secretary CONNOR. By no means, Mr. Chairman. The idea of using the northeast corridor for demonstration purposes is motivated by the fact that our population density is greatest there. Our concept is that we would be able to demonstrate the feasibility of faster, more comfortable surface transportation on an intercity basis. This is not a commuter passenger problem that we are attempting to solve by this demonstration.

Mr. STAGGERS. Well, now, then you are contemplating high-speed transportation in other areas?

Secretary CONNOR. Yes, sir.

Mr. STAGGERS. You will go up to Boston, for example?

Secretary CONNOR. Yes, sir. The present thinking is that for the type of demonstration that is contemplated the distance from Washington to New York is needed for a proper test of the feasibility of the type of system that is being thought of on the existing rails. The Boston to Providence sector would involve some different concepts and for those concepts it is thought that a test of that distance would be feasible.

Mr. STAGGERS. And the reason for this is that the present evidence shows or will show the feasibility of this. Is this a national concept?

Secretary CONNOR. Mr. Chairman, we think that it is a national problem and one that will be recognized more and more, as we get into the 1970's. We think, therefore, that the demonstration results that will be obtained from this experiment in the northeast corridor will be applicable to many other population corridors that already are evident in other sections of the country.

Mr. STAGGERS. I have several other questions that I would like to ask, but I will at the moment defer to my colleagues who are present.

Secretary CONNOR. Mr. Chairman, at this point may I submit for the record a so-called explanatory statement which provides a great deal of factual material about this ground transportation and the earlier components? We have submitted this for study by your staff, but I think that it would be helpful to have it in the record.

Mr. STAGGERS. Without objection, it will be inserted in the record at this point.

(The document referred to follows:)

EXPLANATORY STATEMENT ON GROUND TRANSPORTATION STUDY

H.R. 5863—A bill to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation and for other purposes

U.S. Department of Commerce, Transportation Research Staff, Office of the Under Secretary for Transportation

I. RESEARCH AND DEVELOPMENT

THE RATE OF TECHNOLOGICAL PROGRESS IN THE RAILROAD INDUSTRY

The basic ideas for much of the equipment that is used in railroads today go back to the period between the Civil War and World War I. During that time many of the fundamental characteristics were introduced, including air-brakes (introduced in 1869), steel cars (1906), electric and diesel-electric propulsion (1884 and 1925, respectively), automatic couplers (patented in 1868), automatic block system signaling (1871), heavy steel rail with currently acceptable cross sectional shapes, etc. Train speeds were consistently increased to the point that passenger trains were frequently exceeding 100 miles per hour.

As the railroad system matured, it was somewhat inevitable that the rate of technological progress would level off, but it must be emphasized that there continued to be an increase in the quality of American railroad equipment and operational procedures. Technological improvements were researched and incorporated, and continue to be introduced. Since World War II, the railroads have invested about \$20 billion on new equipment and facility modernization. In the year 1964, the figure was \$1.4 billion. This included rack car trains capable of carrying up to 1,800 new cars per train. Equipment for piggybacking truck trailers provided for almost 900,000 carloads in 1964 and

has been increasing about 10 percent per year. A 20-hour schedule between Chicago and Atlanta is being maintained. Unit train shipments are large, single-destination, single-product trains that eliminate intermediate switching and have lower rates than single-car shipments. Unit trains are now used for coal, grain, iron ore, hot steel slabs, and various raw materials. The capacity of new freight cars has been increased to the extent that new cars being delivered from the builders average 76 tons compared with 50 tons for those being retired. The most dramatic accomplishment since World War II has been the almost complete substitution of the diesel locomotive for the steam locomotive. The whole character of this technological progress has been evolutionary in nature and the result of growing competition by other transport modes. Aggressive action has and is being taken to compete with freight competition but the same cannot be said about passenger traffic.

Previous efforts to improve intercity passenger travel

After World War II the railroads and their suppliers made a concerted effort to modernize the passenger train business. Table 1 summarizes some interesting characteristics of five advanced lightweight passenger trains that were put in service in the mid-1950's. It is interesting to note that the X-piorer train had one-third the first cost, one-third the weight, and one-third the operating expense (fuel) of conventional trains.

TABLE 1.—History of lightweight passenger trains

Railroad	Pennsylvania R.R. and New York Central and Union Pacific and Rock Island	Pennsylvania R.R.	New York Central and New Haven	Rock Island and New Haven	New Haven
Builder.....	General Motors.....	Budd Co.....	Pullman-Standard.....	ACF Industries.....	Budd Co.....
Type.....	Aerotrains.....	Pioneer III.....	X-Florer.....	Talgo.....	RDC-Hot Rod.....
Construction.....	Steel-aluminum.....	Stainless.....	Aluminum.....	Steel-aluminum.....	Stainless.....
Number of cars.....	16.....	7.....	6, plus center unit.....	6 (3 units each).....	8.....
Seats per car.....	600.....	88.....	Variable.....	96.....	2 have 60 seats; 6 have 7 seats.....
Total seats in train.....	40 feet, 1 inch.....	86 feet, 2 inches.....	99 feet, 3 inches.....	3 units equal 109 feet, 5 1/4 inches.....	576.....
Length of car.....	\$41,600.....	\$95,000.....	\$142,037.....	\$128,750.....	85 feet.....
Cost of each car.....	\$250,000.....	\$250,000.....	\$430,000.....	\$250,000.....	\$325,000.....
Cost of locomotive.....	656.13 feet.....	649.8 feet.....	643 feet, 9 inches.....	656 feet, 9 inches.....	510 feet.....
Length of train.....	\$872,500.....	\$915,000.....	\$1,184,076.....	\$1,022,500.....	\$2,000,000.....
Cost of train.....	1,375 pounds.....	986 pounds.....	1,090 pounds.....	1,146 pounds.....	1,733 pounds.....
Weight per seat, total.....	\$1,454.....	\$1,455.....	\$2,056.....	\$1,775.....	\$4,514.....
Cost per seat, total.....	Pennsylvania R.R., February 1956 to June 1957; New York to Pittsburgh; New York Central, April 1956 to October 1956, Chicago to Detroit.....	Pennsylvania R.R., 1 car only for test runs, New York to Washington and Pittsburgh to Chicago.....	New York Central, June 1956 to October 1957; Cleveland to Cincinnati; New Haven, March 1957.....	Rock Island, January 1956 to November 1957; Chicago to Peoria; New Haven, March 1957, New York to Boston.....	New Haven, Boston to New York.....
Initial use of train.....	Union Pacific, December 1956 to September 1957, Los Angeles to Las Vegas.....	This car was basis for design of 6 multiple-unit electric suburban service cars now in service on Pennsylvania R.R. in Philadelphia.....	New York to Boston; New York Central, October 1967 to July 1968, Chicago to Elkhart.....	Rock Island, November 1957 to present, Chicago-Joliet suburban service.....	Boston to Providence suburban service.....
Subsequent use of train.....	Rock Island to Chicago suburban service.....				Do.....
Use today of train.....					

Source: Vice president, special services, Pennsylvania R.R.

The following material has been extracted from a paper by W. W. Patchell, "Technological Change and the Future of Passenger Traffic" given at Northwestern University Transportation Center Conference, January 1961.

In June 1954, the Eastern Railroad Presidents Conference appointed a committee to determine the type of rail passenger equipment which would meet the needs of the future. About the same time, General Motors developed its lightweight Aerotrain, to produce a service competitive with the bus or automobile. Two of these trains were built. One went into service on the Pennsylvania between New York-Philadelphia and Pittsburgh. The New York Central ran the other between Chicago and Detroit. These trains later were purchased by the Rock Island, and are used in suburban service between Chicago and Joliet.

During this same period, the Rock Island placed Jet Rockets in service between Chicago and Peoria. These were built by American Car & Foundry, which had been promoting the Spanish Talgo train. These trains are now used in Chicago suburban service. A Talgo train was also operated by the New Haven between New York and Boston.

Pullman Standard developed Train X, which is a type of Talgo train. The New York Central operated one train between Cleveland and Cincinnati, but is no longer in service. The New Haven also operated one of these trains between New York and Boston.

In cooperation with the Budd Co., the New Haven developed a train called the Hot Rod, to operate between Boston and New York. With the exception of the cab unit, the cars were basically the familiar Budd rail diesel car. The three New Haven trains operated under diesel power for their entire route, except in the Grand Central Station area, where they picked up current from the third rail for direct electric drive to the propulsion motors. None of these New Haven lightweight trains is in service at present.

The Keystone was the Pennsylvania's contribution to lightweight train development. Although they have the heavyweight appearance of the earlier Congressional equipment, which weighed 1,700 pounds per seat without the locomotive, the Keystone cars weigh only 1,200 pounds per seat. This is just about half of the weight per seat of the standard steel coach used in the New York-Washington passenger service.

As a result of the experience with the tubular-type Keystone train, the Budd Co. designed and constructed its Pioneer III coach. It is mostly stainless steel with plastic interior wall and ceiling panels, and molded Fiberglas seats. This construction reduced weight per seat to less than 700 pounds.

By this time, there was a transition from development of long-distance passenger equipment to suburban service equipment. Recognizing the problems created by suburban service peak-hour loads, the railroads developed high-capacity cars to reduce the tremendous investment needed to replace some of their higher maintenance cost equipment. One, primarily used by the midwestern railroads, where overhead clearances were not a critical problem, was the gallery type of suburban coach, such as the stainless steel car built for the Burlington. It has a weight per seat of 1,400 pounds including motive power. Passengers are seated on the first level in a two-and-two arrangement and on the second level in single-seat balconies, each with an aisle. Similar cars were built for the Southern Pacific, the Milwaukee, and the Northwestern.

In the east, the New York Central, Long Island, and New Haven introduced three-and-two seating for suburban service. This provided relatively high seating capacity on a single floor level, enabling these railroads to meet their clearance requirements.

Following development of the Pioneer III, the Pennsylvania persuaded Budd to develop a new lightweight suburban car for use in its electrified territory. Six of these cars were purchased in 1958. They are constructed of stainless steel with plastic interiors, walls, and Fiberglas stairwells. Utilizing three-and-two seating, they seat 128. Including the propulsion equipment, their weight per seat is 720 pounds, or almost one-half that of the Aerotrain. In three of these cars, Budd used a new lightweight passenger truck known as the Dean truck, which Budd had developed for its Pioneer III coach, and which had been tested in 50,000 miles of operation in New York-Washington service prior to being considered for use in suburban service equipment. This truck, as adapted for use with electric propulsion motors, reduced truck weight.

There was a significant change in thinking with respect to power requirements. This involved a head-end power source for such auxiliary power requirements as heating, lighting, and air conditioning, rather than the costly self-contained units on each car. This principle was used in the Talgo-type trains, the Aero-train, Train X, the Pioneer III, and the Pennsylvania's Keystone tubular train.

These lightweight trains were designed to have strong passenger appeal but the results were very discouraging. The John P. Doyle report, dated June 26, 1961, "National Transportation Policy," Senate Report No. 445, cites some reasons why this happened. Trains such as the Aero-train were made as a unit so that they could not readily be broken for changing cars, even for maintenance. Initial passenger acceptance was generally very good but people began to object to the level of noise and vibration at the higher speeds. Breakdowns were so numerous on some trains that passengers stayed away because of unreliability. Operating problems were encountered, particularly on roads where part of the system is electrified and where only electric locomotives could be used in underground terminals. Another problem was that the light train weight did not consistently trip signal-activating devices.

This experience with lightweight trains in the 1950's, as well as similar experience with articulated lightweight trains in the 1930's, highlights the lack of experience demonstrated at that time by both the few railroad operators who sponsored them and the equipment manufacturers in managing innovation. There was too little service testing prior to use and too little detailed systems analysis and operational planning.

The market for intercity passenger equipment on trunkline railroads in the United States has been small. About the only purchases of intercity equipment have been by two western railroads for de luxe cars for ultra-long-distance operation.

For suburban service, the market has been brisker. Dual-level or "gallery" cars, already described, are hauled by a diesel locomotive at one end, but capable of either direction, or push-pull operation by the installation of a remote control cab in the car at the other end from the locomotive.

Individually powered cars operated in trains by one engineman under multiple-unit (MU) control are being installed in substantial numbers for suburban service by the limited number of railroads which are electrified. These cars constitute, in effect, a refinement of similar equipment operated since the turn of the century on electric rapid transit lines, and since 1910 in railroad commuter service.

More important, however, is the fact that the concept of individually powered passenger cars, operated as MU's, is receiving serious attention for a wider range of service. (It may be noted that the 320-mile high-speed Tokaido line in Japan is equipped exclusively with individually powered cars.)

Opportunities for intercity operation of MU electric cars are limited to the Washington-New Haven and Philadelphia-Harrisburg routes and to a short line between Chicago and South Bend.

Fortunately, the MU concept has also been applied to self-propelled diesel cars since the 1950's, so that it can be used on nonelectrified lines. The decline of local and branch line service has limited recent production of this kind of equipment in the United States, but successful application to longer trains over long distances in Britain and Japan, among other countries, gives promise of renewed and expanded use of this equipment in the United States in the future.

First cost and maintenance expense of individually powered diesel cars tend to compare less favorably with those of locomotive-hauled trains of nonpowered cars as the length of the train increases. However, MU operation has the advantage of lower operating costs for shorter trains and, even for long trains, increased flexibility in adding and subtracting units en route, higher acceleration and braking ability to maintain service despite breakdown of individual units and simplification of terminal operations.

Prior to the Civil War, American railroads were also faced with the problem that they were not compatible with each other. To ship goods from Philadelphia to Richmond, for instance, involved loading and reloading four separate times. The principal offender was gage—everything from 3 to 6 feet—but couplers, wheel flange height, and many other factors also intervened. After the war the principle of interchangeable equipment was developed, cooperatively, by the major railroads and as mergers became common the progress was swift. The

major shift occurred in 1886, when the southern railroads shifted from 5-foot gage to the standard 4-foot, 8½-inch gage in a single hectic day.

The result today is that a new coupler, a new brake system or the like, is acceptable only if it can be used with other equipment. The restriction on development is most oppressive and applies equally to both passenger and freight equipment. Thus, in some cases an electric or diesel locomotive must have steam generation equipment because it might be used with passenger cars which require steam for heat, even on electrified roads.

Following is an examination of the development of railroad subsystems.

A. Track and roadbed¹

For more than 125 years track has been constructed in its present manner, although the components have varied and improved techniques have been introduced since man first laid slabs of lumber on the ground to keep his wheels from sinking into the mud.

1. *Rail.*—The steel rail, basic to all railroad and transit operations, has been used in one form or another since the late 18th century. The T-rail used today became the standard following the Civil War but generally was made of iron until 1870.

Probably no other single railroad product has been researched as much as the steel rail. It has appeared in many shapes and forms and numerous combinations of alloys. By the end of the 19th century there were 119 patterns of rails in 27 different weights.

Control cooling has increased longevity of rail to the point where it can be expected to bear 600 million gross tons of traffic over its life in tangent track, and less on track with more curvature.

Rail with beneficial amounts of silicon, called high silicon, has been utilized successfully to reduce wear on curves. Increased life of 150 to 200 percent over that of control-cooled rail have been obtained under conditions of heavy traffic density.

Heat treatment by flame hardening and induction hardening is claimed to increase rail life 300 to 800 percent above that of control-cooled, but is presently considered economically feasible only for track on heavy curves or grades sustaining high-density rates of traffic and possibly adjacent to station platforms. Several processes have been developed which utilize flame or induction heating of the railhead with air or water quenching, and promise to bring reductions in cost which may find economical advantages for more general use. Fully heat-treated oil quenched rail is used mainly for track structures such as switches and crossings sustaining repetitious impact and abrasion.

Rail joining by welding into continuous lengths is being utilized to a large extent in renewal of track by the railroads. Continuous welded rail has found favor because of the resultant cost reductions in maintenance to track and rolling stock. Rail previously removed from track for rail end batter can be left in for up to 50 percent additional use as welded track. Increased use of welded joints has brought reductions in joining costs to lower than that for bolted joints. Advanced methods and equipment have been developed for electric-flash and gas-pressure welding types, which are the more favored, considered more reliable, and used in fixed plants to produce large quantities of strings 1,300 to 1,400 feet in length. Portable gas welding and induction welding units presently being tested would facilitate the joining of rails in track for new or repair installations.

Rail surface grinding has brought beneficial results to operating transit systems and railroads. Heretofore, rail grinding has been used on a local repair basis and mainly for correction of corrugations. Scheduled dressing is being adopted by more and more systems for the benefits in riding quality, preventive measures against defects, and reduced maintenance of wheels. It is considered that rail grinding on new track installation prior to vehicle operation, and at periodic intervals thereafter, will provide a uniformity of surface free of scale, surface defects, and installation marks which produce objectionable high-frequency vibrations and possibly rail corrugation. Large-scale operations require self-propelled grinding cars.

¹Much of the material in this section has been extracted from a report prepared for Parsons Brinckerhoff-Tudor-Bechtel by Kaiser engineers, "Data Collection and Analysis Report Track and Roadbed Investigations for Test Track Program of San Francisco Bay Area Rapid Transit District."

2. *Rail fasteners.*—The cut spike is the basic type of rail fastener in use for wood tie and ballast track. Improvements and adaptations have come about for means of reducing plate cutting of ties, by provisions to fill plate holes and prevent shifting. These adaptations are available in the form of anchor studs, twisted shank cut spikes, and hairpin spikes, and are considered superior for anchoring of tie plates. The cut spike is still used extensively for line spikes in maintaining gage. Screw spikes have never been successfully used for rail fasteners because of wood fiber stripping within the tie.

Anchorage of rail to preclude track movement has become more important with the use of continuous welder rail. For this, various devices have been devised. The box anchor of the drive-on type is the most popular type of rail anchor for heavy duty work in the railroads of the United States, but requires the use of two units for each tie plate at each anchor point. In track for transit systems and foreign railways, the compression clip has been used extensively for fastening and anchoring rail, and because of its dual function, requires only one unit for each anchor.

3. *Rail supports.*—Rail supports are used to transfer loads from the rail to the tie or structure beneath, and cushion against shock loads.

Originally, rails were fastened directly on the tie. As wheel loads became larger, distribution of loads with the rail base alone became critical, and tie cutting took place, causing frequent renewals. As wood for ties, and labor to replace them became more costly, steel plates with large distribution areas were utilized. Rolling stock and the speed of operation were increased to take advantage of this contribution to tie life. This advantage was pressed to the point that tie cutting even with larger plates became prevalent again. The track designers looked to new materials and after many trials with a variety of materials, found that tie pads of rubbers, other elastomers and compositions gave the best supplement to service and longevity, although they have not generally been found economically superior to steel.

Molded resilient rail seats have been developed and show promise. The rail base is encased in the rail seat, and claims are made for some rotational capability, reduction of curve wear from better transition, improvement in head wear by allowing conformance of railhead to wheel taper, and intimate contact of surfaces.

4. *Roadbed.*—Ballast is essential for transferring loads from ties to subgrade. Its function depends on hard, dense material, resistant to abrasion, and interlocking angular pieces for good distribution. The slags from precious metal and ironmaking processes are considered superior to crushed rock and gravels, but are not always readily available. Most ballast is procured from available local sources, since transportation charges make it uneconomical to import better grades of material. Ballast stabilization has been developed by use of asphalt penetration and stone chip seal courses to upgrade the roadbed. Successful test installations have been found to be economically feasible in reducing maintenance, improving riding quality, and in one instance of reducing noise. A chemical treatment method is also available which is being tested by two railroads for application to ballast. This chemical facilitates the drainage of ballast by causing fine-grained soils and deleterious material to be removed, and prevents fouling of ballast.

Wood ties have always played a major part in track construction, and their usefulness and utilitarian value have been developed consistently to meet demands of the railroads served. The improvements in wood ties have increased longevity by seasoning, preservation, incision doweling, and abrasion pads that have raised life expectancy to 35 to 40 years in tangent track. Wood ties should not be spaced in excess of 20-inch centers, not because of loads imposed, but rather due to the lightweight of wood ties.

The application of concrete ties has been considered for transit system track for its weight in anchorage and stability of welded track, endurance and function of prestressed concrete, and reduced number of tie and fastener units from the wider spacing allowed. Concrete ties have made impressive gains over wood ties in foreign railway practice. The intensity of loads and density of traffic there is less than that on American railroads, which are reluctant to gamble large capital investments on other than test installations of concrete ties, until longevity and feasibility representative of their conditions have been further proven.

Three basic types of concrete ties are the monoblock types of American and German design and duoblock type of Swedish design.

Concrete slab has been contemplated for trackbeds for the past 50 years. Successful use has been obtained when used as subballast slab on soft ground or under dense traffic, but high costs have limited its use. Direct fixation of rail to slabs has encountered difficulties in fastenings that have hampered adaptation for permanent roadbeds. Developments in resilient rail supports and compression clip fasteners show promise for slabs to be utilized as trackbeds and be economically feasible with production techniques of slip form highway pavers.

Precast-stressed concrete beams have been investigated to determine the feasibility of applications of prestressed-precast units placed on roadbeds, joined together in continuous track and providing a uniform distribution of vehicle loads and smooth riding surfaces. Difficulties were apparent in casting beams to varying curvature of system, spiraling and superelevation. Prestressing costs were found to be economically unjustified for comparable performance with other trackbed concepts.

5. *Construction methods.*—American railroads have resorted to large-scale operations in rebuilding track with continuous welded rail. The purpose has been for fully utilizing mechanization and labor crews with resultant substantial reductions in installation and maintenance costs. For that reason rebuilding programs are accomplished to a large degree with tracklaying trains of a scale to build at rates of 1 to 2 miles per day. These operations utilize equipment scaled to renew or build 400 to 500 miles of track annually on large systems.

In European and Japanese railway construction, installation of preassembled track panels is utilized to a great degree with bolted fastenings or field welding for the joining of panels. Transportation and distribution equipment and techniques have been developed and employed for this type of track construction. Panels are handled generally in lengths of 150 feet more or less.

6. *Terminals and yards.*—Each mode of transport has been growing through the years without intermodal system integration. As a result, train terminals are usually located inconveniently to airports, bus terminals, or large parking areas. Improvements are finally getting increased attention.

Current developments in automating classification in freight yards are very important. They include "computerizing" of the humping and car retarding process so that the destination in the yard, the velocity, weight, and momentum are all determined automatically and fed into a computer to determine how much retardation to apply to the car and what combination of switches are required. The process is getting a great deal of sophisticated attention at this time. Automatic car identification equipment is now available, for example. It is interesting to note that techniques of piggybacking, unit trains, and special containerization are changing the requirements with regard to yard size, location, and design.

7. *Tunneling.*—The art of tunneling is being very rapidly improved. New machines, new techniques of soil stabilization, new procedures for reinforcement and finishing have all been developed in quite recent periods. These techniques were developed in connection with mining, subway construction, highway and rail tunnels and water supply tunnels. At present, most hard rock tunneling is still being accomplished by the use of explosives. The use of explosives causes many secondary problems which cost time and money to correct. Hard rock tunneling machines that avoid the use of explosives are getting increased attention. The high cost of land right-of-way has stimulated tunneling in urban areas. Also, the nature of high-speed transport requires minimizing curves which frequently makes tunneling essential. Progress in techniques of rock fracture, mass material movement by conveyor belt, prefabricated tunnel liners, etc., all contribute to this developing technology. Few of these changes developed on railroads although they are applicable thereto.

B. Vehicle-passenger and freight

The basic skeleton design of American railroad cars, both freight and passenger, was developed shortly before the Civil War. This design is primarily dependent on a principal structural member, a strong backbone running the length of the car called the sill. The body of the car is constructed on lateral extensions from the sill, couplers are attached to the sill through a shock absorbing mechanism called draft gear, four- or six-wheel trucks are attached to the sill through pivoting members. Trucks and car body are held together by gravity.

1. *Propulsion—Engines and multiple units.*—Steam engines continue to provide a significant proportion of railroad propulsion only in Russia, South America, and, to a lesser extent, England. Even in those countries steam equipment is

being phased out rapidly. In the United States no steam locomotives remain in main line service. To illustrate the rapidity of the change it should be noted that steam locomotives were still being manufactured in this country as late as 1949. For freight service in this country the change has been entirely to diesel-powered prime movers although electric locomotives, built in the 1930's mostly, are still in use for freight service on the few electrified lines. No exclusive passenger locomotive equipment is being built for service in this country. Present models of diesel-electric locomotives are designed for both passenger and freight service.

The changes in propulsive equipment have been accompanied by very substantial amounts of experiment and research. The first diesel-electric switcher, by GE, went into service in 1925. Before World War II diesel-electric locomotives were too underpowered to provide heavy duty main line freight service. Their first main line service was confined to passenger work. Trains such as the Burlington Zephyr did not exceed the speeds (in excess of 100 miles per hour) of the steam-powered New York Central trains between Chicago and New York, and the electric-powered Pennsylvania Railroad runs from New York to Washington. Although steam locomotives continued to be manufactured after World War II, and some successful attempts were made to increase their efficiency, the superiority of diesel power, in terms of basic efficiency, elimination of wayside coal and watering facilities, greater availability and versatility, lower stress on track structures and, most important, drastic reduction in manpower for maintenance and operation—was already established.

While thus far electric drive has been necessary to provide heavy duty service, recently there has developed an interest in a German-developed "hydraulic drive" in which the diesel engines are directly coupled to the wheels through an automotive-type automatic transmission. All three of the American manufacturers now offer such equipment. During the 1950's extensive experimentation was performed on the use of steam turbine and powdered coal, fuel oil, and nuclear-powered gas turbine equipment. Work on petroleum fueled gas turbines is continuing and shows promise.

Gas turbine engine development has been very rapid. Operable on a variety of liquid and gaseous fuels, this power source is efficient, simple, and easy to maintain. The engines are light in weight and achieve about 1 horsepower per pound of engine weight. Extensive use of gas turbines by highway trucks in lieu of diesel engines is probable. A similar trend may develop with the railroads, as greater speeds dictate lighter equipment.

The basic problems of propulsion are two—traction and energy distribution.

The coefficient of friction between steel wheels and steel rails is nonlinear with speed, varies markedly when films of such substances as water or a plastic material are placed between them and in general is an incompletely understood physical phenomena. Further basic research on traction (or adhesion) seems warranted for both freight and passenger equipment and for both high and low speeds, although it must be pointed out that current projects are being funded by General Electric, General Motors, and many others in this country and abroad. Progress has been limited by the fact that friction effects useful for traction are harmful when applied to the wheel flanges and rails as methods of guidance.

Energy distribution problems center around the fact that a locomotive must carry its own fuel at considerable expense. Supplies of energy must be distributed and stored in locations available to the locomotive. As electricity, the energy is available at all points but the major problem has been the frequency is not consistent at either 25 or 60 cycles. In electric operation from central power sources, the power must be distributed and picked up by locomotives and MU cars. On the whole, there are very few electrified lines and this limits this application. The French did some work on reducing the aerodynamic drag of pantographs in the 1950's. The Japanese have utilized improved overhead suspension systems for their catenary on the new Tokaido Line. The Japanese designed catenary for very close height tolerances. This allows the pressure of the pantograph against the catenary to be significantly reduced without loss of electrical contact.

Although some experimental investigations into reaction thrust devices (rockets, propellers, etc.) was performed in Europe immediately before and after World War II, no work is being done in the United States now and no really significant work has been done here in modern times. There is some data available from the use of aerospace technology to develop the various rocket sled test tracks.

The state of the art in traction motor development has moved ahead very rapidly in the last few years. It was the availability of new advanced solid state devices that provide the means to obtain almost any speed/torque relationship desired. The solid state devices are used to change the input voltage, frequency, phase angle, and wave form so that the desired motor output performance is achieved. Applications for rectification equipment and control are also very promising.

2. Car bodies.—The first steel passenger car was built in 1906 and the first stainless steel and aluminum cars were developed in the early 1930's. The latter development was of first-class caliber, pioneered the fabrication techniques of forming and welding stainless steel, and contributed heavily to the development of various alloys. (This is an instance where railroad technology contributed to our aerospace technology.)

Railroad cars were first lighted by electricity in 1887 and air-conditioned cars appeared in 1930. Vista-dome cars were introduced in 1945, economy slumber coaches in 1956, low center of gravity cars and other experimental equipment appeared in the period of 1950-56. Improvements continue to appear. It is probable that the new emphasis on rapid transit equipment will have a beneficial effect on railroad passenger equipment.

3. Trucks.—Up to the present time railroad car and diesel locomotive trucks have utilized pairs of wheels rigidly connected to a solid axle. Even locomotive drives use coupled wheels. The axles of most passenger equipment and all freight equipment are held at the end in bearings which are, in turn, mounted in slots (pedestals) on the truck sideframe. Springs permit some differential vertical motion between axles. The newest trucks have hydraulic cylinders which prevent longitudinal oscillations.

From the Civil War to World War I most trucks were built up by riveting together rolled steel sections and castings. During the 1920's the all cast-steel truck was widely developed in which truck frame, bolster and spring plank are all cast of steel. There are many designs in service and there was a particularly impressive spurt in development in the period of 1946 to 1950 when such improvements as roll stabilizers, large centerplates, outside swing hangers and the like were designed, tested, and adopted.

By 1958, an all-welded steel truck design which incorporated air springs, shock absorbers, and other improvements was developed.

4. Axles.—Another area of intensive current research is in axles. The axle holds the wheels to gage, as well as transmitting loads from bearings to wheels. A larger safety factor must be employed for axles as the capacity varies roughly as a function of the square of the speed and as used in conventional truck design may well prove to limit high-speed trains. However, every railroad research organization and most of the major railroads have continuing research programs in axle design, failure analysis and detection and the like and the situation could conceivably change.

Bearing loads are fairly high and for freight equipment are getting much higher. For many years bearings consisted of smooth sheets—of various materials such as lead—which were wrapped around the axle. Lubrication has long been a problem and failure results in the well-known hot box, a failure which at best forces the train to run at greatly reduced speeds—at worst can cause fire and/or accident. In recent years engineering pads of various designs have been developed to provide better lubrication and continuous attention by the various railroad research organizations has greatly reduced the problem. At the same time there has been a swing to roller bearings on all passenger equipment and many freight cars. Although the additional cost for roller bearings is about \$500 per four-wheel truck the reduction in starting and low-speed friction, together with some improvement in reliability (which in turn permits higher safe operating speeds) has made the cost acceptable to many users.

5. Brakes.—Braking forces are limited by the frictional forces between steel wheels and steel rails and by the frictional forces between brake shoes and wheels. As mentioned above these forces are not linear with speed. Until very recently railroad braking comprised the application of cast iron brake shoes against the rim of each wheel by an air-actuated system of levers. The system (basic patents in 1869 but under continuous development since) requires a continuous air line from one end of the train to the other and is actuated by a reduction in line pressure. In particular, braking the train sets all brakes. As first developed the air brake system was an on-off device. That is, the force with

which the brake shoes were applied against the wheel was not variable. Later developments permitted a limited degree of variation in the pressure.

The system was and is greatly hampered by tendency of the brakes to lock a wheel as the relative speed decreased. Once locked up the force to unlock them is just not available between wheel and rail, and the result is that a flat spot gets ground on the wheel and the rail is damaged. And of course the wheels are coupled so that two wheels are affected. Research has developed three lines of attack to alleviate the situation.

First, there was the development of an acceleration-sensitive device which detects wheel lock and releases the particular brake pair involved. Developed before World War II, this all-mechanical device is now on about 10 percent of American freight cars and is being incorporated on most new equipment.

A second line of attack involves the development of new brake shoe materials with more desirable slow-speed characteristics than cast iron. These are proprietary developments (one was patented in 1959) and are finding increased use for both new and rebuilt equipment.

The third line of attack on the brake problem has involved disk brakes in use on passenger cars since the middle 1930's.

Research is being done in this field by Japanese and European research organizations and by many American manufacturers.

Electric locomotives and MU's utilize the traction motors for dynamic braking as the primary braking system. Friction brakes are also incorporated, but only at lower speeds and essentially for positioning at stations.

6. *Couplers*.—An automatic coupler design was first patented by Janny in 1868. Before the days of automatic couplers, cars were joined together by link and pin couplers. A heavy iron link extended from a drawbar on one car to a drawbar on another, and a movable iron pin, passing through the drawbar and link on each car, held the cars together. The cars could be neither coupled nor uncoupled without a brakeman stepping between them, to handle the links and pins. Such couplers caused so many accidents, that as soon as the automatic coupler was invented it was a requirement by law. More recent is the development of an interlocking coupler. This coupler has its parts machined to more accurate dimensions than the older couplers so as to achieve a tighter fit. Its most important feature, however, is the interlocking design which prevents uncoupling even in the event of derailing.

The conventional coupler on passenger and freight cars permits automatic coupling, but must be released manually. Automatic uncoupling has been developed and is now being tested for service on the bulk commodity unit trains where individual cars must be quickly and automatically uncoupled to allow for dumping. The need to meet a universal interchange standard has retarded innovation of new coupler ideas. Car couplers are fastened to the car frames by a draft gear which helps absorb longitudinal shocks. The couplers must have some play in them and this is furnished by a draft gear. These were originally spring mechanisms and later friction draft gears using the friction of metal plates and wedges rubbing against one another. These have been replaced on many new cars with a series of rubber pads to take up the shock.

C. Train control

1. *Basic signaling*.—From the beginning, railroad operation required positive control of the "right" to movement, since the vehicles cannot deviate from their route path and stopping distances are long. Hence, even on multitrack routes where tracks were, until recent years, used normally only in one direction, a means had to be found of preventing trains from colliding with preceding trains. Furthermore, since the vast majority of railroad route miles—including main line—in the United States are single track, with operation both ways on the same "path," there also had to be restriction of the right to move in but one direction at a time over a given section. In recent years, to provide more flexibility, even multitrack routes have been equipped with controls which permit either-direction operation on all tracks.

Originally, trains were given "rights" over given sections of line in a sequence rigidly prescribed by a timetable. The system was safe, but clumsy, for if a train were delayed, nothing else could move until it reached its prescribed checkpoint.

Very early trials with semaphores and other signals failed of acceptance.

Starting in 1851 the railroads adopted the still new electric telegraph, which for the first time permitted a dispatcher at a central point to keep in touch with train crews via telegraph operators at stations along the line. By this

means he could issue orders to crews to stop, move, or meet other trains as the situation changed. Gradually semaphore and color indication lamp signals came to be introduced at operators' stations so that they could order a train to halt for orders.

Meanwhile, in Europe there had been developed a system by which employees at successive block stations along the route, in direct communication with adjoining stations by electric bell or telegraph circuit, could pass trains safely block by block, forbidding entry to each until it was known to be clear. On the busier railroads of the United States, starting in 1865, this "manual block" system was introduced to provide the increased flexibility by local, but positive, control. Under manual block, the engineman proceeded by obeying signal indications, which supplemented, or superseded, his train orders and timetable rights.

In 1871, development of the closed electric track circuit and electrically or air-operated wayside signals permitted the introduction of automatic block signals actuated by the trains themselves. Since they were not controlled, these signals could not be used to give a right to a train to move but they served to increase safety and movement by indicating the condition of the line ahead. Where movement by signal indication was desired, manual block stations were retained.

Since World War I, automatic block signals have been converted gradually to all light color or position indication, for day as well as night service, and need for semaphores obviated. With increasing length and speed of freight trains, the number of signal indications has been increased for greater refinement in control of stopping, yet without impairing line capacity.

2. *Interlocking.*—As traffic increased and the track network at important junctions and terminals increased in complexity, it became necessary to manipulate track switches from a central point to provide special signals which would indicate to the engineman whether his route was open and at what speed he should take it, and to interlock the two systems so that no conflicting route-paths could be established. Thus there came into being, shortly after the Civil War, interlocking plant operated from a "tower." At first, switches were thrown and signals moved by long rods or wires, and the interlocking accomplished by sliding contact bars within the control machine which locked a signal or switch if its movement created a conflict. Starting about 1890, electric or compressed-air motors moved switches and signals, and then control from the tower and interlocking of routes was accomplished electrically. Track circuiting permitted the normal automatic block signal feature to be superimposed on the interlocking plant territory. It also prevented switches being thrown under trains.

The chief development in interlocking plants since the 1930's has been "route-interlocking," by which the plant operator merely identifies the locations at which each train will enter and leave the plant territory. The between route is established and accomplished automatically.

3. *Centralized traffic control.*—With the development of coded electrical impulses which could be transmitted long distances, the railroads found they could combine the best features of (a) automatic block signals, (b) movement of trains by signal indication under "manual block," and (c) central control of switches and signals accomplished hitherto within limited interlocking areas. In effect they stretched out interlocking plants to cover an entire stretch of line. Installed first in 1927, on a short stretch of signal track, centralized traffic control (CTC), permits a dispatcher to activate switches and signals over an entire division or more. The signals provide both automatic block protection and give directions to the engineman. Junction and terminal interlocking areas can be tied in as normal parts of the CTC. Since train crews move in obedience to signal indications, train orders are unnecessary and wayside order points can be discontinued.

Until recent years, CTC was used largely to provide greater capacity for single-track lines by permitting faster and more flexible "meets" between trains. Today the greater emphasis is on using CTC to permit the reduction of existing double-track lines to single, or to remove some of the tracks of three- and four-track routes, with large savings in track maintenance and property taxes.

4. *Automatic train control.*—Of limited application, except on ultra-high density passenger routes, are systems of reproducing in the cab the indications of wayside block and interlocking signals. Earlier versions simply repeated indications of individual signals as they passed. Today cab signals utilize continuous track circuits and reflect changes in line condition immediately. In a few instances, the line signals themselves have been eliminated.

Tied in with cab signals, but perhaps even more limited in application today, are systems generally described under the term "automated train control," by which the train is stopped automatically if the engineman fails to obey a signal. Starting in the 1880's many scores of ideas were tried, most of them utilizing a mechanical means of activating brakes from a mechanism located near the relevant signal. A refined form of the mechanical "tripper" is still in wide use on urban rapid transit lines, but was never adopted successfully on trunkline railroads.

In the early 1920's the Interstate Commerce Commission required the railroads to install, on selected test portions of their routes, various forms of ATC then under development. Some of these—the intermittent type—contact the moving train only at the location of the wayside signal. Others provide continuous contact through track circuiting. Almost all types ultimately adopted means by which the engineman could "forestall" automatic braking action by "acknowledging" a warning signal given by the ATC system.

In recent years there has been added to ATC so-called "speed control" which requires the engineman to take precautionary action when he exceeds safe speeds prescribed for a given section of line.

ATC is applied to only a minority of main line routes and, except for ultra-heavy passenger density lines, is not now being installed. In fact, a substantial number of railroads have sought permission to remove installations stemming from Interstate Commerce Commission orders of the 1920's on the ground that train frequency has greatly declined.

However, true automation is being developed for railroad operation by at least two supply companies. Presumably, it would provide train movement and speed control without necessity for crews. So far application has been confined to a few industrial situations, mining and the British post office.

5. *Communications.*—Shortwave radio is being applied widely in the rail industry for communications between crews in yards, between the front and rear of freight trains and between fixed stations and trains. Thus far union agreements have prevented full exploitation of radio for giving instructions to crews.

As a substitute for line wire telephone and telegraph communications between offices and stations, there has been installed a substantial network of microwave relays.

D. Performance capabilities with the present state-of-the-art in railroading

The question is frequently asked, "What kind of performance can we get on railroads with the present technology?" This means speed to most people. In 1893, a New York Central locomotive with four cars hit 112.5 m.p.h. over a measured mile near Batavia, N.Y. In 1905, a Pennsylvania train ran 3 miles at the rate of 127 m.p.h. By 1915, speeds in excess of 100 m.p.h. were being attained over favorable sections of tangent tracks in regular passenger service on a number of railroads. Greater speeds were subsequently achieved in experimental runs in this country and in Europe with the record of slightly more than 200 m.p.h. being achieved by a specially geared electric locomotive pulling four specially prepared cars on a section of track in France in 1956. But average speeds for crack trains still run in the range of 60 to 80 m.p.h. At the present time the New Tokaido Line is running on schedule with maximum speeds of 125 m.p.h. Naturally, the track, roadbed and alignment can limit the maximum speed as much as can train performance.

PRESENT FUNDING OF RESEARCH AND DEVELOPMENT IN GROUND TRANSPORTATION

Technological progress in rail transportation has been evolutionary in recent decades. Furthermore, attempts to develop other means of ground transportation with service characteristics similar to rail have, until very recently, been limited largely to basement inventors. Technological progress in other modes especially air has proceeded much more rapidly. Air transportation has benefited from sizable R. & D. programs, while in contrast ground transportation has been characterized by small R. & D. programs. Unlike air transportation which has benefited from large defense and other Federal Government expenditures, ground transportation has had no Federal Government support directly or indirectly until the start of the HHFA grant program. (This program is still very small compared to the size of the Federal Government support of R. & D. in air transportation.)

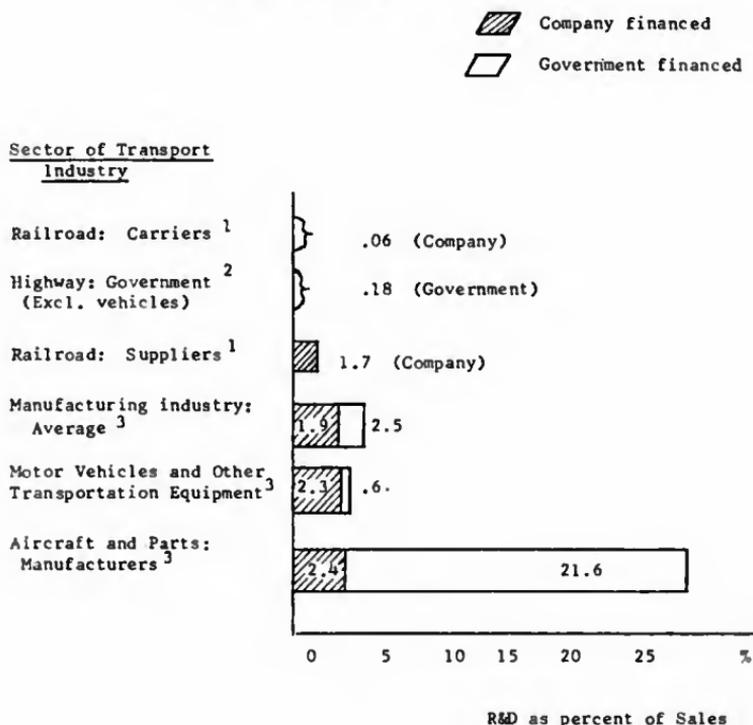
Comparisons are seen clearly in table 1 where expenditures as a percent of sales are shown. Company-financed R. & D. efforts in rail transportation, by both

carriers and suppliers, are modest by comparison with company-financed efforts in other industries. The figure of 1.76 percent which R. & D. bears to sales in rail transportation is below the average of all manufacturing industries for which industry and government R. & D. efforts total 4.40 percent of sales. The total of highway, motor vehicle, and other transportation equipment R. & D. expenditure also does not equal the average of all manufacturing (2.48 percent). However the aircraft industry is well above the all manufacturing average at 24.20 percent.

Relative R. & D. efforts are also reflected in the numbers of scientists and engineers engaged in the different industries as shown in table 3. The most striking comparison is the 101 for air versus the 16 for motor vehicles and other transportation equipment (where motor vehicles raise the average significantly).

R. & D. efforts in transportation supported by all agencies in the Federal Government are shown in table 4. Table 4 shows the HHFA expenditures for rail. (Table 1 does not include urban transit in rail.)

TABLE 1
COMPARISON OF R&D EXPENDITURES FOR
VARIOUS SECTORS OF TRANSPORT INDUSTRY



Sources:

1. R&D expenditures as percent of gross railway operating revenues for carriers, and as a percent of sales for suppliers: Science and Technology in the Railroad Industry, National Academy of Sciences-National Research Council, Washington, D.C. (Average for 1960-62).
2. Research expenditures as a percent of direct expenditures for the entire highway program in 1958: Special Report 55; Highway Research in the United States, 1960, Highway Research Board.
3. National Science Foundation, Research and Development in Industry, 1961. Tables A-22, A-24, pp. 84, 86. 1961 Figures. Data on company-financed research and development do not include funds contributed by industrial firms for the support of various types of organizations who perform research.

TABLE 2.—*Company-financed R. & D. in transportation industries*

	<i>Estimates of millions of dollars spent annually on R. & D.</i>
I. Supplies, total.....	1,007
A. Motor vehicles and other transportation equipment ¹	628
1. Motor vehicles.....	(2)
2. Ship and boat building.....	(2)
3. Railroad equipment ²	15
B. Aircraft and parts ³	379
II. Carriers: total ⁴	(6)
A. Railroads ⁵	6.2
B. Buses.....	(2)
C. Trucking.....	(2)
D. Water.....	(2)
E. Air.....	(2)
F. Pipelines.....	(2)

TABLE 3.—*Full-time equivalent number of R. & D. scientists and engineers, by industry, January 1962*

	<i>R. & D. scientists and engineers per 1,000 employees</i>
Total.....	28
Aircraft and missiles.....	101
Electrical equipment and communication.....	52
Professional and scientific instruments.....	48
Chemicals and allied products.....	32
Machinery.....	28
Rubber products.....	20
Petroleum refining and extraction.....	17
Motor vehicles and other transportation.....	16
Stone, clay, and glass products.....	14
Other industries.....	14
Fabricated metal products.....	12
Food and kindred products.....	7
Paper and allied products.....	7
Primary metals.....	6
Lumber, wood products, and furniture.....	4
Textiles and apparel.....	3

¹ National Science Foundation, "Research and Development in Industry 1961," table A-8, p. 69.

² Not available.

³ National Academy of Science—National Research Council, "Science and Technology in the Railroad Industry," p. 48.

⁴ NSF, op. cit.: Estimated from NSF 1961 figures. Since 1960 the standard industrial classification used for NSF reporting has been changed to include missiles (SIC 19) with aircraft and parts (SIC 372), straight extrapolation of previous data gives 379 as the estimated portion of \$392,000,000 total to be assigned to aircraft and parts alone.

⁵ NSF, op. cit.: The survey gives only the total R. & D. figure for 11 different nonmanufacturing (transportation and nontransportation) industries as \$65,000,000 in 1961. Transportation carriers and services comprise 10 percent of that group.

⁶ Less than \$65,000,000.

⁷ NAS-NRC, op. cit.

Source: Hearings before subcommittee of the Select Committee on Small Business, U.S. Senate, June 5 and 6, 1963. Statement of Dr. Jacob Perlman, National Science Foundation.

TABLE 4.—*Transportation R. & D. expenditures applicable to civilian sector, by Federal agencies by mode, fiscal year 1963*

[Millions of dollars]

	Air	Highway	Water ¹	Pipeline	Rail	Mixed	Total
DOD.....	171	13	10	-----	-----	10	204
FAA.....	59	-----	-----	-----	-----	-----	59
NASA.....	43	-----	-----	-----	-----	-----	43
HHFA.....	-----	1	-----	-----	7	12	20
BPR.....	-----	8	-----	-----	-----	-----	8
AEC.....	-----	-----	3	-----	-----	-----	3
HEW.....	(²)	2	-----	-----	(²)	-----	2
Maritime.....	-----	-----	2	-----	-----	-----	2
Others.....	2	-----	-----	(²)	-----	2	4
Total.....	275	24	15	(²)	7	24	345

¹ Both ocean and waterway.² Less than 1,000,000.

Source: Survey for Office of the Assistant Secretary of Commerce for Science and Technology.

CURRENT R. & D. IN UNCONVENTIONAL GROUND TRANSPORTATION

Work which has been done or is now going on in research and development of ground transportation systems other than conventional rail ranges from improved applications of wheels on rails to air supported vehicles based on aeronautical engineering.

A concept using steel wheels on steel rails has been proposed by General American Transportation Corp. This system is essentially an auto ferry using tracks and cars wide enough to load automobiles crossways for rapid loading and unloading, and traveling at speeds up to 150 miles per hour. The intent is to relieve the driver of the control of the vehicle, to achieve high speeds, and to allow the traveler to have his own automobile at destination.

Monorails have been attracting interest for many years and still are receiving a considerable amount of attention. The esthetic cost of elevated monorails has been a deterrent and there are technical problems remaining to be solved before speeds in the range of 100 to 200 miles per hour can be achieved.

Many engineers believe that wheels on rails cannot be used for speeds beyond 200 miles per hour and have turned to air or magnetically supported vehicles. In fact, Prof. Robert Goddard proposed a magnetically supported vehicle in a tube as a student in 1904. Recently the Westinghouse Electric Corp. has been experimenting with magnetically supported platforms, but the instability is so great no further work is planned.

Air supported vehicles have appeared in many forms ranging from the ground effects machines which "fly" a foot or so off the ground to air bearing vehicles which operate with a few thousandths of an inch clearance above a guideway.

Ground effects machines (GEM's) have been studied extensively in this country and Great Britain for both military and civilian applications. The difficulty of control, dust, noise, and the relatively low current speeds of such vehicles makes them seem unattractive for intercity transportation.

The Ford Motor Co., has an air bearing vehicle called Levacar. Its support is by means of perforated plate through which compressed air flows to float the plate a fraction of an inch above a guiding surface. The major drawback of such a concept is the necessity for an accurately aligned guide surface which is expensive to construct and maintain. The power required to propel such a vehicle at high speeds is quite low compared to wheels on rails.

The General Motors Corp., has designed an air-supported vehicle named HOVAIR which uses a flexible plastic diaphragm, rather than a plate, eliminating the need for the accurately aligned guide surface. Variations up to an inch or so are accommodated through the flexing of the diaphragm.

Britain's Hovercraft Development, Ltd., has proposed an air-supported vehicle traveling in a V-shaped track to be powered by a diesel or linear induction electric motor.

A number of concepts include the use of a linear induction motor, which is constructed by flattening out the rotor into a bar in the track and the stator coils are placed in the vehicle (positions may be reversed). General Motors is considering it to propel HOVAIR. Linear induction motors have captured the imagination of many investigators since World War I. Much of this effort has taken place in England and Japan. These motors which have much potential for high-speed operation have been built and do operate. Effort has been devoted primarily to upgrading the efficiency to an acceptable level. It is possible that the application of the new advanced solid state devices to the linear induction motor may help accomplish this goal.

A major problem facing all of these systems, traveling from 200 to 500 miles per hour, is the protection of right-of-way from obstacles, such as rocks, weather, and other intrusions. One solution which appears attractive to many investigators is a tube or tunnel, offering not only protection, but additional stability and guidance. However, tubes and tunnels pose the problem of increased power required since the vehicle acts as a piston to drive air ahead of it.

One answer to this has been proposed by a number of individual investigators to drive the vehicle with differential air pressure, preferably a vacuum in front of the vehicle. However, the expense of evacuating large volume tubes may prove to be too great to permit an economic system.

Another answer proposed by Dr. Foa of the Reusselaer Polytechnic Institute is to propel the vehicle through the tube with a fan or propeller creating an "air-screw" around the car, pushing the air to the rear and the car ahead. Additional aerodynamic research is needed to prove out the theory.

In addition to the above there are a number of concepts proposed for urban transit which may have components which could be incorporated into intercity systems. One example is the Westinghouse Electric Transit Expressway, an electrically driven, pneumatic-tired bus controlled by a computer.

Several aerospace and railway supply companies are working on automatic controls using central computers.

Substantially improved electric motors appear possible on the basis of work by the Army Engineer Research and Development Laboratories, Garrett Corp., General Motors Corp., Westinghouse Corp., Louis Aliss Corp., General Electric Co., Lear Siegler, Texas Instruments, and Pratt & Whitney.

NEEDED RAILROAD RESEARCH AND DEVELOPMENT

Following are areas of research and development which have potential for improvement of rail transportation:

1. *The dynamics of wheel-rail interaction.*—Much empirical work has been done to study this interaction. A more theoretical analytical approach and an attempt to understand the physical mechanisms that are at work seems required now. Greater understanding is needed of—

- (a) the effects of high speed combined with heavy wheel loads on the life of rails and roadbed;
- (b) adhesion and wheel slip;
- (c) hunting (truck nosing); and
- (d) lack of equalization of load on all wheels of a truck.

While it has long been known that flexure of track is important, no adequate theoretical analysis has been done. We require an improved understanding of track flexure. This could lead to the development of a better structure to replace ballast as well as provide a more precise control of line and surface.

Development of methods to produce improved field closures in continuous welded rails could eliminate "soft" spots with resultant reduction in accelerated wear.

2. *The dynamics of soil mechanics.*—Most of the research done in soil mechanics has been for static loadings. Research is needed to determine the reactions of track substructure under dynamic loadings. More information is needed on—

- (a) soil instability and methods of stabilizing substructure; and
- (b) analytical relationships of soil dynamic load bearing capabilities.

3. *Suspension.*—Research into suspensions appears to be a promising area. Some work is already going on in industry with differential drives and computer simulations of suspension systems. The work might be expedited if a simulation model were completed and used to evaluate some of the proposed suspension systems. Active suspension which would permit increased speed on curves

by leaning the car into the curve require additional study and analysis. Trade-off studies should be made of the increased cost of the active suspension systems versus savings inherent in obviating curve reduction.

4. *Propulsion.*—Recent progress in the laboratory has overcome the long-standing limitation that alternating-current motors cannot produce a high starting torque or a wide range speed of operation. The development of efficient solid state converters and system controls provides the means to vary inputs of voltage, frequency, phase angle, and wave form to the traction motor. It is by this that significant improvements in operating characteristics of alternating current squirrel cage induction type traction motors become possible. Additional effort appears warranted to continue this R. & D. and relate the results more closely to rail traction motor requirements.

In diesel propulsion the development of direct drives, such as hydraulic, which would eliminate generators and motors, is already under study.

The Japanese, by their construction of the new Tokaido Line, have demonstrated that the technology exists to provide electric power pickup at speeds up to 150 miles per hour. Performance capabilities for still higher speeds are not known. Research is required for technology allowing speeds above 150 miles per hour and to find methods to lower the high cost of constructing and maintaining eatenaries.

5. *Aerodynamics.*—Power consumption increases disproportionately as speed is increased due to increasing aerodynamic drag. If speeds are to be increased significantly without excessive increase in power requirements the aerodynamic drag must be significantly reduced.

Head end drag presents a problem because a series of cars, each individually streamlined is not satisfactory when combined as a long train. Movable or adjustable panels should be investigated. Underbody drag has been unusually difficult to study because of the need to simulate the movement over the ground. Head end drag may be studied in a wind tunnel but other test facilities will have to be devised for underbody studies.

Another area where some research may have benefits is in the design of aerodynamic brakes for high-speed trains. These could be used to slow the train to a speed where mechanical brakes are most effective.

The aerodynamics of vehicles in tunnels is another area where not enough is known. Information is needed on questions such as:

The energy costs of "pumping" air in tunnels and what solutions are available to ease the problem.

The energy costs of air drag-friction cause by tunnel walls.

Effect of porosity of tunnel walls.

6. *Automated freight yards.*—At present many large freight yards have been automated, with excellent results. This requires a large capital investment which has retarded similar automation of the intermediate and small yards. Further study is required to establish the means of achieving this automation of the intermediate yards at satisfactory cost levels. Fully automated yards would require the use of automatic coupling and decoupling. If study shows this to be a desirable goal then work should be initiated on automatic couplers and decouplers. Other items requiring improvement to more fully automate yards are automatic car identification and car position information as inputs into central computers permitting computer storage of car inventory and advance train classification plans.

7. *Optimum train length.*—The greater cost of reclassification of long trains has not been systematically compared to the savings resulting from increasing the length of trains; therefore, the economic train theory might be set up in computer studies to compare savings in reclassification in short trains versus other operating savings for long trains.

8. *Consistent delivery time.*—It seems possible that real time computer controls could be established to provide more consistent delivery times. The train makeup by car could be provided by the computer with the objective of providing the best routing for consistent delivery and lowest costs. This might indicate other than the shortest routings. The computer would be then assisting the dispatchers and it might be possible to cut the freight car inventories. There are major problems both with interchange and shipper routing.

9. *Passenger handling.*—Increased use of on-board fare collection and/or automatic fare collection would speed passenger flow.

10. *Containerization.*—Increased attention is required to provide a better material handling capability at the interface between transport modes. Mini-

mizing cost and time involved in transshipment and at both shipper and receiver facilities is essential. Improved containerization and container handling is needed. The railroads have successfully employed piggyback techniques to haul truck trailers. The use of air cushion devices to slide containers on and off flatcars, truck, docks, etc., is being studied by General Motors. Heavy loads can be handled by this means without heavy handling equipment.

11. *Visual test of brakes.*—There is a need to devise an automatic test whereby the train operator can test all brakes to insure that they are in working order after cars have been added to or deleted from the trains, without having his start delayed.

12. *Rail materials.*—Recent use of improved steels and hardening processes, along with the practice of grinding the rail surface before putting new rail into service and periodically thereafter, offers substantial improvement in life of rails and reduction of maintenance costs. Additional benefits in further improvement of rail life, and increased adhesion and lower noise generation may be found in the use of plastic coatings.

PROPOSED RESEARCH AND DEVELOPMENT IN HIGH SPEED GROUND TRANSPORTATION

Following are some of the areas of research and development which have potential for high speed ground transportation (HSGT).

1. *Vehicle aerodynamics.*—Little is known about the fundamental aerodynamics of high-speed ground or near ground vehicles. Information is needed on aerodynamic stability characteristics and lift and drag forces as a function of the guideway-vehicle geometry and vehicle speed, as well as the forces generated when vehicles pass each other in close proximity.

The aerodynamic characteristics of vehicles moving in tunnels of varying degrees of porosity at speeds of 200 m.p.h. and above are not sufficiently well known to permit rational choice of HSGT system configurations.

The possibility of reducing aerodynamic drag through the use of boundary layer control should be studied.

Work on aerodynamics should be started early in the research program as aerodynamic effects will control vehicle design and influence the overall system design.

2. *Vehicle propulsion—General.*—The implications to the overall HSGT system design of various types of propulsion must be investigated. Possible propulsion subsystems include electric motors, gas turbines, ducted fan, bypass engines, turbojet, ejector, differential air pressure, and internal combustion engines.

The feasibility of various novel propulsion techniques has not been ascertained. Research into the feasibility of the most promising of these should be undertaken. The work should begin by establishing the general characteristics required of a propulsion subsystem as a function of vehicle mass, drag, scheduling, communication, passenger environmental control, braking, and emergency and/or redundant capacity requirements.

3. *Vehicle propulsion—Electric.*—Advances made in the last few years in the technology of AC motors offer significant improvements in the ability to design electric drive motors. Desired performance characteristics can now be provided. The development of these techniques into commercially available electric drive motors should be encouraged.

These same techniques may help in the realization of a dream of many years—to develop a linear induction motor with acceptable efficiency. The idea of converting the rotor or armature into the form of a bar in the guideway and the stator coils into a line of coils in the vehicles and using the magnetic flux to generate propulsive force offers many advantages. Current models have low efficiencies.

The availability of electric drive controls consisting completely of solid state devices with no moving parts will offer more reliable controls with stepless acceleration. The research has been done and development needs to be completed.

A possibility for elimination of the difficulties encountered in transmitting electrical power to a high speed vehicle through a sliding contact is transmission of power by microwaves using the tunnel or tube lining as a wave guide. Research into all aspects of the microwave concept is needed to determine its feasibility.

4. *Vehicle-guideway interactions.*—Higher speeds will require improved suspension systems to isolate passengers from vibrations, sway, and changes in

vehicle velocities. One method which is particularly important to investigate is an adaptive system in which the characteristics of the suspension are varied in accordance with the type of disturbance encountered.

As speed increases the demands on suspensions of wheeled vehicles become severe. Research is needed into methods of aerodynamically supporting the vehicle as a means of reducing the demands on the suspensions. One approach which can be studied is the use of the aerodynamic lift provided by ram air at speeds above 200 m.p.h. Another approach which has an almost infinite number of variations is an air cushion vehicle where levitation is achieved by means of a layer of air under pressure beneath the vehicle. The layer of air can range from several feet in thickness to a few thousandths of an inch, depending upon the system used. Means of controlling the layer and pressure include plenum chambers, skirts, perforated plate, flexible diaphragms, and accurately machined ports on accurately machined guide surfaces. The research effort needed to study the feasibility of all these concepts and to provide information as to which if any provide the most suitable answers to the HSGT system requirements is an immense one.

The operation of a HSGT system at speeds of 200 m.p.h. or more implies a well protected, aligned and maintained guideway and infra-structure with the result that the guideway is potentially the most expensive single subsystem of virtually any HSGT system. A considerable portion of this expense is inversely proportional to the allowable guideway alignment. A part of the research effort on any suspension or levitation system must provide answers on these guideway requirements.

The power requirements placed on the propulsion subsystem also must be determined in research on levitation methods or adaptive suspensions. Tradeoff studies between levitation, suspensions, propulsion, and guideway design are needed before selections of the overall HSGT system can be made.

5. *Guideway structures.*—The guideway will inevitably undergo displacements from supporting structure deflections and, also, movements in the rock or earth supporting the foundations. A knowledge is required of the guideway movements, arising from such causes as live load, wind, and temperature. Both the minimum movement which may be achieved and the cost of approaching it are important factors.

Research is required to support economic analysis of the various methods of supporting the guideway—hard rock tunnel, soft earth tunnel, earthfill under a surface structure, deep foundation under elevated structures. The research must provide information to balance the cost of construction of the guideway structure against the cost of designing, building, and maintaining a vehicle and a vehicle guideway interface which can tolerate the movements expected for the guideway structure. Tradeoffs between the vehicle and the guideway must be studied thoroughly. Since the cost of the guideway is many times as much as the total cost of all the vehicles, a vehicle which can operate on a less sophisticated, cheaper guideway will result in major investment and operating cost reductions, even though the cost of individual vehicles may be increased significantly.

6. *Human factors.*—The translation of human needs and constraints into technological specifications has precedent in previous engineering of aircraft and air terminals and to a lesser extent in other vehicular systems. Human factors are construed to include (a) comfort and safety; and (b) the roles of operating personnel.

Constraints on system component designs relative to acceleration, vibration, acoustic noise, illumination, and air pollution need to be compiled.

Terminal facilities and procedures for entry (reservations, ticketing, baggage, etc.) and exit need to be designed.

7. *Computer control.*—The objective of research in control by central computers is to determine feasible schemes for sensing, processing, and evaluating all information needed to control traffic automatically in the network and to sustain the required level of performance established for the network.

Decisions on scheduling (based, for example, on predicted or predetermined passenger demand), dispatching, and vehicle speed control and regulation can be made either at a central computer facility serving the entire network or at several regional facilities. It is possible that the final transport system will contain both central and local information processing and decisionmaking centers. In this case, it is necessary to evaluate cost and reliability factors associated with the degree of central computer control responsibility.

8. *Dynamics and control of vehicle groups.*—The research outlined is concerned with the determination of several optimal control schemes for the velocity control of each individual vehicle within a string of high-speed vehicles.

This research is necessary in order to establish—

- (a) The optimum spacing of the vehicles as a function of the desired average velocity;
- (b) The transient deceleration and acceleration of each vehicle whenever switching and injection of vehicles takes place;
- (c) The speed control associated with the rendezvous process of a through vehicle with a local one;
- (d) Bunching problems that may arise as a result of system disturbances and their effect upon the system operation; and
- (e) Sensitivity characteristics of the system whenever unpredictable disturbances occur.

9. *Communications.*—Research on the role of communications in a HSGT system has two principal aspects:

- (a) The determination of the nature and amount of information content required in the system in order to achieve the operating performance characteristics specified for the overall system; and
- (b) The determination of the form and organization of communication links required among the various elements within the transport network and between the network and the users it serves.

The control of traffic in the HSGT system requires the sensing of information concerning the state of the system, transmission of this information to appropriate points, and the processing of the information for presentation to the controlling and decisionmaking devices. The quantity of information to be handled, and its form, are determined to a great extent by the degree of optimality required in system performance.

II. DEMONSTRATION PROGRAM

DEMONSTRATIONS

Purpose

An essential part of the program to explore the potential of fixed-path/high-speed ground transportation utilizing special-purpose route facilities is to test the market as inexpensively as possible, before large sums are committed for new or improved facilities.

By measuring public response to varying levels and combinations of speed, cost, comfort, and convenience, obtainable, without delay, at low cost, the demonstrations will help to indicate the economic prospects of long-term investment in improved ground transportation.

Since the only guided surface transportation using special-purpose fixed facilities now operative on a commercial basis is railroads, the project will utilize existing rail routes in the northeast corridor for the controlled experiment.

Providing improved passenger service utilizing the best of present technology, will (1) test public reaction to measurable improvement in present techniques and (2) provide a basis for statistical projection of probable response to still further improvements.

It is desirable to make projections before commitments are made to build systems whose costs may range between \$750 million and \$3 billion in the northeast corridor. For a total expenditure by the Federal Government and by interested private groups of less than \$50 million, rail service in terms of comfort and convenience can be greatly improved, and elapsed time in route reduced considerably. This should give a good indication of the results of more far-reaching improvements.

Although the demonstration will use selected rail routes along the northeast corridor, its results are expected to be useful to many other parts of the Nation such as: (a) Seattle-Tacoma-Portland; (b) the east coast of Florida; (c) Milwaukee-Chicago-South Bend-Cleveland; and (d) San Francisco-Los Angeles.

It must be emphasized that the demonstrations are tests. They are not intended to be long-term commitments of the Federal Government to provide intercity rail passenger service.

Federal funds would be employed exclusively to defray those costs of equipment required to attain the standards of service prescribed by the Government as essential for a valid test of public response. The railroads would receive no assistance in sustaining the present level of passenger service or standards of

plant and equipment. The demonstration would have no effect on their present circumstances with regard to tax accruals, access to capital, public obligations, etc. Increased revenue resulting from the improvements incorporated in the demonstration would be used to reduce the Government's contribution to increased expenses.

The \$8 million now sought as the public contribution to the incremental cost of the demonstration decidedly is a proper responsibility of the Federal Government. The probe is designed to produce answers which Government must have for long-term transportation planning—not only with the corridor, but also elsewhere in the Nation. In any case, no commitment to a future development of railroad transportation is implied.

Investigations by the Department of Commerce indicate that improved railroad service in the corridor shows promise of potential usefulness. At the same time, alternative forms of improved passenger transportation are in prospect. Before committing any party in interest to an estimated investment of perhaps as much as \$2 billion in order to provide even an attractive rail-type service, using facilities, it is essential that public reaction to demonstrations of selected improvements be obtained. Only in this way can we assess the probable public patronage of any form of improved ground transportation—including a high-speed railroad itself.

Secondly, the economic cost of varying levels of service standards applied to railroad transportation must be compared with alternative forms of surface transportation measured against a similar yardstick.

The cost of the demonstration projects to the Government will not exceed \$8 million in the first year of the 3-year experiment. Of this sum, about \$200,000 represents the expense of developing and implementing wholly new techniques of measuring and analyzing travel demand response factors and trends on a particular travel route.

The remainder, \$7.8 million, would constitute the national contribution to increased investment required to provide appropriate test conditions (i.e., improvements in railroad passenger service quality) along the corridor rail routes which have been selected for this purpose.

In drawing plans for improvements prescribed for the demonstration, the Department of Commerce has evaluated carefully all relevant developments in railroad passenger service since the end of World War II. Included was a survey of the limited number of demonstration projects involving railroad commuter service which were sponsored by the Housing and Home Finance Agency under the authority of the Housing Act of 1961.

The Department has also reviewed experiments by the railroads—and their suppliers—with innovations in equipment, schedules and fares, most of which occurred in the immediate postwar years, in an effort to arrest the decline in passenger revenues and reduce their deficits.

The new Tokaido Line in Japan and the Trans-Europ Expresses and other modern European trains have received attention. Such foreign innovations as appear appropriate to American conditions and feasible in the limited demonstration project will be given serious consideration.

Washington-New York Line

The key items in the demonstration improvement, funded jointly by the Federal Government and the railroad, are expected to be:

Acquisition of a number of new high-speed, stainless steel, self-propelled electric "multiple-unit" passenger cars operable in trains without locomotives;

Upgrading of electric current catenary structure as required;

Revision of signal system where necessary to permit high-speed operation;

More intensive improvement of a selected stretch of track between Trenton, N.J., and New Brunswick, to permit tests of still higher speeds.

In addition to these items, it is hoped that other improvements could be included in the demonstration program. Some of the new improvements which have been suggested as desirable are:

New suburban stations with ample parking and convenient highway access;

Improved baggage handling;

Car level platforms at Wilmington, Baltimore, and Washington;

Automatic protection at all grade crossings;

Improved ticketing procedures.

More extensive changes, curve reductions for example, are not contemplated.

With intensive utilization at the higher speeds which engineering studies show to be feasible, the new equipment could add a substantial number of runs to the present frequency of through Washington-New York trains, and without disturbing the present through service between Washington and Boston and between New York and the South and West. Such a large number of schedules would provide frequent, regular service to both terminal and intermediate points. The new cars would be scheduled, where possible, to provide runs of less than 3 hours elapsed time between the two cities (compared with present best schedule of 3 hours, 35 minutes) at hours of peak demand for through travel. The added service, of course, increases peak period capacity.

Contemplated also is the adjustment of schedules provided by existing locomotive-hauled passenger trains on the New York-Washington route for optimum blend with the additional runs to be performed by the new cars. Included in the plan is operation of a train of conventional equipment on a new fast schedule between New York and Philadelphia at the peak business travel period, morning and late afternoon.

Specifications for the new cars now being prepared will call generally for faster acceleration and braking than is currently available in railroad train operation, as well as for a sustained running speed of 150 miles per hour. Among the advantages of self-propelled cars, compared with locomotive operations, are:

1. Quick turnaround and flexibility of train make-up without terminal switching;
2. Lower rolling weight stress on bridges;
3. Faster, smoother acceleration and braking.

Design of these cars is basically similar to that of equipment recently acquired for suburban railroad service in the Philadelphia area. Demonstration specifications, however, call for more spacious seating and refinement in seating, lighting, decor, baggage accommodation, springing, etc., adapting the units to longer haul, intercity operations. Facilities for a light food service will be provided, obviating the need for food vendors. There will be parlor car as well as coach accommodations. It is hoped that the new cars will be at least as comfortable at speeds over 100 miles per hour as the best present cars at 80 miles per hour. In addition to improvements in overall comfort and decor, attention will be paid to such details as air-operated, easy-to-open doors and ashtrays at each seat in smoking sections of the cars.

New York-Boston Line

In view of the serious physical obstacles to higher sustained speeds along much of the so-called shore line between New York and Boston, the initial demonstration project is expected to confine physical improvements to the relatively straight and well-graded stretch of the New Haven's main line between Boston, Mass., and Providence, R.I. On this still heavily patronized segment of the corridor route, there is tentatively planned a substantial increase in speed, frequency, and comfort, using a gas-turbine, self-propelled, lightweight train now under development by a leading carbuilder.

The only portion of the New Haven Railroad which is electrified and can be used by the new electrically powered cars to be provided under the demonstration project is the densely traveled four-track section between New York and New Haven.

The route taken by all of the railroad's suburban, and most of its long haul, trains utilizes the tracks of the New York Central to gain access to Grand Central Terminal. The Central uses an electric power system which differs from that of the New Haven's both in type of current and in method of current collection, and New Haven locomotives and multiple-unit cars serving this route must be specially and expensively equipped to adapt to both systems.

Hence operation of demonstration equipment likely will be confined to service in and out of Pennsylvania Station, New York. This could take the form of through service between New Haven, Conn., and Pennsylvania Railroad points or additional service between New Haven and New York via the Hell Gate Bridge route, with convenient transfer to Pennsylvania Railroad trains.

The demonstration project will, however, make full ticket collection and other statistical studies of the entire New York-Boston main line of the New Haven for future use. Since a portion of intercity trains on the corridor rail route run through between Boston and Washington, utilizing equipment of both railroads, it is necessary to study patronage reaction of the through corridor route as a unit, as well as the separate sections southwest and northeast of New York City.

Experimental design

Since the purpose of the demonstration project is to measure as precisely as possible public reaction to specific ingredients of service betterment, it is essential that the experiment be designed, or shaped, in advance, in detail—to produce the largest possible store of usable information, with maximum pinpointing of the individual factors of improvement.

Only a relatively short span of time has been allotted to the project; hence, a sequential type of data analysis probably will be necessary, so that data can be examined at relatively short intervals, as a basis of decision to change or continue the relative weights of individual items of service change.

An efficient sequential design will require continuous and current availability of detailed results. Careful attention must be given to the degree of sensitivity in the data collection system.

Were there unlimited time for the experiment, quite possibly the key factors of service improvement could be put into effect one at a time, and each additional factor isolated from those preceding. Obviously, since this is impossible, combinations of factors will have to be dealt with.

Fortunately, by applying and appraising varying combinations of factors on individual trains and on separate segments of the routes involved, it should be possible to obtain refinement in identification not possible with their uniform application.

Second, modern techniques of differential statistical analysis will further break down the raw data findings to isolate specific items of influence.

To insure high sensitivity, the data-collection system will be carefully planned to give an orderly, progressive sequence of events which will measure market response to a wide range of changes in speed, schedule, frequency, and convenience and fares.

The specific pattern of changes in these factors which should be made during the demonstration period will depend in large part upon information developed in the base year prior to the beginning of actual demonstration.

This information will be obtained from sample surveys of all types of passengers, both rail and nonrail, and from more intensive flow data collected from rail passengers alone. The survey data will include information on reasons for choosing present mode of travel and preference for various levels of change in speed, schedules, and other factors possible in rail travel. The flow data will show station-to-station movement of rail passengers by type of ticket, time of day, and day of week, as well as seasonally. The indicated preferences and observed flow pattern will be used to design the optimum combination of improvements possible within the capability of the demonstration. The experiment will include meaningful deviations from this optimum in such a manner as to permit measurement of the differential effects of the important factors within the time permitted.

Accurate, detailed and current passenger statistics will be collected from both the Pennsylvania Railroad and the New Haven Railroad on trips between Washington and New York and Boston. These data will be collected from July 1, 1965, to provide a normal base year for the demonstration period starting July 1, 1966, and through the demonstration period, which will probably end June 30, 1967. Each passenger moving on through trains will be counted and classified according to: (1) City of origin and destination; (2) type of ticket (e.g. coach or pullman); (3) date of trip; and (4) train number (time of day).

These data will be collected continuously by the conductors on each train and will be reported at the end of each run. The data will then be summarized according to the four classifications shown above. These classifications will permit tabulations showing the flow between each pair of the following cities: Washington, Baltimore, Wilmington, Philadelphia, Trenton, Newark, New York, Stamford, Bridgeport, New Haven, New London, Providence, and Boston.

These flows can be summarized, in total, for any period of days, or hour of the day, and by type of ticket. The detail in which the basic data are collected will also permit the development of distribution of traffic showing peakloads as well as averages and the effect of shifting schedules.

In addition to the traffic flow data, there will be a program of on-train questioning to develop patron reaction to changes in service and sample surveys to determine the effect of such changes in rail service on nonrail passengers. These sample surveys will also measure the effectiveness of advertising which will be needed to acquaint people with the demonstration program.

A campaign of advertising and promotion must be progressed at planned intervals to give good coverage of all potential travelers. If this is not done the normal lag in patronage response will make it impossible to measure the true reaction to change, in the time allotted for the demonstration experiment. A proper interpretation of results must take into consideration not only the possibility that the true result is larger than that observed because of a lag in response, but that it might be smaller. The so-called novelty effect would attract people who would later revert to previous riding habits.

These considerations make it clear that expert judgment will play an important part in evaluating the data which can be obtained during the demonstration period.

After at least a full year of evaluating and analyzing the passenger travel using the present rail service in the corridor (collection of data has already begun), the demonstration project would run for 12 to 18 months. The preceding year would be used not only to gather data on present travel as a basis for evaluating response to the demonstration service (and a basis for adjusting results for seasonality) but also for planning the service and the methods of data gathering and for acquisition of equipment and other physical preparations.

During the demonstration itself the Department will determine, in consultation with the railroads involved, the service to be provided and the standards of convenience, speed, cleanliness, and so forth which will govern. Arrangements will also be completed for the collection of data on public response. The railroads and their employees will conduct the actual operations. If, after 6 months or more, patronage appears to have adjusted to the improved quality of service, further changes in service, and possibly in fares, will be undertaken in order to measure their effect on demand. The guiding consideration in planning service features and service changes is to gain information on public response.

In addition to improvements in speed, frequency, and convenience it is hoped that many ancillary features of travel can be tested. Studies of various amenities on the train, of stewardess service, baggage handling and checking, ticketing, reservations, use of credit cards, access to trains and stations, limousine service, parking at stations, and other matters will be undertaken. Such present day conveniences as paying fares on the train will be tested. The effort to retain the convenience of the private automobile may go beyond the provision of parking facilities; it may be feasible to put automobile carrying cars on some trains as is done in Europe.

Because train service is most economically suitable between large centers of population, the demonstration will be directed to the larger cities in the test area, probably New York, Newark, Trenton, Philadelphia, Wilmington, Baltimore, and Washington, and, on the New Haven Railroad, Boston and Providence. Rather than merely a succession of trains stopping at all intermediate points it is contemplated that the schedules would include nonstop runs between New York and Washington and between other city pairs such as Philadelphia and Baltimore. For some of these city pairs, the schedules from city center to city center will be faster than air.

Operating fast, frequent service will, of course, require coordination with the freight movements on the railroad. The engineering study on which general planning is based indicates that track facilities are adequate or can be arranged so coordination is feasible. The Interstate Commerce Commission is being consulted in the planning; its safety regulations are being followed.

Public response to service improvements obviously cannot be tested if the public is unaware of them. For this reason a thoroughgoing promotional effort will be planned and carried out. Publicity will be sought and features likely to capture favorable public attention will be emphasized.

As a part of the effort to measure public response to improved rail service, which is the whole aim of the demonstration, travel market studies, interviews with travelers, and other forms of inquiry will be carried out. It will be helpful to learn whether travelers would have foregone their journey were it not for the demonstrations or whether they would have traveled by rail or some other public carrier or by automobile. As mentioned earlier, other Federal agencies are cooperating in the project. The cooperation of State highway departments and of air and bus companies will also be requested in efforts to gather complete data.

III. NATIONAL TRANSPORTATION STATISTICS PROGRAM

NATIONAL TRANSPORTATION STATISTICS PROGRAM

Recommendations

In order to assure that developing high-speed ground transportation plays an efficient and economic role in the Nation's transportation system, improved information about the demand for movement of people and goods as well as of the impact of new transportation facilities is necessary. Accordingly, the proposed legislation to authorize high-speed ground transportation research and development entails the coordination and improvement of transportation statistics. The level of funding asked for this part of the high-speed ground transportation program in fiscal year 1966 is \$2 million.

The \$2 million request for the statistics program for 1966 will be expended as follows: \$500,000 for development of an information system, \$500,000 for standardization and adjustment of data collection procedures of agencies now collecting transportation data, and \$1 million for new data collection.

New data collection in fiscal year 1966 will concentrate on traffic flow information. A part of this sum will be used to collect information specifically needed for the northeast corridor transportation project.

Statement of the problem

At the present time, many agencies of the Federal Government collect transportation statistics. Transportation data are also collected by agencies of State and local government and by private organizations. While masses of data are accumulated, lack of central coordination impairs the usefulness of the available information. Moreover, shortcomings of the data, both with respect to reliability and completeness, tend to be perpetuated.

In a report entitled "Improving Federal Transportation Statistics," issued in May 1962, the Committee on Post Office and Civil Service of the House of Representatives declared:

"* * * Since there is no Federal transportation agency or even a clearinghouse to fit together the many pieces of transportation and travel information, this fragmentary approach has resulted in duplication and excessive trivia in some systems and complete gaps in others. At present, no one can begin to define the statistical dimensions of the transportation universe."

The committee report identified three major deficiencies in currently available transportation information:

1. It does not cover all commercial transportation—the principal major gaps are in the intrastate motor carriers and the exempt for-hire and private motor carriage, but there are serious statistical gaps in other modes, also.
2. It does not provide a comprehensive picture. The available data cannot be brought together into a meaningful evaluation of total freight and passenger movement in this country.
3. It does not present significant detail on the movement of passengers and freight, either nationally or in the geographic regions.

The committee report stated elsewhere, "* * * it is a truism that no overall national transportation policy can be intelligently developed until a meaningful body of facts is assembled, nor would one expect the uncoordinated and highly competitive segments of the industry to work together voluntarily to fill the statistical voids which, in fact, handicap the entire industry."

The problem under consideration is of a magnitude and complexity such that a considerable expenditure of effort for a number of years will be required to bring about needed improvements. In order to describe some of the difficulties of the situation as it now exists, a review of the nature of existing data collection activities by Federal agencies seems appropriate.

Existing Federal transportation statistics programs

Seven Federal agencies conduct large-scale programs of collection of transportation statistics. In addition a sizable number of other agencies also collect transportation or transportation related data.

1. *Interstate Commerce Commission.*—The Interstate Commerce Commission obtains very large quantities of information from the carriers falling within

its regulatory control. This includes not only the firms directly concerned with the movements of goods and persons, such as the railroads, motor carriers, and pipeline carriers, but also organizations related to these transportation activities, such as sleeping car companies, freight forwarders, private rail car lines, and so on.

ICC reports include coverage of the following information:

- (a) Financial statistics, including revenues, expenditures, investment, depreciation, and other data, for rail, motor, and water carriers.
- (b) Operating statistics, including data on equipment, miles of track or road, equipment in line haul or yard use, and other data.
- (c) Gross data on number of passengers carried.
- (d) Data on commodity carriage.
- (e) Data on carrier accidents.
- (f) Railroad employment data.
- (g) Reports on the Pullman Co. and Railway Express Agency, Inc.
- (h) Financial and statistical data on freight forwarders.
- (i) Financial and statistical data on private carlines.

While the Interstate Commerce Commission has been collecting extensive information germane to its regulatory obligation, the data are of limited usefulness for transportation policy or program studies.

From the point of view of transportation policymaking and the studies associated with it, additional data are required in the following areas:

1. Most intrastate carriers do not report to the Commission. Among motor carriers alone, those under ICC authority accounted for a little over one-third of all intercity ton-miles carried by truck.

2. With the limited exception of the 1-percent waybill sample, it is virtually impossible to associate ICC information with the actual origins and destinations of passenger and goods movement.

(a) The great majority of all reports to the ICC is made on a company basis. Both financial and operating statistics are usually company totals or averages which cannot be attributed to the specific geographic areas served by the carrier.

(b) The closest that any ICC information comes to providing origin and destination information is the railroad waybill sample. This sample is a measure of commodity flow between States. Even in this instance, problems of geographic and commodity classification as well as the unevenness of reporting procedures tend to limit the value of the data. No adequate information concerning origin and destination and volume of passengers on rail and motor carriers is obtained.

2. *Civil Aeronautics Board.*—The Civil Aeronautics Board is responsible for the economic regulation of air carrier operations, the development of international air transportation, and the promotion of air safety in civil aviation.

CAB data cover all domestic air carriers over which it has jurisdiction. Non-scheduled and contract carrier and some intrastate carriers are generally excluded. These exceptions do not represent a large portion of the air carrier market.

The CAB concentrates on two types of statistical reports:

1. Air carrier financial and operating statistics: Generally these reports are published quarterly. The financial reports summarize revenue, expenses, and income for CAB certificated route carriers. The air traffic statistics reports summarize airline operating statistics such as seat-miles, passenger-miles, load factors, cargo ton-miles, by airline and in total. Much other statistical information is collected by CAB from individual carriers and appears in various reports.

2. Airport activity statistics: These data cover the number of aircraft departures and volume of passenger, freight, express, and mail traffic generated at each airport served by certificated route carriers.

3. Airline ticket samples: The CAB samples tickets sold for both domestic and overseas travel. From these samples, origin-destination and competition analysis statistics and reports are prepared. The flows of passengers between city pairs and the competitive positions of air carriers in the markets are readily obtainable from these reports.

There are some important areas that are not currently covered by the program. The first of these is the rapidly growing field of air cargo service. Commodity

flows and origins and destination statistics will become increasingly important. There is need for data on passenger market areas served by major airports. Another area of importance is the need for data on complete user travel time and costs, including those to and from airports.

3. *Federal Aviation Agency.*—The Federal Aviation Agency compiles statistics on a number of areas important to its primary responsibilities. The data are published in the following reports:

1. *Aircraft listing and descriptions:* This includes reports of active civil aircraft by State and county; registered civil aircraft operated by U.S. air carriers.

2. *Traffic and activity reports:* These reports cover all types of air traffic activities at airports having FAA air traffic control facilities and at military airports. Such figures as aircraft landings and departures, control operations, and instrument approaches are published for the civil airports.

3. *Other special types of reports on subjects such as aviation personnel, agricultural flying, airline accidents, are made.*

4. *Other publications are the annual national airport plan and the 5-year aviation forecasts:* FAA also has available a wealth of technical information on airports, aircraft guidance facilities, airplanes, and air traffic patterns.

Data on airport traffic levels by type of traffic, airport physical characteristics, FAA air route facility and services are available and useful for transportation policy and program research.

There are some air data that would be highly useful additions to those now collected. One important example is the need for more adequate statistical information on general aviation, especially business flying. General aviation is an important factor adding to congestion at air terminals. Information about travel patterns, the nature of the companies owning or chartering aircraft, and the purpose for which these are used would be helpful for future terminal planning. Airport finances and economics are another gap in the existing information. Both operating cost data and sources of revenue would be useful items of information.

4. *Corps of Engineers, Department of the Army.*—The Corps of Engineers maintains very detailed data on waterway and coastal facilities, waterborne commerce and vessels.

1. *Waterborne commerce statistics:* This information is published annually in five volumes and two supplements. The data is geographically organized in a minutely detailed breakdown of segments of the U.S. coastline, waterways and canals, including ports and harbors. Statistics are given for each of these segments on physical characteristics (depth, area, etc.), vessel trips by type and draft of vessel, and receipts and shipments by commodity and type of traffic.

2. *Vessel data:* Details on vessels and their characteristics are kept and reported annually in three volumes.

These statistics are detailed and comprehensive and are useful for transportation research and policy studies. The geographical and commodity classification systems used are unique and it has been difficult to make the data compatible with those obtained from other sources, such as the ICC.

Due to the decentralized reporting and time lags in compilation it is frequently necessary for users to request special tabulations in order to obtain timely information.

5. *Maritime Administration, Department of Commerce.*—The Office of Ship Statistics of MARAD collects statistical data relevant to the administration of its responsibilities and programs. Over 20 periodic reports are published. These reports concern primarily the following subject areas:

1. *Manpower, employment, job distribution, compensation, and other labor statistics for the maritime industries.*

2. *Vessel inventories covering Government-owned, U.S.-flag and foreign-flag merchant fleets.* Data is restricted to ships of 1,000 gross tons and over.

3. *Data on ship construction, sales, deliveries, transfers, scrapings, etc., for the United States, and in some cases, the rest of the world.*

These statistical programs are limited to the study of merchant fleets, maritime labor, and similar subjects in this sector of the economy. Little or no information is available on passenger or goods flows.

6. *Bureau of Public Roads, Department of Commerce.*—The Bureau of Public Roads collects and publishes a wide variety of statistical reports covering the following subject matter:

1. Motor vehicle statistics including fees paid, fuel consumption, and highway income.
2. Reports covering highway financing, construction, and use.
3. Reports dealing with vehicular traffic on roads.
4. Special reports on truck weights, speed trends, the economic impact of highway construction, and other topics.

Bureau of Public Roads reports do not at the present time cover highway freight movement on a comprehensive basis. The utility of BPR reports is also limited by the difficulty of obtaining information for areas smaller than States. The detailed information is generally retained at the State level and must be obtained from State agencies individually. Also gross vehicle flow information published by BPR cannot be associated with specific origins and destinations.

A great deal of statistical information is collected under the auspices of the Bureau of Public Roads by State and metropolitan transportation and planning agencies. A good deal of progress has been made toward improving the quality of this information and in standardizing the statistics that are collected. These planning oriented data collection activities are among the most valuable of all transportation statistics programs. Information is collected in great detail, including specific origins and destinations of travel and goods movement. This information is now available only from the State and local sources engaged in its collection, and does not at this time contain sufficiently detailed intercity movement data. Making these statistics centrally available would be a very helpful step. Further action needs also to be taken in achieving across the board data standardization.

7. *Bureau of the Census, Department of Commerce.*—The Bureau of the Census conducts several programs of data collection in the transportation field. The programs of special significance to the development of a national transportation program are summarized below:

1. *Projects of the Transportation Division:* This Division has recently been conducting, as part of the 1963 Census of Transportation, three surveys to fill major information gaps in the transportation statistics collected by the Federal Government.

- (a) *Truck inventory and use survey:* This was a survey of the owners of 115,000 trucks selected from the nearly 13 million in the United States. Information was collected on the type and physical characteristics of vehicles including trailers, use of truck, business of owner, and characteristics of utilization (miles driven, area of operation, etc.).

- (b) *Commodity transportation survey:* This was a survey of out-bound shipments of commodities by manufacturing firms. A sample of 10,000 manufacturing firms was selected, and a further sample of shipments was then selected from the firms, records. The following information was collected: Month of shipment, commodity group of items, shipping weight, origin and destination, and mode of transportation. Results have not yet been published.

- (c) *The national travel survey:* The survey was conducted in 1963, on a quarterly basis, as a part of the quarterly household survey of the Bureau of the Census; 6,000 households were interviewed during each quarter of 1963 regarding trips taken, mode used, size of party, distance of trip, destination, etc. Socioeconomic characteristics of the family were obtained.

The national travel survey produced information of value for a general overview of the travel market in the United States. For more detailed analysis, the survey's usefulness was limited by an insufficient number of observations to permit intensive analysis of travel by some modes or in specific regions.

2. *Transportation statistics in the census of population and housing:* In the 1960 Census of Population and Housing, the Bureau of Census collected and compiled for the first time statistical information on the journey to work. The data includes, on a census tract basis, the number of automobiles available to each household and the principal mode of travel from home to place of work.

8. *Other transportation statistics program.*—In addition to the major programs reviewed above, many Federal agencies collect transportation or transportation related data. Among these are:

- Office of Business Economics, Department of Commerce.
- Bureau of International Commerce, Department of Commerce.
- Public Health Service, Department of Health, Education, and Welfare.
- Office of Education, Department of Health, Education, and Welfare.
- Bureau of Mines, Department of Interior.
- Immigration and Naturalization Service, Department of Justice.
- Bureau of Customs, Department of the Treasury.
- U.S. Coast Guard, Department of the Treasury.
- Department of Agriculture.
- Department of Labor.
- Federal Power Commission.

Improvement of current data collection by Federal agencies

Since such a large number of agencies, both governmental and private, is already deeply involved in data collection, it is advisable to build as much as possible on existing activities in the development of a national transportation statistics program.

The objective of improved data collection procedures is to satisfy as many of the needs of users of transportation statistics, especially of those users concerned with policy-oriented analyses, as possible through the availability of comprehensive, readily accessible, and standardized data files. The basic criteria for development of such data files are standard definitions of variables, standard locational coding, and the assurance of acceptable levels of reliability. Further, as recommended by the report of the Committee on Post Office and Civil Service of the House of Representatives, every effort needs to be made to eliminate duplication of data collection wherever that can be done.

A comprehensive review of ongoing data collection activities will lead to recommendations for supplementation and coordination of these activities with a view to producing information that is consistent with the criteria stated above, and that, further, will fill some of the gaps that currently exist in transportation data.

An example of how existing data collection programs could be extended to provide valuable additional information is the following. The Highway Act of 1962 provides that in order to be eligible for receipt of Federal highway funds each standard metropolitan statistical area by 1960 census definition must have a continuing, comprehensive, regional transportation planning program. In practice this means that each SMSA must conduct, either through State auspices or through a planning program of its own major data collection activities. It is standard procedure to conduct a large-scale household survey as part of this data collection activity. The household survey gathers detailed trip information, origins and destinations, purpose, characteristics of the travelers, and other data. Since these studies have generally been oriented to producing transportation plans for individual metropolitan areas, relatively little attention has been given to intercity trips that are picked up in the survey. It would be relatively easy to expand the surveys to obtain detailed intercity travel information.

The Highway Act requires that the metropolitan planning process be carried on on a continuing basis. This implies that data collection must be undertaken at stated intervals so that current information is always available.

According to the 1960 census nearly 70 percent of the population of the United States lives in SMSA's. This proportion is expected to increase in the future. Thus, if the collection of intercity travel data were to be carried on as part of the data collection process for standard metropolitan statistical areas, relatively current information about travel by a very substantial proportion of the population would be available at all times. Since the metropolitan area transportation studies are already financed in substantial part by the Bureau of Public Roads, no great difficulty should be experienced in obtaining the necessary minor adjustments of the data collection procedure.

In more general terms, there would be virtue also in attempting to introduce more standardized locational coding and definitional procedures into this very major, costly, continuing program. At the present time, locational coding

procedures tend to vary from study to study. Similarly, there are just enough differences in the definitions of certain categories of information, for example, trip purpose, to make direct comparison difficult.

Many similar examples could be shown to substantiate this point. All of them indicate that through central coordination and management of transportation data collection, economies could be achieved and a far greater number of users could be served efficiently.

New data collection

Even with needed changes in the ongoing data collection activities of organizations now gathering transportation information, some gaps in the available data will remain. Two kinds of problems exist in this context.

The first of these are gaps in information required on a continuing basis. Determination of the exact nature of the data to be collected should be made in consultation with the agencies engaged in large-scale transportation data collection and with a cross section of potential users.

The second type of new data collection is of a more specialized and immediately necessary kind. The need, particularly by the Government, to make transportation policy decisions cannot await the development of a comprehensive statistics program. Studies now underway require that data be collected in the near future. Three examples are the northeast corridor transportation project, the current study of the commercial feasibility of use of VTOL or STOL vehicles for intercity travel being undertaken under the auspices of the Federal Aviation Agency, and the analysis of the function of transportation project recently begun by the Bureau of Public Roads. These major policy-oriented studies have data requirements that could ultimately be met through continuing data collection activities. They cannot, however, wait upon the establishment of the national program.

Precise information, including detailed origins and destinations of trips, modal linkages, characteristics of the traveler, purpose of trip, and so on, is not currently available in any systematic form. Such information has to be collected in the immediate future to assure the success of the type of study the northeast corridor transportation project represents.

Information system development

Traditionally, statistical information concerning transportation has been made available in the form of reports containing tabulated data. With the development of electronic data-processing equipment and the use of increasingly sophisticated methods in the analysis of transportation problems, tabular reports tend less and less to meet the requirements of users of transportation data. Statistical reports still have value for those seeking a summary overview of information on particular aspects of the field. Such reports can readily be produced as a byproduct of an automated information system.

In the reports cited in the previous section, the House committee recommended: "Computerization offers unprecedented opportunities for fresh approaches and new statements of problems which in the past have been lost in (literally) tons of detailed paperwork. For the first time, using modern data processing, information retrieval, input-output, and other techniques, it may be possible to break away from the present compartmentalization and fragmentation of data, and to integrate transportation information into the broader socioeconomic framework where it properly belongs."

That automated, efficient information systems are both feasible and highly advantageous has been demonstrated in recent years by the establishment of such systems in the city of Pittsburgh, Alameda County, Calif., Tulsa, and a number of other localities. These information systems are used both for day-to-day management and for analysis and planning. The State of California is currently contracting with Lockheed Aircraft Co., for the design of a statewide information system.

The basic premise upon which the exposition here proceeds is that transportation information must be systematically organized to meet the needs of users. These users include Government officials at the Federal, State, and local levels charged with making transportation policy, businessmen making investment and operating decisions, and scholars studying many aspects of transportation and its relationship to the development of regions and of the Nation.

Frequently, users require information drawn from more than one source. This need has two implications. Data need to be standardized to assure compatibility. Further, the files of data needs to be organized in a way that permits easy extraction and combination of data from several source files.

In order to permit this kind of manipulation, transportation data need not only to be on a magnetic tape or punched cards, but must also be organized and standardized according to explicit and uniform criteria. The major ones are the following:

1. **Standardized locational coding:** A very large proportion of all types of transportation data is identified by geographic location. For example, all data dealing with the movement of persons and goods, facilities, transfer points, rates, and so forth fall into this category. At the present time a number of systems of locational identification are in use. Some of these are systems of coordinates, some are systems of numbering specific locations uniquely. In order to achieve easy manipulability of information in a single agreed upon system of coding, a coordinate system consistent with that being developed for use by the census would seem to be the most desirable.

2. **Comparability:** As indicated earlier, many agencies collect transportation data at the present time. Data collection activities have generally developed out of the functional activities of the organization. Definitions for classes of information are consistent with the functions and needs of each separate agency. In order to permit the coordinated use of data gathered by many sources, it is necessary to introduce standardized definitions of variables for use by all collectors of data.

3. **Reliability:** Since many agencies are engaged in the collection of data for different purposes, different standards are in use for determining the reliability of the information that is collected. In order to permit the use of the data for a wide variety of analytic and operating purposes, the level of reliability of the data must be known. Review of current agency data collection methods will lead to recommendations for improvements to increase the standards of reliability in continuing data collection.

Note needs to be taken of the fact that an effective and usable information system that will take advantage of the most recent advances in information handling technology must contain not just many types of transportation data per se, but must also contain other information, notably from census sources. Nontransportation data are needed for analyses of the demand for transportation and for studies of the impact of transportation policy decisions.

It may be well here to quote once more the recommendations of the House committee previously referred to which called attention to the need to "integrate transportation information into the broad socioeconomic framework where it properly belongs." That socioeconomic framework is represented in the information system by data about population and its composition, employment, and industry characteristics, personal income, some land-use data, and other similar files. As in the case of transportation data, these more general data must be coded consistently with respect to location, must use standardized definitions and must have a known and acceptable level of reliability.

The main point to be stressed under this heading is that much more is required than a clearinghouse operation which gathers tabular reports from many sources and distributes them to those that have an interest in such information. An effective information system implies having available in readily manipulable form, data required for the broadest range of governmental and private studies and decisions.

Conclusion

In line with the findings of the House Committee on Post Office and Civil Service, the view expressed here is that there is need to take action to coordinate and systematize transportation information. Moreover, gaps in the existing data have to be filled.

The principal means that have been suggested are the establishment of an information system using the latest information technology, adjustment of continuing statistics programs, and new data collection. The computerized information system will make it possible to provide a wide range of users with data specifically appropriate to their needs.

Adjustments of data collection procedures will require coordination with the collecting agencies to make certain that both their requirements and those of other potential users are satisfied. Where it seems advisable, new data collection will be related to continuing data-gathering programs that are already in existence. In other instances, responsibility for new data collection, either special purpose or continuing, will be allotted on the basis of use of the data.

The Federal Government spends billions of dollars annually in the transportation field. At the present time information on which rational expenditure decisions can be based is frequently inadequate. To begin data collection anew each time a study is required is wasteful both of time and money. To make major expenditures without adequate study can lead to errors costing millions of dollars. Improperly located highways or airports without adequate ground access may be considered examples. Relatively small expenditures on systematically organized and current information can help prevent such errors.

No one should think that the development of a useful, operational national transportation statistics program is an easy task or one of short duration. Above all, it must be the objective of such a program to move away from data collection activities that are narrowly oriented to the needs of individual organizations and that have as their end the production of tabular materials and reports of limited usefulness. An effective program must serve the needs of as many agencies and institutions as possible, with the users' needs being the major determinant of content and of organization.

Percentage of the population living in metropolitan areas

Year	Total U.S. population (millions)	Percent of population in—	
		Metropolitan areas (SMSA)	Outside of metropolitan areas
1920.....	105.8	45	55
1930.....	123.2	51	49
1940.....	132.2	52	48
1950.....	151.3	57	43
1960.....	179.3	63	37
1970 (estimate).....		65-69	35-31

Source: Outdoor Recreation Resources Review Commission Study Report 23, ch. V.

Class I railroad revenue passenger-miles

[Passenger-miles in millions]

Year	Total passenger-miles		Passenger-miles, excluding commutation	
	Total United States	Eastern district railroads	Total United States	Eastern district railroads
1953.....	31,662	15,543	26,905	11,912
1958.....	23,250	11,258	18,474	7,714
1960.....	21,261	9,531	17,064	6,501
1961.....	20,286	8,934	16,154	5,925
1962.....	19,905	8,690	15,859	5,731
1963.....	18,497	8,114	14,396	5,156
Percent change, 1963-53.....	-42	-48	-46	-57

Source: Reports of the Interstate Commerce Commission and the Eastern Railroad Presidents Conference.

Estimated highway vehicle-miles for the Nation and the northeast corridor

[Vehicle-miles in billions]

Year	Total vehicle-miles		Passenger car miles only	
	Nation	Corridor	Nation	Corridor
1953.....	528	97	424	78
1958.....	647	116	529	95
1960.....	719	128	588	105
1961.....	738	131	605	107
1962.....	767	136	627	111
1963.....	801	142	653	115
Percent change, 1963-53.....	+52	+46	+54	+47

Source: Bureau of Public Roads, highway statistics, and estimates by NECTP engineers.

Average local traveltimes for intercity travelers

[In minutes]

SMSA	Between home and—			Between downtown and—		
	Airport	Rail terminal	Bus terminal	Airport	Rail terminal	Bus terminal
Boston.....	38	44	52	32	14	15
Providence.....	42	35	42	27	9	11
Springfield.....	42	32	38	27		
Hartford.....	45	32	38	37	14	15
New Haven.....	31	22	26	27	14	15
Bridgeport.....	28	21	25	27	9	11
New York.....	51	60	70	52	18	18
Newark.....	32	37	43	32	9	11
Trenton.....	32	21	25	22	9	11
Philadelphia.....	55	65	76	27	14	15
Wilmington.....	31	35	42	37	9	11
Baltimore.....	39	45	53	32	14	15
Washington, D.C.....	41	48	50	22	14	15

Source: Estimates made by Systems Analysis & Research Corp.

Trip travelltime for 15 leading air passenger markets in the Washington-Boston corridor 1948, 1953, and 1963

	Number of minutes												Percent increase (or decrease) in total time			
	1948						1953								1963	
	Ground time ¹	Flight time	Total time	Ground time	Flight time	Total time	Ground time	Flight time	Total time	Flight time	Total time	1963/1948			1963/1953	
Boston-New York.....	60	55	115	70	55	125	100	69	169	47.0	35.2					
New York-Washington.....	66	60	125	75	60	135	85	82	167	33.6	23.7					
Boston-Washington.....	55	185	240	55	122	177	75	124	199	(17.1)	12.4					
Boston-Philadelphia.....	60	105	165	75	86	161	90	85	175	6.1	8.7					
New York-Providence.....	65	67	132	80	52	132	95	60	155	17.4	17.4					
Philadelphia-Washington.....	65	58	115	80	47	127	75	55	130	2.4	2.4					
Baltimore-New York.....	75	58	133	90	63	153	100	46	140	9.8	(4.6)					
Hartford-New York.....	50	46	96	40	40	120	85	58	143	49.0	10.2					
Baltimore-Boston.....	70	40	110	95	31	126	100	40	140	27.3	11.1					
New York, Philadelphia.....	65	160	225	70	153	223	90	66	156	(30.7)	(30.1)					
Hartford-Washington.....	45	105	150	65	112	170	85	42	127	6.7	13.4					
New York-Scranton.....	65	54	119	75	37	112	85	42	127	(20.0)	(15.4)					
Hartford-Philadelphia.....	50	130	180	85	64	172	75	69	144	(8.6)	(2.3)					
New York-Worcester.....	55	80	115	65	64	129	70	56	126	8.7	8.7					
Harrisburg-New York.....	65	80	145	60	63	123	70	60	130	(10.4)	2.7					
Average.....	61	87	148	75	71	146	84	66	150	1.4	2.7					

¹ Ground times for Scranton and Worcester are for 1952; ground times for all other city pairs are for 1946. Source: Official Airline Guide, June 1946, 1948, 1962, 1963, 1965.

Mr. STAGGERS. Do you take into account all modes of transportation, such as water transportation and airline transportation and airline terminals and the like?

Secretary CONNOR. Not those modes but the high-speed ground transportation definition presently refers only to railroads as we know them, but the concept and the definition have broader possible applicability. It means a guided system of transportation, whether it is on rails or some other pathway, rather than free-flowing traffic, such as you would get by the use of public roads, and so forth.

Mr. STAGGERS. You would exclude those?

Secretary CONNOR. We would exclude public roads and water transportation. We would stick to the rail concept and other modes that are within that definition.

Mr. STAGGERS. One other thing. I wonder if you have consulted the statistics in the Bureau of the Budget, as to whether or not more of these data have been gotten together, that they would be able to supply you?

Secretary CONNOR. Yes, sir; this question has been explored with the Bureau of the Budget people and they support the program that we are proposing.

Mr. STAGGERS. They support you in a study of this kind?

Secretary CONNOR. Yes, sir. As I have indicated this would be a coordinating activity which would not duplicate the work that is now being done by other Government agencies for their purposes, but there are gaps in the whole outline of work which we think need to be filled and that our main intent would be to fill those gaps as well as pull together the statistics from the other agencies that are useful for this national transportation planning work.

Mr. STAGGERS. Would that not be somewhat of a duplication of effort?

Secretary CONNOR. No, sir; we do not think that it is or will be. They are not doing this work that is proposed here.

Mr. STAGGERS. I thought that they were supposed to do it, but that they were doing it alone.

Secretary CONNOR. They are not doing it in transportation.

Mr. STAGGERS. Just one other question. You talk about \$20 million that the President talked about, but we did not get any message here on this—it has been bandied around and there has been talk about \$100 million being spent and then \$2 billion for putting this into operation. It is estimated that \$100 million more will be required for research and development.

Secretary CONNOR. The \$20 million figure is found in the President's fiscal 1966 budget message. These other figures you mention have been estimates made by various people at various times, but they are not official.

Mr. STAGGERS. The bill that was sent up here at the opening of the Congress had some figures in it.

Secretary CONNOR. Mr. Chairman, I think it would be reasonable, since this is in the nature of an experimental program, to have some kind of a limitation in terms of years.

Mr. STAGGERS. Do you not think that there should be some limit in the matter of time and expenditure?

Secretary CONNOR. If it is considered desirable, some kind of a limitation in amount and years could be inserted and this is something that we would be happy to explore with you.

Mr. STAGGERS. We hope that you will, because that would be, I believe, necessary.

Those are all of the questions that I have.

The chairman of our full committee, Mr. Harris, is present.

Mr. HARRIS. Mr. Secretary, I believe this is your first appearance before the committee. I want to join the members in extending to you a cordial welcome.

Secretary CONNOR. Thank you very much, Chairman Harris.

Mr. HARRIS. I congratulate you on your appointment and elevation to this important post. We will look forward, I am sure, to a very pleasant association.

Secretary CONNOR. Thank you. I look forward to many appearances before your committee, Mr. Chairman.

Mr. HARRIS. I will, I think, probably defer at the moment, Mr. Chairman, until other members have had their chance to interrogate the Secretary. And if I may, then, I would like to ask some questions. Maybe they will be more in detail and will be on some questions that have not been brought up. In the meantime, I should like to say at this moment that Mr. Springer, the ranking minority member, is unable to be here this morning. I was advised that there was a death in his family and that it required him to go home. Of course we express sympathy to the family and regret that he is unable to be here. I did want the record to show that Mr. Springer was unable to be here today for that reason.

If I may, I will defer for the moment. I yield to Mr. Friedel. He will, I assume, have one passenger line going over to Friendship before he gets through. [Laughter.]

Mr. FRIEDEL. I am afraid not, Mr. Chairman.

Mr. Secretary, this is my first opportunity of meeting you in person and I want to congratulate you for your appointment as Secretary of Commerce.

Secretary CONNOR. Thank you very much.

Mr. FRIEDEL. I am also pleased with your statement this morning. I notice that you said that the speed might be up to 150 miles per hour. Would that be done on the same roadbed as they have today, or will there have to be improvements on the roadbed?

Secretary CONNOR. The existing roadbeds would have to be improved in order to enable that rate of speed, sir.

Mr. FRIEDEL (presiding). Would there have to be any new type of rail?

Secretary CONNOR. The present expectation is that the existing types of rails could carry speeds at that rate.

Mr. FRIEDEL. I have heard it said that it might cost anywhere from \$1 to \$1.5 billion and you are only asking for \$20 million for research and development. That is a very conservative figure to me. I can see that it does benefit the northeast corridor and that it will ultimately benefit all parts of the United States. I would like to know a little bit more as we go along as to what is covered in "research and development" and whether there will have to be new tunnels, whether

the roadbeds have to be straightened out and will this be done on the present roadbed before you go into this exorbitant cost for the whole project.

Secretary CONNOR. I think that it might be worth taking the time right now to go into a little greater depth on several of those questions.

This bill would authorize three separate activities: One is in the research and development field and would be nationwide in its scope and operation. In other words, research and development activities would not be confined just to the northeast corridor.

The second part of the bill having to do with demonstration would be conducted in the northeast corridor but the results would be applicable, we think, on a nationwide basis.

And then the third part of the bill, the statistical gathering and evaluation aspect would be nationwide in scope. These statistics would affect the entire transportation system of this country, and thus they, too, would not be limited to the northeast corridor.

The research and development program, to me, is the most exciting aspect of this whole bill, because having come from an industry that places a great deal of emphasis on research and development I have seen from my own experience what can be expected from a research and development program, and I think that it would be helpful to the committee if Dr. Nelson would talk just for a few minutes on the kind of research and development programs that are now contemplated.

Mr. FRIEDEL. I want to ask one more question. If we were to authorize the \$20 million how soon do you think that the tests would start?

Secretary CONNOR. The demonstration project?

Mr. FRIEDEL. Yes.

Secretary CONNOR. You are talking about that?

Mr. FRIEDEL. Yes.

Secretary CONNOR. It would be a year from this fall.

Mr. FRIEDEL. That is all at this time.

Mr. DEVINE. Thank you, Mr. Chairman.

Mr. Secretary, on behalf of the minority, I, too, would like to welcome you here in your initial appearance before the committee. We shall be glad to see you from time to time in the future.

I would also like to compliment you on the statement that you have made here today. Mr. Bridwell contacted me earlier about the overall problem. I might say to you, in my opinion this legislation falls more readily within the jurisdiction of this committee than perhaps does the mass transit program within the metropolitan areas.

I am interested in your figures that appear on page 3 of your statement as to the relationship of population density which exists today and will exist in the future in the United States. And according to statistics in some 650 years to come, there will be one person per square foot in the United States. Here you have 854 persons per square mile. So then we will have no transportation problem—nobody will be able to move.

Secretary CONNOR. I think that research can go on in both fields at the same time.

Mr. DEVINE. You think so. Thank you.

Mr. STAGGERS (presiding). Mr. Jarman.

Mr. JARMAN. I would like to join my colleagues in congratulating the Secretary of Commerce on his appointment to this important post.

Secretary CONNOR. Thank you, Mr. Jarman. I might note for the record that Mr. Jarman and I were in law school together. I think that he should be complimented also for the fine work that he has done on this committee and in the Congress.

Mr. JARMAN. Many years have gone by, Mr. Secretary, and I will welcome the opportunity for a visit. I have no questions at this time, Mr. Chairman.

Mr. STAGGERS. Mr. Pickle.

Mr. PICKLE. I welcome you, Mr. Secretary, to the committee.

Secretary CONNOR. Thank you.

Mr. PICKLE. I assume by your testimony that the Department has determined that in your judgment this is a feasible project and that with the expenditure of \$20 million you will be able to advance it on a major scale; in other words, you support the overall operation?

Secretary CONNOR. Very much so, Congressman Pickle. Again, based upon my own experience with what can be done in a scientific field, and by applying the results of research and development and test runs and demonstrations to industrial purposes, I think that this is a very sound program for the Federal Government to sponsor.

Mr. PICKLE. Mr. Secretary, if we are going to have high-speed ground transportation the overall purpose is to move people quickly and safely. Your testimony refers to moving goods and people. Do you envision at this time moving people more than goods?

Secretary CONNOR. We think both objectives are very important because, considering the population growth expectation and the gross national product expectation, we think that the question of moving goods in the future is of equal importance to moving people.

Mr. PICKLE. Do you envision moving goods on the same train that you move the passengers, simultaneously?

Secretary CONNOR. The same track or roadbed but not necessarily in the same train; probably specialized vehicles for the carriage of goods will be the expectation.

Mr. PICKLE. The reason I asked the question is that the handling of freight does take time when you move big boxes and the like.

Secretary CONNOR. Our expectation is that the intercity passenger traffic would have to move separately from the freight.

Mr. PICKLE. Let me ask you this question, Mr. Secretary: If, in years past, the railroads have contributed a relatively small amount of research and development, as you stated, do you anticipate they will increase their research along with this grant, if it is made?

Secretary CONNOR. Indications that we have from conversations with railroad officials are that now they are quite persuaded through research and development that considerable improvement can be made over the existing forms of rail transportation. They have been stimulated to do more research and development in the last couple of years. We do think that hand in hand with this program will be a greater interest on the part of the railroads in research and development activities of their own in separate programs as well as coordinating their work with what is being done in this program. The findings from the

program we contemplate will be of general applicability to all railroads, as we see it.

Mr. PICKLE. I think that all of us recognize that this is a national problem and that we have to try to find an answer of moving people in these densely populated areas. Over recent years the trend has been away from rail transportation. Most railroads, as I have envisioned it, have thought that they were fighting a losing battle. And here we come in and revive them, and say that it is not a losing battle. Is this the answer? I do not know whether we are fighting against modern times or not in this program. That is for us to decide. You think that \$20 million will be sufficient to get us this information to determine this and to make this determination?

Secretary CONNOR. The \$20 million estimate is for the first year. We do not think that it can be completed within 1 year. We think, as the chairman suggested, having some kind of a time limitation and, perhaps, a dollar authorization and limitation is the sensible way to proceed because at the end of a fixed period of time we should be able to come back to Congress with recommendations as to what should be done in the future, based upon the results of the program. But we do not, as we sit here, know just what the future will be for handling passenger traffic on what we now call railroads.

During this experimental period there may be modes of transportation similar to railroads that will emerge. Or as the result of the demonstrations and the research and development we may reach the conclusion that for passenger traffic the kinds of surface transportation similar to railroads do not have very much of a future.

We do feel very strongly at the present time, however, that goods will still have to move on rails or some kind of a guided mode of surface transportation at high speeds because the volume of goods is so tremendous that so far as we can see at the present time they cannot be handled by the other modes of transportation without the assistance of this railroad-type of transportation.

Mr. PICKLE. I thank you, Mr. Secretary. That is all.

Mr. STAGGERS. Mr. Ronan?

Mr. RONAN. I would like to welcome you, Mr. Secretary, to this committee, and to congratulate you on your appointment. I have no questions at this time.

Mr. FRIEDEL (presiding). Thank you very much. I also want to make the statement that Mr. Nelson was in to see me, and he gave me a very good briefing of what the bill proposes to do. It was helpful and enlightening.

Mr. HARRIS. In view of that, since Mr. Nelson has not yet responded to your suggestion of a moment ago, I will give him that chance now.

Secretary CONNOR. I think that it would be interesting to have Dr. Nelson outline the possibilities of the research and development program.

Dr. NELSON. We visualize the research and development program as covering the whole spectrum of high-speed ground transportation, ranging from the system, such as rail which is presently in operation, to those more advanced concepts which are still in the process of research and which may, as the result of this research, proceed to a stage of development.

Let me, if I may, give you some examples of the kind of research that may be done to improve the operation of the present system, the present configuration of high-speed ground transportation.

One of the very important problems that the railroads today face in freight transportation is that of loss and damage, particularly damage. This is an area that the railroads have made great advances in, great improvements, but much remains to be done. Last year, for example, the railroads paid \$135 million in loss and damage claims. Much of this was an irretrievable economic loss. If it is possible for us to support a research and development program which will aid the railroads to reduce the extent of damage that occurs in the movement of goods, it would make an important economic contribution to the whole Nation.

Other kinds of development and research which may be done in the existing configuration of rail service are with respect to the wheel-rail interaction; that is to say, really, the physical relationship between the operating vehicle and the roadbed. The railroads over the years have made great improvements but much remains to be done to reduce the extent of wear, to improve this relationship, to provide a smoother ride with less vibration to the vehicle. Part of this problem of the wheel-rail interaction, for example, concerns traction and adhesion. If we could develop means of increasing traction we could substantially reduce the amount of horsepower necessary in the operation of rail equipment. We see good possibilities of making progress in this area.

This also has the opposite side of the coin, that is, the problem of braking. The Japanese Tokaido train when it gets up to speeds of 150 miles an hour requires over 10,000 feet to bring it to a stop. A good deal needs to be done in improving, for matters of safety, the braking of rail equipment.

Another area in which a great deal could be done is soil mechanics. The Japanese in their Tokaido system, for example, have found that this has been one of the most difficult problems that they faced in achieving speeds of 150 miles an hour. The tendency on the part of the track and the roadbed to shift created some difficulties of vibration and has reduced the character of the ride.

There are propulsion problems that plague the existing system. A very substantial advance was made in the transition from steam to diesel-electric, but yet there are good possibilities today because of advances in electric transmission of increasing the proportion of power used in the rail system which comes from central power stations. Cooperation needs to be achieved between the power industry, and the rail industry in order to develop a better technique of transmitting power from a central power station, communicating it and getting it into either a locomotive or a self-propelled car.

These are examples of the kinds of things that we can do that will result in immediate or almost immediate improvement in the existing rail system and which could substantially reduce the cost of transportation.

We look beyond these immediate kinds of projects to newer concepts which could have tremendous impact on the Nation's transportation systems, particularly in these areas of high population density.

Really basic problems reside in the matter of vehicle aerodynamics and improving the configurations of the vehicle to reduce the air drag.

Not a great deal of work has been done on the speeds which we contemplate here, 150 to 250 miles per hour. Of course, the aviation industry has done a great deal of aerodynamic research and development, but at much higher speeds. This was one of the important problems which the Japanese faced in building and designing the Tokaido line.

We need to look to improvement in vehicle suspension. I would not want to indicate that the day of the wheel has come to an end by any means, because we, as the Secretary said, will continue to rely very heavily on rail transportation for some time to come, but it becomes increasingly clear that at high speeds we need to turn to other means of suspension than the wheel. An obvious alternative is air suspension. A good deal of work has been done with air suspension. We have ground effect machines and developments of that kind. We need to apply this to a high-speed, high-density, high-volume vehicle. Some work should be pushed forward by private firms already engaged in research and development toward this objective.

We need work pushed forward in vehicle propulsion. There are a number of possibilities here. Of course, the application of jetpower transferred from aviation is a possibility. This has certain shortcomings, and we are looking to other means of achieving vehicle propulsion at high speeds in the ground transportation configuration.

These, Mr. Chairman, are some of the things that we can do. I can go on at greater length if this is the pleasure of the committee.

Mr. HARRIS. I would imagine that it would be impossible, Dr. Nelson, for us during the course of the hearings to try to develop specific procedures. Obviously, we could not do that.

The purpose of your request, as I understand it, is to seek authorization from the Congress to permit the research and development program with the view to trying to determine how this might be designed.

There are so many questions in a program of this kind that as of now are unanswerable. We wish we had more information as to what could be accomplished and we would then be in a better position to determine the extent of the program, the requirements and what is necessary to meet the demand. All of this is pretty important to me. Commerce is the lifeline of our society. Communication is another. And it is necessary that we develop such transportation as to meet what has long since been described as the national transportation policy of the Nation which is referred to in the Secretary's testimony.

Dr. NELSON. If I may refer to the explanatory statement.

Mr. HARRIS. Yes; you may.

Dr. NELSON. That the Secretary entered into the record. This contains a further explanation. It gives an indication of the extent of the research and development which is now being carried on on conventional ground transportation. There are a number of firms, Mr. Chairman, who are making efforts to push forward with new concepts and ideas in this field. However, not a great deal of progress has been made, because a number of institutional barriers exist, such as are referred to in the statement. This is one of the reasons why we are here to urge that the U.S. Government support research and development in this field.

Mr. HARRIS. With the knowledge of the experience of the Japanese railroad system, which was developed with much technological information that was developed in this country, it would seem to me that the experience of that operation, the know-how that we have, with our experience in the B-70 experiments, and in the X-111, the supersonic, the experiments on heat resistance and the like, and with the air suspension type of experiments which are still being worked on, it does seem to me that it does offer some help to us.

I want to go into this matter as stated in the bill. It states that you are authorized to undertake research and development in high-speed ground transportation. That is No. 1. And the purpose of it will be to improve the national transportation system. I have a feeling that this is designed to do something about passenger service.

The railroads are doing a lot of research and development, insofar as freight haul is concerned. I am very curious to know what you mean in the statement about the transporting of automobiles. I thought that it was the purpose of the research to get some of these automobiles off the highways and out of the way. There is no place to put them downtown in the cities now. Someone told me the other day that there were 57 million automobiles, something like that number, in the country. I told them that I did not doubt it. It looked to me like every day most of them are between here and Silver Spring. I think that much good would be accomplished with spending money for research and development to transport automobiles at 150 to 200 miles per hour from one town to the other. I am not trying to be critical, but just to inquire about this.

Secretary CONNOR. We have not adopted that as a part of our program, Mr. Chairman. That was just cited as an example of the concept that has already been developed by private sources. The concept would seem to be worth exploration, because what it would mean is that a family going on a vacation trip, let us say, from here to some point in northern Wisconsin, would drive into an area outside of Washington and drive on to one of these car ferries and either stay in the automobile or, preferably, get out into another part of the ferry and that they would be transported by rail safely and quickly to, let us say, the outskirts of Chicago where the automobile would then be driven off and it would proceed on its way. This would eliminate quite a bit of the driving hazards, particularly for older people who might prefer this. And it would make it a lot easier and, perhaps, safer, but this is not an integral part of our program. Let me make this clear. This is just cited as one concept that has been developed for further consideration.

Mr. HARRIS. I would like to comment, Mr. Secretary, that will make it awfully rough on the city, because most of these urban centers are filled with the automobiles that come in to them. They have no place to put them.

Secretary CONNOR. This would mean going around Chicago—you would never go into Chicago—you would come down in the country area. That would be the idea. We are not going into this, however.

Mr. HARRIS. I doubt that you would not have them in Chicago. You would leave them out in the outskirts of the city, and they will drive the car downtown.

Mr. FRIEDEL. Would you yield for a question?

Mr. HARRIS. Yes.

Mr. FRIEDEL. I noticed in your statement, Mr. Secretary, on page 10 you say:

The new forms and concepts of high-speed ground transportation which appear to merit investigation in some detail include mass transport of automobiles on rail "ferries", vehicles which are supported in their route-path by a layer of air.

This is the sort of thing that Chairman Harris was referring to. He intimated that the layer of air would go and all of a sudden you would hit the ground.

Secretary CONNOR. Dr. Nelson can explain the scientific part of it.

Mr. HARRIS. That is the scientific data and information that you seek to obtain with this authority?

Secretary CONNOR. Yes, sir.

Mr. HARRIS. Referring back again to the bill, it states that the purpose of this is to improve the national transportation system. Now I think to improve the national transportation system what we need to do is to try to get some of these people off the highways and out of the air terminals. And that is no reflection on motor transportation or air transportation. We have been pleased to see that these modes of transportation have zoomed up as the requirements of the public have increased from day to day. But the time is going to come when we will have to do something about air terminals. And the transportation around the air terminals, too, or else this highway problem will increase. We are developing interstate highways now, and we hardly get them completed until they almost get to the point in many areas where they are obsolete when they start using them. So I am inclined to agree with your concept here. We have got to attack this problem from the base and try to do something about it.

Now having said that, the bill says that you, Mr. Secretary—

may lease, purchase, develop, test, and demonstrate new facilities, equipment, techniques, and methods, and conduct such other activities as may be necessary to accomplish the purposes of this Act.

That is, improving the national transportation system.

Now just how far does that language take you, "and conduct such other activities"—what does that mean—to operate them?

Secretary CONNOR. No, sir; Mr. Chairman. I interpret the purposes of this act as limiting the activities that we are authorized to do in this section to research and development in high-speed ground transportation. That is the limiting phrase there.

It goes on to say that research and development activities in high-speed ground transportation are limited to things that can improve the national transportation system, and I do not look upon that phrase of improving the national transportation system as being the broad line of authority. I think that it is qualified by the preceding part.

Mr. HARRIS. It is not contemplated that you may experiment with a new use yourself?

Secretary CONNOR. Experiment—yes, sir; but not put it into operation.

Mr. HARRIS. As I said, you cannot experiment with something unless you operate it.

Secretary CONNOR. Well, the operation would be for experimental purposes; and, therefore, limited in time and extent and scope.

Mr. HARRIS. That is exactly what I wanted to find out, what the purpose of it was. Then that would mean, according to your statement here, that we could expect the operation of this kind?

Secretary CONNOR. Within the limit of the appropriation it could be from here to Boston; yes, sir.

Mr. HARRIS. That is from here to Boston.

Secretary CONNOR. On a demonstration basis.

Mr. HARRIS. I think we ought to know where it leads us as to what the purpose of this is.

Now this would be an experiment for a new use—a new type of use. Do you have any estimate of what it might cost the taxpayers of the country to provide a research program for demonstration purposes for high-speed ground transportation from here to Boston?

Secretary CONNOR. You mean, for the entire route from here to Boston? Well, let me understand. It is not practical to do that, because the inherent characteristics of the roadbed between New York and New Haven—I think it is—or New London, are such that you just are unable to conduct a meaningful experiment at this time. The roadbed is deficient in many respects for this purpose. So our demonstration from here to Boston is just out of the question.

Mr. HARRIS. Do you have an idea that you would be limited to the experiment on the demonstration on the existing roadbed that would be suitable for the purpose?

Secretary CONNOR. No, sir; not necessarily, but the intention is for this demonstration project to use the existing roadbed, but in the research and development authorization we probably, would be experimenting in a small way with other possibilities, rather than existing types of roadbed and rails.

Mr. HARRIS. From what we know, are the Japanese experiments on a narrow-gage or a broad-gage track?

Secretary CONNOR. It is a standard gage.

Mr. HARRIS. A standard gage. What we call here a standard gage?

Secretary CONNOR. Yes, sir.

Mr. HARRIS. Was this developed by our scientists and research people?

Secretary CONNOR. Now, sir, I do not want to give the wrong impression on that. The Japanese deserve great credit for putting this system together. And they did it by themselves, but they utilized concepts that were well known to us in the United States.

Mr. HARRIS. Did they pay for it, or did we pay for it with foreign aid?

Secretary CONNOR. As I understand it, the financing was by the World Bank and a loan to the Japanese Government. It was not paid for by the United States in any degree.

Mr. HARRIS. Except that we participated in the World Bank.

Secretary CONNOR. Yes, sir.

Mr. HARRIS. It was on a loan basis?

Secretary CONNOR. Yes, sir.

Mr. HARRIS. That experiment is over 100 miles long, is it not?

Secretary CONNOR. 320 miles.

Mr. HARRIS. Can we go on one of these air-cushioned vehicles? [Laughter.] I have my own judgment on these. Maybe my questions are naive. I assume that you have not seen it over there, either.

Secretary CONNOR. I was in Japan at the time that it was under construction several years ago, but I have not been on the completed road; no.

Mr. HARRIS. Do you know whether that 320-mile, high-speed experimental road was built on an existing roadbed?

Secretary CONNOR. Dr. Nelson has detailed information. It is my understanding that it was new, but it was a regular rail route.

Mr. HARRIS. An entirely new roadbed?

Dr. NELSON. Yes.

Mr. HARRIS. In terms of dollars, do you know what it cost?

Dr. NELSON. Somewhere between \$1,250 and \$1,500 million. The final accounting is not in.

Mr. HARRIS. Is it a low-cost experiment, I mean?

Dr. NELSON. It is not an experiment, sir. It is a regular operating railroad.

Mr. HARRIS. Well, how were they able to finance it?

Dr. NELSON. It is anticipated that it will be very successful. The Japanese railroad between Tokyo and Osaka gets about 75 percent of the entire intercity business. This is extremely lucrative.

Secretary CONNOR. Mr. Chairman, because of the weather situation there, which is very unpredictable, the airplane route is not completely practical at all times, so that this supplementary form of transportation, considering the growing population in that area, has very bright prospects.

Mr. HARRIS. If we are going to have the kind of national transportation system that is envisioned by the 1940 act we will, perhaps have to have something like that. I think that we have a very fine air transportation system and a very fine Interstate Highway System. And that, perhaps, we will require something of this kind, based on the rail concept, at least, whatever the concept may be that your scientific data will develop. I think that the transportation of the airlines is all that they can take care of at present—they have about reached the saturation point at some of these terminals. It is true, when you go to one like at New York or the Washington National Airport or here, for example. How about trying an experiment from here to Dulles?

Secretary CONNOR. Mr. Chairman, you have put your finger on a very important problem in connection with air transportation problems today. I was talking with the Port of New York Authority the other day and they are most discouraged about the future prospects for air transportation in the Metropolitan New York area because of the space limitations of the existing airports and the tremendous difficulties they have encountered in trying to get the necessary land for a new air terminal that will accommodate jets. This is, certainly, a problem that we will run into more and more in other parts of the country.

Mr. HARRIS. You said that the cost of the 320 miles was approximately \$1 to \$1½ billion?

Dr. NELSON. One and a quarter billion to—

Mr. HARRIS. One and a quarter billion to \$1½ billion?

Dr. NELSON. Yes, sir.

Mr. HARRIS. And how far is it from here to Boston?

Dr. NELSON. Approximately 450 miles.

Mr. HARRIS. Well, I do not know whether that is any guideline or not. You can see that \$20 million is very small.

Secretary CONNOR. Well, sir, if we planned a program without constructing a new roadbed which would utilize all of the latest technology in the operation of a train, built along these improved lines from here to Boston, the capital cost would be greatly in excess of what the Japanese paid, because their labor and other costs are so much lower than our costs in this country. And the cost of the acquisition of the land is high there, but it is high here, too, so that the estimate, I think, as I remember, Dr. Nelson, is somewhere between \$3 billion to \$4 billion to duplicate it between here and Boston, that is, what the Japanese have done on their line. And we are not recommending this at the present time. We think that it would be foolhardy to recommend such a plan now, in view of the existing knowledge that we have about passenger demands and, also, about the future prospects for rail transportation for passenger service. That is why we are asking for authorization for research and development which will provide some of the answers that we need and, also, give us the basis for the discussion with private rail carriers and to work closely and cooperatively with them. To me, this is one of the greatest benefits that will accrue from this legislation.

We, in the Department of Commerce, will have every incentive to work closely with the railroad people in this country, to try to share their problems and to come up with programs that reflect their best judgment. I think this has been badly needed, because the railroad people have had the feeling that they have been sort of alone in handling their problems without too much understanding, at least, on the passenger side of the business.

Mr. HARRIS. Maybe they would feel better and maybe they would feel that they would do better if you would build a terminal for them like we do for the airline companies. They used to build their own, but they do not any more.

Do you contemplate entering into contracts with the railroad industry that will be interested in this program?

Secretary CONNOR. Yes, sir; we do, particularly under the demonstration authority. In this respect we have had discussions with the Pennsylvania Railroad. You might like Under Secretary Martin to give a summary of that situation.

Mr. HARRIS. I was going to ask about that, because I saw some publicity on that. When it became apparent that we were going to hold hearings on this, the chairman of the Board made an announcement to the stockholders that they anticipated in the foreseeable future that they would have train service from here to New York at about up to 125 miles per hour, and possibly, ultimately up to 150 miles an hour. Somebody has been giving it a lot of thought.

Secretary CONNOR. There have been discussions, but no commitments on either side. And, frankly, I think that statement to the stockholders was more of a forecast or a projection. It, certainly,

was not a statement of fact. But Mr. Martin can give us the summary of this situation, if you would like him to do so.

Mr. HARRIS. Yes. Do you have anything to say, Secretary Martin.

Mr. MARTIN. We have had preliminary conversations with the Pennsylvania Railroad, of course. It is clear that they have the best facilities for conducting this test between here and New York. If the Congress would give us this authorization and we were given the funds—if they were appropriated—we have expected to spend on the Pennsylvania Railroad for the test \$9,600,000. The Federal contribution would be to the extent of the purchase of the equipment, the multiple unit cars, high-speed cars capable of speeds up to 150 miles an hour. These cars would be operated on the test in units of four, six, or eight cars. We are not sure as to the exact number yet. These would be in the test. We have talked in the range of 28 cars to as high as 50 cars. It would be somewhere in that area.

The railroad would make a contribution which would have to be somewhat in excess of what the Federal Government would make, because it would be necessary to improve the right-of-way, to straighten the rails, to improve their catenary system—

Mr. HARRIS. What?

Mr. MARTIN. Their electric power system for the transmission of electric power. It would be necessary to provide better bridge facilities in two or three instances, and grade crossings would have to be improved, and the signaling would have to be changed to allow this test to be conducted.

At the end of the test which would be somewhere in the area of 18 months to 2 years or thereabouts, the railroads would purchase the equipment in total from the Government.

Mr. HARRIS. If it were successful.

Mr. MARTIN. If it were successful or otherwise. I think that they would use the equipment on other services that they now have.

Another contribution that the railroads would make would be raising the platforms to make them level which would assist in passenger entrance and exit from the trains more quickly. The idea is to provide a service that would have a maximum of 3 hours time between New York and Washington.

Mr. HARRIS. That is not enough.

Mr. MARTIN. I agree with you, sir. That is the maximum for four stops. We think that it would be substantially less than that. It could be down to 2 hours and 45 minutes, depending on the number of stops that were made.

Mr. HARRIS. There would be an experiment with nonstops, too, would there not?

Mr. MARTIN. That is correct. The actual dimensions of the tests would be designed in cooperation with the railroads by the Department. All sorts of innovations would be had as to fares, nonstop service, as you mentioned, different amenities of travel, the configuration of the cars, fast baggage handling and the like. Those would be included.

Mr. HARRIS. That is the one type of experiment which sounds to me as a very logical thing.

What about another type? We will take an example that I have heard mentioned, this tubular system on the ground.

Mr. MARTIN. That would not be a demonstration project. That is a concept that has been talked about, Mr. Chairman, in scientific areas as part of the assessment that would be made of surface transportation possibilities that might hold promise. Some attention has been paid to the idea of a tube.

Mr. HARRIS. Maybe that would come when we have the density of population that Mr. Devine spoke of.

Mr. MARTIN. Perhaps.

Mr. HARRIS. What about the monorail system, has it worked out?

Mr. MARTIN. I would not say it has not worked out. It is, certainly, having publicity. It has big technical problems. The Japanese have just completed the construction of a 16-mile, I believe, monorail system from downtown Tokyo Station to the Tokyo Airport. We had a visitor over from Japan, the former chief engineer of their railroad system, and he commented about how it worked out. It had not provided the service that they wanted, but it was not working to full capacity as yet. It is a possibility. It is a type of transportation.

Mr. HARRIS. It would be interesting, and I doubt that I will ever live to see it, if we could go into a tube and phst, come out at the other end.

Mr. MARTIN. I do not think that will come about right now.

Mr. HARRIS. What about the research and development?

Secretary CONNOR. Dr. Nelson will speak to that.

Dr. NELSON. We were charged in the Department of Commerce with doing a careful analysis of the transportation needs of the northeast corridor to 1980 and the ways in which these needs could be met.

Mr. HARRIS. Under what provision of the law are you charged with that responsibility?

Dr. NELSON. The responsibility of the Department of Commerce to promote and advance transportation. The specific assignment came from President Kennedy. This assignment was to determine the best ways in which the transportation needs of the Northeast Corridor could be met and is consistent with our basic national transportation policy as stated in the act of 1940 which intends to preserve the inherent advantages of each form of transportation. We found, in this effort to make a determination of the most efficient and effective ways in which the needs of the corridor could be met, that we needed to know a great deal more about the prospects of technological advance in each form of transportation through 1980. This included the possibility of short haul air transportation as well as the likelihood of developments in the highway field, such as automated highways. This, also, required a prognostication of what might develop in what we know now as rail transportation.

We turned to the Massachusetts Institute of Technology which, to our knowledge, had the broad resources over these several fields to carry on this kind of an evaluation. Last September we entered into a relationship with Massachusetts Institute of Technology, a contractual relationship, giving them the assignment of making forecasts of the development of technology in each field of transportation that could feasibly be useful in the Northeast Corridor through 1980. Massachusetts Institute of Technology has worked throughout the winter and in the next month will tender to the Department of Com-

merce a report on that assignment, during the month of June. The contract was for \$495,000.

Mr. HARRIS. That envisioned not only rail transportation but air and highway transportation, and so forth?

Dr. NELSON. Yes, sir; a very important part of the contract encompasses predictions about the development of air transportation, short haul air transportation, for a traffic pattern such as we might find in the Northeast Corridor, and elsewhere in the country.

Mr. HARRIS. We thank you for the information.

Mr. Chairman, I have received a letter from Under Secretary Martin in further reference to the newspaper accounts of Mr. Saunders' statement. And I believe unless you have objection it would be appropriate to include the letter along with your statement on the subject this morning.

Mr. MARTIN. I have no objection.

Mr. HARRIS. If there is no objection, I would like that to be included at the proper place with his statement.

Mr. STAGGERS. Without objection it will be made a part of the record.

(The letter dated May 14, 1965, follows:)

THE UNDER SECRETARY OF COMMERCE
FOR TRANSPORTATION,
Washington, D.C., May 14, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Thank you for your letter of May 11, in which you call attention to the newspaper accounts of Mr. Stuart Saunders' statement about demonstration projects on the Pennsylvania Railroad.

My office has deemed it necessary in preparation for appearances before your committee to have knowledge of the possibilities for demonstrations of improved rail passenger service on Northeast Corridor railroads. As a result of this, we have had conversations with Pennsylvania Railroad officials, including Mr. Saunders, as to what might be done in the way of demonstrations on the Pennsylvania Railroad. No agreements whatsoever have been made with the Pennsylvania as to the specific terms of any demonstration projects which might be carried on. Mr. Saunders and his staff have been fully apprised that any demonstrations in which the Department of Commerce might engage would necessitate authorization from the Congress.

We are hopeful that authorization will be granted and that arrangements can be made to demonstrate improved rail passenger service on the Pennsylvania. The Pennsylvania Railroad operates through the densest intercity travel market in the Nation, and we believe it offers the best possibility for determining whether rail passenger service can be made economically viable. If improved rail passenger service is economically viable and receives substantial patronage, it will ease the demands on Federal, State, and local funds for the provision of other transportation facilities. Hence, for coordination of transportation policy this program is of great importance.

Sincerely,

CLARENCE D. MARTIN.

Mr. HARRIS. Section 2 of the bill authorizes you to collect transportation data, statistics, and other information which you determine will contribute to the improvement of the national transportation system. Now I think that is fairly clear—that is understandable. There should not be any problem in trying to decipher what is intended there.

Now section 3 provides that you may enter into agreements, make contracts—that was referred to a moment ago, is that right?

Secretary CONNOR. Yes, sir, particularly the research and development contracts that we are talking about, but, also, the demonstration contracts.

Mr. HARRIS. That includes private agencies, and institutions such as Massachusetts Institute of Technology as you mentioned, under the broad authorization?

Secretary CONNOR. Or the Pennsylvania Railroad that you mentioned.

Mr. HARRIS. Or "organizations"—what does that mean?

Secretary CONNOR. Nonprivate organizations for studies such as Brookings Institute that might be qualified to do that, and Mellon Institute.

Mr. HARRIS. And "individuals"—now, "individuals," I assume under that that you would have in mind there corporations, etc., as well as an individual person?

Secretary CONNOR. Yes, it would be specifically designed to enable us to retain consultants who might be helpful.

Mr. HARRIS. That is further down. It gets into the authorization for personnel, and so forth, later on. This is about the authorization for contractual arrangements, etc.

Secretary CONNOR. It is quite possible that we would have consultant arrangements under this with individuals. Down below we would be authorized to hire people under the civil service rules and regulations and then, also, to have per diem type arrangements with consultants, but up above there it is possible that there would be an individual with an expertise in this field and we would enter into a contract with such individuals.

Mr. HARRIS. Where is there authority to make such an arrangement or contract with the Pennsylvania Railroad—that is a corporation—where is that authority then?

Secretary CONNOR. Well, I assume that the words "private agencies," "organizations" would include Pennsylvania Railroad, but I think that the language can be improved.

Mr. HARRIS. I do not know of any definition to that effect anywhere in the Interstate Commerce Act.

Secretary CONNOR. I think that this language can be improved, Mr. Chairman.

Mr. HARRIS. I believe that there is a definition in the Interstate Commerce Act. This is not an amendment to that act. But, nevertheless, it would have to have some relation to it. I think there is a definition in that act of what an individual is, that it would mean corporation, and so forth.

Secretary CONNOR. I think that this could be looked at again with that in mind.

Mr. HARRIS. All right. Then, of course, the civil service laws would be applicable for the personnel?

Secretary CONNOR. Yes.

Mr. HARRIS. Do you have any idea how much personnel will be necessary for this undertaking?

Secretary CONNOR. Well, an estimate has been prepared. Dr. Nelson has the proposed table of organization. Do you want to describe that, the type of people, and the numbers?

Dr. NELSON. In the office of the Under Secretary for Transportation, approximately 35 people would be assigned to this project.

Mr. HARRIS. Would they be technical people?

Dr. NELSON. Yes, sir; professional people, economists, engineers, and people with technical capabilities; yes, sir.

Mr. HARRIS. And then, of course, you would provide for your consultants, and so forth, in the part further down, and then the cooperation with other agencies. Now I assume that the Housing and Home Finance Agency is pointed out here because of the authority under the mass transportation program?

Secretary CONNOR. Yes, sir.

Mr. HARRIS. Now in section 5 we have a general pattern that has been had in many of these programs the last few years of a 3-year limitation on the authorization. How long do you think that this program will take?

Secretary CONNOR. Well, our initial planning has been done on the basis of a 3-year program, but these are always a little slow in getting started and it would seem to me that the authorization should be for 4 years to enable us to get started and then be prepared to make recommendations at the end of the program.

Mr. HARRIS. If I knew that you would complete it in 4 years I think that I would be inclined to agree with you, but if it is going to take 6 or 7 years, then it would seem to me that it would be a pretty good thing to have a review of the thing in a relatively short period of time.

Secretary CONNOR. Mr. Chairman, we think that because of the experimental nature of the program it would be a good idea for us to come back to this committee at the end of a fixed period of time. I think that it is a question whether it should be 3 or 4 years. I think that 4 years would give us a little bit more elbowroom.

Mr. HARRIS. Obviously, it is a problem. If you say it takes 4 now, it will, perhaps, take at least 5 or 6. That has been our experience with these things.

Secretary CONNOR. At least, the committee would have another opportunity to look at it.

Mr. HARRIS. You would not object if the committee decided on a 3-year program with your coming back to see what progress has been made at the appropriate time and what will be necessary from then on, because there are many things that neither your office, efficient and capable as it may well be, could envision this morning.

Secretary CONNOR. No, sir; 3 years would be quite satisfactory to us.

Mr. HARRIS. All right. You mentioned something about the authorization. If this is a proper place, and when I speak of the proper place here, when we get that far, it will be the Rules Committee, which will be the proper place then, and if it were to be on a 3-year basis, what would be the appropriate amount necessary to carry on the work effectively and efficiently?

Secretary CONNOR. At the present time it looks to us as if it will involve an expenditure of \$88 million, but this may be a figure which is too low, and I would suggest \$90 million as a reasonable figure, according to our present estimates.

Mr. HARRIS. Now the \$20 million in the budget is for the next fiscal year, is it?

Secretary CONNOR. Yes, sir.

Mr. HARRIS. In other words, you would suggest then that the authorization include \$20 million for the next fiscal year and then \$35 million each for the following 2 years?

Secretary CONNOR. Yes, sir; that is our expectation.

Mr. HARRIS. Thank you very much. I hope that you do not think that I have tried to indulge in too many detailed questions here, but I did want to make the record as clear as possible. It is a program that we ought to be as familiar with as we can, so that we may have the proper support when we go to the floor of the House.

Secretary CONNOR. We appreciate your interest in this.

Mr. STAGGERS. Thank you, Mr. Chairman. I think it is important that we all have this information on all of these problems while the Secretary is here so as to get the answers to these problems. There are one or two things that I would like to go into, if I may.

In your section 3, you talk about 3648 and 3709 of the Revised Statutes (31 U.S.C. 529; 41 U.S.C. 5), and that has to do with your bids for letting out contracts. I wonder why you ask for this—why these contracts should not be let out open end for bidders?

Secretary CONNOR. Because of the nature of the research and development activities and the demonstration projects. It seemed to us that competitive bidding would just be impossible because, for example, the Pennsylvania Railroad has the most accessible facility for conducting the demonstration that we are talking about; and, therefore, it would not be feasible for us to get competitive bids from other railroads if we want to conduct the demonstration on that particular piece of track, so that we could not get in a competitive bidding system. In research and development, where it is possible, it is customary in other situations for the Government agency concerned to go to the organization that in its opinion is best qualified in the country for the conduct of that particular piece of research. And here, again, it just is not practical to have a competitive bidding system, because you are after the services and the attention of certain individuals who are only in that organization.

Mr. STAGGERS. Well now, that runs contrary to our national defense policy. All of their contracts are not let on that basis. It is competitive bidding.

Secretary CONNOR. My understanding is that competitive bidding is required in production-type contracts, but not in research and development type contracts.

Mr. STAGGERS. We have over here at Union Station a car from the Pullman Co. and one from the St. Louis Car Co., now would not that type of equipment be open to competitive bidding?

Secretary CONNOR. Oh, yes, when you procure the equipment for use and operation and so forth, this would be done by competitive bidding. And even in test purposes for the procurement of equipment that is standardized to be used in the test we would follow the competitive bidding technique, but we are asking for freedom in research and development type contracts, so that we would go to the organization that has the facilities and the people who have peculiar qualifications for the work that we have in mind.

Mr. STAGGERS. I imagine that when we are through you will find a lot of people are available.

Secretary CONNOR. But the procurement of equipment in this whole program that we are requesting authorization for is secondary, subsidiary to the conduct of the research and development work and the demonstration which are the primary objectives.

Mr. STAGGERS. Again, I thank you.

Mr. HARRIS. I had intended to ask earlier in connection with this demonstration what kind of power you talk about in the electric cars—what kind of power? Are you going to use electric motors on the cars or will they have diesel engines?

Secretary CONNOR. For the demonstration project I think that Dr. Nelson should tell what the present thinking is.

Dr. NELSON. On the demonstration program on the Pennsylvania Railroad we would use the existing power sources which are central power stations 25 cycle or 11,000 volts. On the demonstration which we plan between Boston and Providence we would use a self-propelled gas turbine car. This is, at least, what we are considering at the present time.

Mr. HARRIS. But they would be in the nature of trains of two to eight cars and the like?

Dr. NELSON. Individually propelled cars, sir.

Mr. HARRIS. Each car would be individually propelled?

Dr. NELSON. Yes, sir, in order to achieve the degree of flexibility that we need for the demonstration program. And, also, to meet the needs of the pattern of passenger traffic.

Mr. HARRIS. What horsepower did you say that it was, 11,000?

Dr. NELSON. The horsepower in each of the electric motors, my recollection is, is 150 horsepower, but one of the electric motors would be on each axle—there is one electric motor on each axle, 150 horsepower per axle.

Mr. HARRIS. How long are these cars—have you gotten that far?

Dr. NELSON. They are 85-foot cars.

Mr. HARRIS. How many trucks does it have on it?

Dr. NELSON. Two.

Mr. HARRIS. Traveling 150 miles an hour. That is a little strange, is it not?

Dr. NELSON. That is being done in Japan now.

Mr. HARRIS. That would be 300 horsepower per car?

Dr. NELSON. No. We are going to have a higher horsepower for the 150-mile-an-hour operation.

Mr. HARRIS. I would think so.

Dr. NELSON. Yes, sir.

Mr. HARRIS. Well, let me join with the chairman and the other members of the committee in thanking you, Mr. Secretary, and your associates here with you today for the splendid presentation you have made and the new record that has been made on the subject.

Secretary CONNOR. Thank you very much.

Mr. STAGGERS. This bill and other bills provide for the leasing and purchasing and developing and for new purposes—that is the purpose of the bill. Now, could the Secretary purchase and operate the New Haven Railroad?

Secretary CONNOR. No, sir; even if we wanted to.

Mr. STAGGERS. It has been suggested that it might be one of the purposes. I just wanted to get it clear. That is not the purpose, is it?

Secretary CONNOR. It is very clear, sir, that the language would not authorize us to do that.

Mr. STAGGERS. Why is there so much conjecture for one operation entirely in the northeast corridor?

Secretary CONNOR. We want to make it clear that our concept is national in character and it is incidental that some of the demonstrations will be taking place in the northeast corridor, because part of the research and development work will be taking place there, as well as in other parts of the country, and the findings from the whole program will be national in scope.

Mr. HARRIS. I would like to comment that we have partially purchased the New Haven Railroad and some think that we might as well partially operate it.

Mr. STAGGERS. I think that this is very important, because one of our colleagues made the comment that it might be a subsidization of the transportation system for the northeast corridor. This is not the concept of this bill, because it is for a national transportation system?

Secretary CONNOR. That is correct.

Mr. STAGGERS. I would like to have that made clear. I think it is very important, so that the country understands it and the Members of the Congress understand it.

Secretary CONNOR. We want that clear in all of our presentations.

Mr. STAGGERS. I, too, like the Chairman, want to congratulate you and your associates for your very clear answers, in trying to clear up some of these misconceptions and some of the things that we need in order to consider this.

Thank you again.

Secretary CONNOR. Thank you very much.

Mr. STAGGERS. The committee will stand adjourned subject to the call of the Chair.

(Whereupon, at 12 noon, the committee adjourned subject to the call of the Chair.)

COMMERCE DEPARTMENT TRANSPORTATION RESEARCH

TUESDAY, JUNE 29, 1965

SUBCOMMITTEE ON TRANSPORTATION AND AERONAUTICS
OF THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room 2123, Rayburn House Office Building, Hon. Samuel N. Friedel presiding.

Mr. FRIEDEL. The meeting will now come to order.

This morning we are resuming hearings on H.R. 5863, a bill which would authorize the Secretary of Commerce to engage in certain research and development in high speed ground transportation. It is our hope that during the next 2 days we may finish with the witnesses who desire to be heard.

Before hearing from Chairman Webb, of the Interstate Commerce Commission, this morning, I should like to enclose for the record for inclusion at the proper place, a letter which I have received from Secretary Connor in response to an inquiry made of him giving a breakdown of the proposed expenditures under the bill for each of the next 3 fiscal years.

(The letter referred to follows:)

DEPARTMENT OF COMMERCE,
Washington, D.C., June 16, 1965.

HON. HARLEY O. STAGGERS,
Chairman, Subcommittee on Transportation and Aeronautics, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. STAGGERS: This is in reply to your letter of June 2 in which you ask for a breakdown of proposed expenditures under H.R. 5863, a bill to authorize research and development in high-speed ground transportation.

The proposed expenditures for the three programs which would be authorized by the bill are as follows:

[In millions]

	Fiscal year 1966	Fiscal year 1967	Fiscal year 1968
Demonstrations.....	\$8	\$7	\$3
National transportation statistics.....	2	3	3
R. & D. high-speed ground transportation.....	10	25	29
Total.....	20	35	35

The expenditures proposed for 1966 are included in the fiscal year 1966 budget. Specific levels of funding for fiscal years beyond 1966 have not as yet been endorsed by the Bureau of the Budget, and, of course, ultimately must be approved by the President. Although we regard research and development in high-speed ground transportation and a transportation information system as

long-run programs, we have made estimates of expenditures through fiscal years 1967 and 1968 only.

I should like to say with respect to a reference in your letter to operating deficits in demonstration, that there is no intention on the part of the Federal Government to contribute to the operating costs of carriers participating in the demonstration. The demonstrations are for the purpose of eliciting information about potential patronage of improved rail passenger service.

Sincerely yours,

JOHN T. CONNOR,
Secretary of Commerce.

Mr. FRIEDEL. In addition, inasmuch as it seems pertinent to the subject matter being considered, I insert for the record the order of the Secretary of Commerce of May 11 contained in the Federal Register of May 25 setting forth the delegation of authority, duties, and responsibilities within the Office of the Under Secretary of Commerce for Transportation.

(The order referred to follows:)

DEPARTMENT OF COMMERCE

OFFICE OF THE SECRETARY

[Dept. Order 128; Manual of Orders, Part 1]

UNDER SECRETARY OF COMMERCE FOR TRANSPORTATION

DELEGATION OF AUTHORITY, DUTIES, AND RESPONSIBILITIES

The following order was issued by the Secretary of Commerce on May 11, 1965. This material supersedes the material appearing at 28 F.R. 5096-5097 of May 22, 1963, and 28 F.R. 6921-6922 of July 6, 1963.

SECTION 1. Purpose:

.01 The purpose of this order is to prescribe the scope of authority and the duties and responsibilities of the Under Secretary of Commerce for Transportation.

SEC. 2. Scope of authority:

.01 The Under Secretary of Commerce for Transportation shall exercise policy direction and supervision of the Bureau of Public Roads, the Maritime Administration, and the Great Lakes Pilotage Administration. Further, the Under Secretary of Commerce for Transportation shall exercise the authority vested in the Secretary under Title XIII, Public Law 85-726 (49 U.S.C. 1531-1542), pertaining to the Aviation War Risk Insurance Program; shall exercise the authority vested in the Secretary under Public Law 87-82C, pertaining to the Aircraft Loan Guarantee Program; and shall be responsible for coordinating activities between the Department of Commerce and the Saint Lawrence Seaway Development Corporation.

SEC. 3. Duties and responsibilities:

.01. The Under Secretary of Commerce for Transportation shall serve as the principal adviser to the Secretary on all matters which involve the transportation policies of the Federal Government and on all policy matters concerning transportation responsibilities and activities of the Department of Commerce. His particular duties and responsibilities shall include:

a. Formulating, in consultation with Executive agencies concerned, overall transportation policies and programs within the Executive Branch of the Government to assure the balanced development of the Nation's transportation system;

b. Administering the Transportation Research Program;

c. Developing, in consultation with the General Counsel and other appropriate officials, the Department's views on matters under consideration by the transportation regulatory agencies as they may affect the Department's transportation responsibilities and other programs;

d. Serving as the focal point within the Department on, and representing the Department with respect to, all transportation activities of an interdepartmental nature;

e. Acting upon applications for adjustment or exception from the provisions of Transportation Order Nos. T-1 and T-2;

f. Administering the Aviation War Risk Insurance Program;

g. Administering the Aircraft Loan Guarantee Program; and

h. Carrying out the emergency transportation planning and coordination functions assigned to the Department of Commerce under Executive Order 10999 of February 16, 1962.

Sec. 4. Deputy Under Secretary for Transportation:

.01. The Deputy Under Secretary for Transportation shall assist the Under Secretary for Transportation in the formulation of policy and in the supervision of areas under his control, and shall assume full responsibilities of the Under Secretary for Transportation during the latter's absence.

Sec. 5. Office of Transportation Research:

.01. The Office of Transportation Research shall plan an overall program of research essential to advancing the Nation's transportation system and shall conduct or monitor assigned research projects in furtherance of the program. The research program shall include plans for, and the conduct of, projects that will:

a. Improve information available to the Government for the formulation and evaluation of national transportation policies and programs,

b. Provide a basis for improvement of regulatory policy over the transportation industries;

c. Increase the coordinated use of various modes of transportation;

d. Provide information on the economic and social impact occurring and anticipated from technological, service, management, and related developments and prospects affecting the transportation industry; and

e. Lead to improvements in the technology, efficiency, and service effectiveness of the transportation industry.

Sec. 6. Office of Transportation Policy Development:

.01. The Office of Transportation Policy Development shall develop overall transportation policies, plans, and programs to assure the balanced development of the Nation's transportation system. In carrying out these functions it shall:

a. Conduct reviews and analyses of proposed or existing policies within the Executive Branch affecting transportation;

b. Identify and define major transportation problems of the Nation and propose research undertakings, policy studies, program planning, or other actions needed for solutions of the problems;

c. Initiate or participate in consultation with other Federal agencies to promote coordination with the Executive Branch in planning transportation policies and programs best suited to the Nation's overall transportation needs; and

d. In consultation with the Office of the General Counsel and other interested offices of the Department, develop proposed views of the Department on matters involving overall transportation policies and problems that are under consideration by regulatory agencies.

Sec. 7. Office of Transportation Programs:

.01. The Office of Transportation Programs shall:

a. Provide staff support to the Under Secretary for Transportation and the Deputy Under Secretary for Transportation in their exercise of policy direction, supervision, and coordination of organization units of the Department enumerated in section 2, above;

b. Perform the functions required in administering the Aviation War Risk Insurance Program; and

c. Perform the functions required in administering the Aircraft Loan Guarantee Program.

Sec. 8. Office of Emergency Transportation:

.01. The Office of Emergency Transportation shall perform all functions concerning emergency transportation planning and coordination assigned the Department under Executive Order 10999 of February 12, 1962. In carrying out these functions, it shall:

a. Prepare national plans, programs, and procedures for the centralized control of all modes of transportation and for the proper allocation of the civil transportation capacity to meet civil and military needs in an emergency;

b. Develop and update long-range programs designed to meet mobilization requirements for the use of all means of national and international transportation, including air, ground, water, and pipelines;

c. Develop and maintain plans to utilize, both domestically and internationally, the civil air carrier transportation capacity in a national emergency;

d. Prepare plans to claim from Federal agencies the materials, manpower, equipment, supplies, and services needed to support coordination of transportation in an emergency, and work with such agencies in developing programs to insure availability of such resources;

e. Propose and monitor or conduct research concerned with transportation emergency preparedness problems, provide representation of ad hoc or task force study groups, and provide advice and assistance to other agencies in planning research on emergency transportation problems;

f. Initiate with other agencies the development of joint plans for coordination of the emergency transportation program, and utilize to the maximum the capabilities of other agencies, by contractual or other arrangements, to perform emergency transportation planning; and

g. Develop and maintain program and organizational plans for exercise by the Department of its transportation responsibilities during an emergency.

Sec. 9. Saving provision:

.01 All orders, delegations of authority and other actions heretofore issued or taken by or relating to the Office of the Under Secretary of Commerce for Transportation or any official thereof shall remain in effect until specifically revoked or amended by proper authority.

Effective date. May 11, 1965.

DAVID R. BALDWIN,
*Acting Assistant Secretary
for Administration.*

[F.R. Doc. 65-5425; Filed, May 24, 1965; 8:46 a.m.]

Mr. FRIEDEL. We have our colleague, Congressman Reuss. Congressman Reuss, you may proceed.

**STATEMENT OF HON. HENRY S. REUSS, A REPRESENTATIVE IN
CONGRESS FROM THE STATE OF WISCONSIN**

Mr. REUSS. Thank you very much, Mr. Chairman, members of the committee. I shall be brief—though the point which I have to make I believe to be an important one.

I have prepared a statement setting forth my view in full, and with the Chair's permission, I should like to offer that for the record, and then proceed briefly to summarize what is on my mind.

Mr. FRIEDEL. Your full statement will be included in the record. (The statement referred to follows:)

STATEMENT OF REPRESENTATIVE HENRY S. REUSS, OF WISCONSIN

**NEEDED: A TECHNOLOGICAL BREAKTHROUGH TOWARD NEW TRANSPORTATION SYSTEMS
WITHIN METROPOLITAN AREAS**

Mr. Chairman, I appreciate the opportunity to appear before your subcommittee this morning. I am here to offer an amendment to H.R. 5863, the "northeast corridor" bill authorizing the Secretary of Commerce to undertake research and development in high-speed ground transportation between cities.

My amendment would insure that an equal research effort is devoted to achieving a technological breakthrough in the development of new transportation systems within metropolitan areas.

The text of the amendment follows:

Page 1, line 6, insert before the period: " , both intercity and intracity (with special emphasis on achieving a technological breakthrough of new systems which can transport persons in metropolitan areas from place to place within such areas, quickly, safely, economically, without polluting the air, and in such a way as to meet the real needs of the people and at the same time contribute to good city planning)".

Page 2, line 24, insert before the period: ", to be divided equally between research and development of intercity and of intracity transportation methods".

The amendment seeks to incorporate the intent of my bill, H.R. 9200, into the legislation now before you. Eight other members have joined in sponsoring this legislation: Thomas L. Ashley (H.R. 9201), Earle Cabell (H.R. 9202), Abraham J. Multer (H.R. 9203), Benjamin S. Rosenthal (H.R. 9204), Leonor K. Sullivan (H.R. 9205), Charles A. Vanik (H.R. 9206), Charles L. Weltner (H.R. 9207), and Sidney R. Yates (H.R. 9208).

I fully approve of the legislation before you today. Better rail transportation between cities is definitely needed. But I am very seriously concerned about the state of transportation in our Nation's cities. We cannot continue to handle urban transportation needs in our present style—primarily lots of roads and refurbishing of wornout buses and subway cars.

We need entirely new modes of urban transport which can carry people quickly, safely, and economically from place to place within urban areas, without polluting the air, and in such a way as to meet the needs of the people for individual transport and at the same time contribute to good city planning.

We are not going to get these systems unless the Federal Government sponsors a research program to develop them, for the burden is too great for private industry to carry alone.

Greater demand is for intracity transport

While better train service is needed between cities, I believe the greatest need for improved transportation is within cities. Therefore, Congress should not authorize a substantial research and development program designed to improve intercity rail travel, without at the same time devoting equal attention to the intracity transit problem.

Few statistics are available on the demand for intercity, as opposed to intracity, travel. However, one of the ways of measuring the need for service, as Secretary of Commerce John T. Connor demonstrated in his testimony before your subcommittee on May 25, is in population density. The Secretary reported, as part of his justification for Federal assistance to the northeast corridor project, that the population density in the corridor was 854 people per square mile.

The population tables show that in the 130 largest cities in the country—those with populations over 100,000—the population density ranges from 6,000 to nearly 25,000 people per square mile. While these figures admittedly at best are a rough guide, they do give an indication of where the need lies.

The advantages which truly effective and efficient urban transportation systems would offer cities are numerous.

Air pollution would be reduced as people shifted from gasoline-burning automobiles to new systems using electric or noncontaminating sources of power.

Accidents as a result of transportation would be reduced through lessening the chance of human and mechanical failure.

The cost of going to and from work would be lowered. The daily bill for a man who drives his car on a 10-mile round trip to his office and back is between \$1 and \$1.20—far too high.

Furthermore, strangulation of cities by urban highways, excessive numbers of parking lots, and all the rest that goes with present commuter traffic results more in the uglification than the beautification of our cities. Establishment of effective urban transportation systems would help to reverse this trend.

Mass Transportation Act is too limited

Today there is no substantial research being sponsored by the Federal Government in an attempt to develop new, dynamic systems which will provide urban dwellers with good public transport. As a cure for the intracity transportation problem, we are relying on the Mass Transportation Act of 1964 which, largely because of its financial limitations, can do little more than help cities purchase new buses or replace wornout subway cars.

The 1964 act authorized a total grant appropriation of \$375 million over a 3-year period. The funds are given to communities to meet part of the cost of improving mass transportation facilities and equipment. The law also stipulates that of the \$375 million, up to \$10 million a year can be appropriated for a program of "research, development, and demonstration projects in all phases of urban transportation" which it is believed will help to alleviate transit needs. This provision is not strong enough for the type of research program that is needed, for under it all of the funds so far appropriated for "research, development, and demonstration" have been earmarked for demonstration projects.

The cost of equipping our Nation's cities with proper mass transportation facilities has been put by some as high as \$10 billion. Obviously, \$375 million will not move us very far toward this goal. The demands on the program are considerable. Thus, the administration apparently has felt it necessary to apply all the program's financial resources toward meeting the demand. As a result, the annual authorization of \$10 million for "research, development, and demonstration" has been—and presumably will continue to be—applied to demonstration projects which, for the most part, result in actual mass transit facilities for communities.

For instance, the San Francisco Bay Area Rapid Transit System, which has received the largest Mass Transit Act demonstration grant to date—a total of approximately \$8 million—has applied the funds to testing automatic train control, vehicle stability, and the use of alternating current and direct current power. Other grants have been made for testing Pittsburgh's skybus—a system of small, lightweight vehicles operated along a separate right-of-way individually, or put together in trains—and to the city of Oakland for testing an air-cushion vehicle which can operate over both land and water. Another prominent example is the minibus which operates here in the District of Columbia.

While these demonstration grants no doubt lead to greater knowledge and understanding of urban transport problems, they do not begin to explore the possibilities to which I am referring and where I believe the real solution to our intracity transit problems lie.

The commucar—A good example

A good example of the type of new system which I believe can be developed as a result of an extensive Federal research program is the commucar, a theoretical system developed by the Massachusetts Institute of Technology. A small, lightweight vehicle, the commucar can travel along guideways getting its power from an electric trolley, or it can be driven along roads independently under its own power. Besides the virtues of safety, speed, absence of air pollution and ease of handling, the commucar takes its passengers directly to their destinations without requiring them to transfer. While technologically feasible, the commucar needs more research before a demonstration model can be constructed and tested. Such research could be conducted under the program I am proposing.

Amendment insures equal attention to intracity transport

The amendment I am offering to H.R. 5863 does two things. First, it adds language to the first sentence of the bill so as to insure that intracity transit, as well as intercity transit, is considered part of the national transportation system, and to place "special emphasis on achieving a technological breakthrough of new systems which can transport persons in metropolitan areas from place to place within such areas quickly, safely, economically, without polluting the air, and in such a way as to meet the real needs of the people and at the same time contribute to good city planning."

Second, the amendment adds language to section 5 to insure that any funds appropriated pursuant to the legislation be "divided equally between research and development of intercity and of intracity transportation methods."

The Secretary of Commerce has indicated a fiscal 1966 budgetary request for research and development for intercity transportation methods of \$10 million (in all he requested \$20 million: the additional \$10 million earmarked for the gathering of statistics—\$2 million, and a demonstration model to run along the northeast corridor, \$8 million; an equivalent \$10 million for research and development for intracity transportation methods would provide parity of treatment).

There is no problem of having the research for both intercity and intracity systems undertaken by the Secretary of Commerce. In fact, I see considerable advantage in having both programs administered by the same office. The two efforts should and would complement each other, and much time and expense could be saved by tying the two research and development efforts together.

In addition, there should be no problem in making the product of the Commerce Department's efforts available to Housing and Home Finance Agency, as well as capitalizing on the experience of that Agency, for section 4 of H.R. 5863 stipulates that in carrying out the objectives of the legislation, the Secretary shall "consult and cooperate with the Administrator of the Housing and Home Finance Agency * * *."

Daily we are reminded of the very serious mass transportation problem facing our cities. This is not a matter which can be put off until tomorrow, or until next year, or until the 1970's. It must be faced today, at least as promptly and forcefully as we propose to face our intercity rail problem. The adoption of my amendment by this subcommittee would insure a balanced research program for both intercity and intracity transport.

Mr. REUSS. Thank you, Mr. Chairman.

I applaud and support the subcommittee's inquiry into the need for massive research and development to improve our transportation systems, and even though the proposed Boston-Washington corridor is a long way from Milwaukee and Wisconsin, I realize that national benefits that would ensue from this kind of a technological breakthrough. As I say, I am very sympathetic to it.

I appear here this morning, however, to suggest that whatever Congress does about research into a technological breakthrough for intercity transport be accompanied by at least an equal program for intracity transport, because I think the need there is, if anything, greater, and the opportunities for a dynamic space age approach even more exciting.

Specifically, I have included in my statement a suggested amendment to the bill before you, which would—while keeping the intercity part of the research program just as it is—set up an equal and equivalent intracity research program aimed at, in the amendment's words—

a technological breakthrough for new systems which can transport persons in metropolitan areas from place to place within such areas—

And here are the goals—

quickly, safely, economically, without polluting the air, and in such a way as to meet the real needs of the people—

By which I include a desire which we Americans seem to have for individualized transport—

and at the same time contribute to good city planning.

By this I mean avoiding the ruination and uglification of our cities by endless parking lots, by endless further expressways, interchanges, cloverleaves, and so on.

The fact is that today we, the United States, are spending \$15 billion annually on research of all kinds, including some \$5 billion a year or so on space technology. But we are spending zero on research into intracity transport—one of the biggest problems that now confronts us.

We are spending close to zero on intercity rail transport, too. I don't mean to minimize the need for some help there.

Unless Federal Government will do at least in a modest way to transport within our cities what it is doing on reaching the moon, the ruin of our cities is going to proceed apace.

I don't want to make invidious comparisons between the need of research on intracity as opposed to intercity transport, because I think both are necessary. However, if one wants to get statistical about it, one could note Secretary of Commerce Connor's testimony a few weeks ago before this subcommittee, in which he pointed out that in the northeast corridor area there is a population density of 854 people per square mile. Well, if you look at the population density of the 130 leading cities of this country, those with populations over a hundred thousand, the Baltimores, the Columbuses, the Milwaukeees, and

all the other 127 of them, the population density there ranges from 6,000 to 25,000 people per square mile.

I offer this comparison to show how needful a program of developing absolutely new methods of intracity transport is.

The goals of such a research project are perfectly obvious. We need to cut down on accidents, we need to cut down on the 3- or 4-hour delays now inherent in going a few miles, we need to cut down on the pollution of our air, we need to aid good city planning.

I asserted a moment ago that Uncle Sam is now spending zero on research into new systems of intracity transport. I believe this is an accurate statement.

We have a Mass Transportation Act that Congress passed last year. But its total \$375 million is almost entirely spent in bailing out existing forms of transport—a new bus here, a new subway car there. There is a little demonstration project program connected with it which has done some good in San Francisco and Pittsburgh and other areas. But, basically, this is in demonstrating improved methods of what we already have, rather than in trying for the breakthrough which I believe is essential.

Now, I am delighted that later this morning this subcommittee is going to hear from Dean Siefert, of the Massachusetts Institute of Technology. MIT has received some help from the Department of Commerce on the northeast corridor intercity problem. In the course of working on it, they found what I would have been sure the would—that you cannot really work on a program for hauling people from Boston to Washington, or Chicago to Columbus, or Chicago to Milwaukee, without figuring out what you do with people within those cities when they get there.

And so MIT, with a truly remarkable team of electrical, mechanical, civil, aeronautical engineers, plus economists, and political scientists, architects and city planners, has given us a vision of what could be done if we really had a space age approach to this matter of metropolitan transport. They have dreamed up something called the comucar, which is a little vehicle which would be an individualized car which you would keep in your home in the suburbs. In the morning when you went to your office or factory, you would run it on its stored-up electrical power. Then when you got to the freeway, you would hook it onto a third rail of some sort, maybe a separate track, and be whizzed at a hundred miles an hour to where you wanted to go in the metropolitan area. Then you would get off the third rail, and go again on your own power to the particular plant or office which was your destination, at perhaps a speed of 40 or 50 miles per hour. These cars would be racked up in very economical parking facilities. Perhaps some could be trucked out to the suburbs to be used during the day. At the day's end you take them home again, and you arrive home unexasperated, unfrustrated, without your pockets being picked by the great cost of urban transport, without having to breathe a lot of carbon monoxide fumes during the day. In short, you have reaped the benefits of a combined Federal-university-industry research program which will, in a small way, do for people on earth what we are trying to do with the moonshot program.

My amendment is very simple. It adds a few words to the bill and says that it shall cover in equal portions intracity as well as intercity

transport. It would use the same financial dimensions—that is to say the Commerce Department has asked for \$10 million a year for the research part of the northeast corridor. Well, we would ask for an additional \$10 million for research into intracity transportation. I have no doubt that much of the research into computers and propulsion and dynamics would cover both. But certainly there needs to be at least an equal emphasis.

I am not concerned much about the problem of just who does this within the executive branch. Obviously, it will have to be done in close cooperation between the Department of Commerce and the HHFA. If the latter becomes a Department of Housing and Urban Affairs so much the better. I am concerned that there be no duplication. But that is something which I am sure this committee could work out.

In short, then, I bespeak the serious consideration of this subcommittee to the problem of helping not only by a research program for intercity transport, but by an equally important and massive research program for transportation within our cities. And I think now is the time to do it.

Mr. FRIEDEL. Thank you, Mr. Reuss. Evidently you have put a lot of time and study into this matter.

It has always been my impression that Chicago has fine commuter service, not only by the city authority, but also by the railroads, like the Burlington, Illinois Central, and North Western. Isn't this true?

I think the problem you are speaking of might come under the mass transit bill rather than under this research proposal.

Mr. REUSS. This is true. I am talking solely about research. The Mass Transit Act, I believe, is a good piece of legislation to help cities and public and private agencies get new buses, new subway cars, more of the same.

What is needed, however, is quite a new look at the problem—just as this subcommittee is preparing to take a whole new look at the problem of intercity transport which won't be confined to conventional rail transport as we know it—so I would hope that we could take as new a look at transport within the cities.

Mr. FRIEDEL. Speaking of your amendments, your second amendment worries me a little bit.

The second amendment adds the language to section 5:

To insure that any funds appropriated pursuant to the legislation be divided equally between research and development of intercity and intracity.

And that might be a hard thing to do—to divide it equally.

I think all cities will benefit from any research done on intercity problems. But to divide the money equally—when you specify half for intercity and half for intracity—we might run into a problem. That is the only thing that worries me about your amendment.

Mr. REUSS. I certainly recognize the possibility of improving the language of this amendment. All I was trying to do there, Mr. Chairman, was to indicate the congressional view that it regards the problem of transport within metropolitan areas as equally important as the transport between the cities of this country.

I certainly would want a degree of flexibility there. I think the chairman has a point.

Mr. FRIEDEL. Any questions, Mr. Pickle?

Mr. PICKLE. Mr. Chairman, I regret I came in late and I didn't get to hear all of Mr. Reuss' testimony, but I am glad to see him before the committee.

I assume what you are asking for is additional study and research for intracity improvements. And this would result in something other than rail transportation. Perhaps it would be in the field of electrical vehicles?

Mr. REUSS. That is correct. I think inevitably it would be something different and better from our present individually owned internal combustion automobile and city streets, and our present system of buses or subways or streetcars on the other hand. Just what it will take requires more imagination than I have.

But in setting forth the studies of MIT so far, into this little commu-car, I think one can grasp the general nature of what this research project would produce.

Mr. PICKLE. I think perhaps you have put your finger on one of the problems we have before us, because, whereas the bill proposed is for rapid rail transportation, in the back of most of our minds is a concern—is this the answer? Are the rails the right form we should be using? Because we know the trends in recent years.

So I, for one, would want to look further into your amendment, because I think this is a basic decision we have got to face.

Mr. REUSS. Yes. I thank the gentleman. He certainly has grasped what I have on my mind, which is simply this: Important as the proposal in the bill is, we should not lose sight of the fact that what is really needed is a program of new transport research which will benefit pretty much everyone in the whole 50 States of the Union.

There are areas where better rail transport between cities doesn't really solve many problems—rail transport between some cities is perfectly good. In my State of Wisconsin, for instance, it is possible to get from Milwaukee to the Twin Cities of Minnesota in very comfortable and expeditious fashion by rail right now, if that is what one wants.

But in our cities, we have terrible traffic jams, smog and smells and pollution and parking areas that are ruining the centers of our city. Something has got to be done about this. I believe that now is the time to do it.

Mr. PICKLE. Thank you.

Mr. FRIEDEL. Mr. Devine?

Mr. DEVINE. Thank you, Mr. Chairman.

Mr. Reuss, I take it from your testimony that your interest primarily is the use of Federal money for research for high-speed ground transportation rather than to federalize the transportation system within the various large cities across the Nation. Is that correct?

Mr. REUSS. Absolutely. This is entirely a private program which would draw upon our computer industry, our automobile industry, our rail industry, our air space industry. And the idea would be to lead to privately owned individualized transport, but of a better nature than what we have now. And I believe that the job can't be done alone by private industry any more than they could—private industry could—reach the moon alone.

Mr. DEVINE. Ultimately, after the research has been conducted and the facts made available, then the individuals in the several cities could utilize the information developed. Is that your thought?

Mr. REUSS. Entirely so.

Mr. DEVINE. And your thought is not to federalize the transportation system in any city?

Mr. REUSS. Just the opposite. My thought is that we need to give private industry an opportunity to make the kind of technological breakthrough which will prevent the problem from getting so bad that voices will be heard saying, "We must federalize local transportation," which I would be much opposed to.

Mr. DEVINE. Thank you.

Mr. FRIEDEL. Thank you.

Mr. REUSS. Thank you, Mr. Chairman.

Mr. FRIEDEL. Chairman Webb, we are glad to have you here this morning, for we know that over the years the Commission has given much attention to passenger train transportation, and several years ago made intensive studies into the passenger train deficit.

You may proceed.

STATEMENT OF HON. CHARLES A. WEBB, CHAIRMAN, INTERSTATE COMMERCE COMMISSION; ACCOMPANIED BY HON. VIRGINIA MAE BROWN; ROBERT D. PFAHLER, DIRECTOR OF THE BUREAU OF RAILROAD SAFETY AND SERVICE; HOWARD R. LONGHURST, ASSISTANT DIRECTOR, BUREAU OF RAILROAD SAFETY AND SERVICE; AND DR. ROBERT G. RHODES, ASSISTANT DIRECTOR, BUREAU OF ECONOMICS

Mr. WEBB. Thank you, Mr. Chairman, members of the committee.

My name is Charles A. Webb. I am the Chairman of the Interstate Commerce Commission, and have served in that capacity since January 1, 1965.

I would like to state for the record that here with me are Commissioner Virginia Brown; the Director of the Bureau of Railroad Safety and Service, Robert Pfahler; the Assistant Director, Mr. Howard Longhurst—Mr. Longhurst, incidentally, was a member of the U.S. delegation which visited Japan to witness the high speed Japanese Tokaido Line. Also I have with me the Assistant Director of our Bureau of Economics, Dr. Rhodes.

In appreciate this opportunity to testify on behalf of the Commission on H.R. 5863, a bill to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation and for other purposes.

My remarks will be equally applicable to identical bills, H.R. 5944, introduced by Congressman Patten; H.R. 6088, by Congressman Monagan; H.R. 8155 by Congressman Giaimo; and H.R. 8316 introduced by Congressman Helstoski.

In referring to "high-speed ground transportation" in the course of these remarks, I will be using the term as it was defined by Secretary Connor in his recent testimony before the House Interstate and For-

aign Commerce Committee on H.R. 5863 and related bills. Secretary Connor said on that occasion :

The term "high-speed ground transportation" comprehends the movement of people and goods, by land, on special-purpose rights-of-way, along which vehicles will be guided. The important characteristic of this kind of transportation is its capability for moving large volumes of people and goods, while imposing relatively low requirements for space. Another advantage is its high reliability under adverse weather conditions. The conventional railroad is the only existing form of high-speed ground transportation now in commercial operation, under this definition of the term.

Although our comments here will concern principally the research and development activities of the Secretary of Commerce in connection with rail service that are contemplated by the present bill, we wish to emphasize that this Commission is vitally interested in the continued development of all forms of surface transportation. The development of a system of high-speed ground transportation by rail for the movement of passengers and freight between major points whether in the eastern corridor or other sections of the country may result in drastic changes in the roles of other modes of transportation. For this reason, we would suggest that consideration also should be given to the part that can or should be played by other major modes of surface transportation in a high-speed ground transportation system. This could well include the role of bus and truck transportation for short haul and feeder operations in connection with high-speed service by rail which necessarily will feature a minimum of stops at points some distance apart.

We have witnessed great progress in the field of surface transportation, but at the same time we recognize that in the area of high-speed ground transportation, technological capabilities are not adequately reflected in actual operations. In the case of rail passenger service, the large gap between what exists and what is possible is easy to understand. In 1964, virtually all of the class I railroads providing rail passenger services reported a deficit from such operations. Nevertheless it is conceivable that rail passenger service will be far more important 10 or 20 years from now than it is today and that, with the benefit of experimentation, research and development, and intensive study of travel behavior, it could be made economically viable.

Our Nation's population is rapidly approaching the 200 million mark. In addition, the demographic trend is toward further concentration of the Nation's population in large urban areas. Transportation within and between these centers of population will become progressively more difficult. In 1960 Americans traveled over 600 billion passenger-miles, exclusive of local movement, and that figure is expected to double by 1980. Freight shipments during the same period may nearly double. It is essential to a sound economy that surface transportation technology and service keep abreast of our transportation needs. The unique advantage of high-speed ground transportation is that it affords unimpeded access to the heart of large metropolitan centers.

In the *Railroad Passenger Train Deficit* case, 306 I.C.C. 417 (1959), the Commission made an extensive study of the rail passenger situation in the United States. In this study we recognized that intercity rail passenger service is an essential element in a strong national transportation system. To prevent the decline of rail passenger service,

particularly in the Northeast, we concluded that experimentation with new types of equipment, service, and fares would be necessary.

H.R. 5863 would authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation. The three basic programs that would be undertaken are (1) research and development concerning various forms of high-speed ground transportation of the movement of passengers and freight including, of course, railroads; (2) demonstration projects to test the public's response to improved rail service in the northeast corridor; and (3) improvement of the scope and availability of transportation statistics.

The purpose of the proposed research and development program is to advance present rail service technology and to develop new means of transportation designed to travel on special-purpose rights-of-way along which vehicles will be guided. The reason for conducting research in this area is that this type of transportation is capable of moving large volumes of passengers and freight, while requiring relatively limited space for rights-of-way. The technological benefits derived from this program will not be confined to the Northeast but will be generally available throughout the United States.

The rail demonstration program to be conducted in the Northeast will use existing facilities and a modern fleet of cars especially designed for high-speed service. Although this program will be conducted only in the northeast corridor, advances achieved in this area will be directly applicable to other regions.

A national program for the collection and improvement of transportation statistics would be established. Presently several Federal agencies collect transportation data but these programs are designed to meet the particular needs of the agencies involved. The Commission's data-collection program is conducted by our Bureau of Economics. The Secretary of Commerce has indicated that the data-collection program that would be authorized by H.P. 5863 would not duplicate reporting requirements established by other Federal agencies, and that the Department of Commerce would use the information collected by these agencies to the maximum extent possible. The Commission would be happy to cooperate with the Department of Commerce in supplying transportation statistics or other information at our disposal.

Since these programs authorized by H.R. 5863 would be administered by the Department of Commerce, the Commission offers no comments respecting the adequacy or reasonableness of the specific provisions contained in the bill. However, the Commission realizes the necessity for greater research and development in the area of high-speed ground transportation, which H.R. 5863 would authorize the Secretary of Commerce to conduct. Accordingly, we favor the general objectives of the bill.

H.R. 5863 does not specifically exempt from the provision of the Interstate Commerce Act transportation activities undertaken by the Department of Commerce directly or under contractual or other arrangements with common carriers. Therefore, we assume that all such transportation activities would be subject to the provisions of the act. Although some of the activities undertaken pursuant to the proposed legislation would be subject to the provisions of the Interstate Commerce Act, we do not foresee any regulatory obstacles to the pro-

gram contemplated by the Department of Commerce. However, if any such obstacles should become apparent, we are confident that they can be removed by cooperative action on the part of the Department and the Commission.

If the proposed legislation should be approved, the need for a comprehensive approach in the promotion and development of the three major modes of public passenger transportation—rail, highway, and air—will be accentuated. The Federal Government is already engaged in extensive research and development of highways and airways. We believe that under the current research program of the Department of Commerce, the potential capabilities of the three major modes of passenger service should be studied in total perspective with a view toward determining what combination of service and facilities provides the best passenger service with the least commitment of economic resources.

In conclusion, I would like to acknowledge publicly our appreciation of the fact that the Department of Commerce has kept the Commission fully informed during the formative stages of the high-speed ground transportation project. In addition, we have been invited by the the Department of Commerce to participate on an ad hoc liaison committee to maintain communication between the Commission and the Department of Commerce for both the planning and active phases of the high-speed ground transportation program. We have accepted that invitation and, if the legislation is approved, hope to make a helpful contribution to the success of the program.

I would be happy to try to answer any questions you might have.

Mr. FRIEDEL. Well, as I understand, this bill in no way relieves the carriers or the Secretary of Commerce from fully complying with all the statutory provisions which you administer in this field, including not only the interstate aspects, but involving safety and the like, is that your understanding?

Mr. WEBB. That is correct, Mr. Chairman.

Our safety authority would be unimpaired. One of the reasons that we would be working closely with the Department of Commerce would be so that our experts on railway safety could be in at the beginning, so that they could anticipate any safety problems that might arise.

Mr. FRIEDEL. Thank you.

Mr. Jarman, any questions?

Mr. JARMAN. No questions.

Mr. FRIEDEL. Mr. Devine?

Mr. DEVINE. Thank you, Mr. Chairman.

Mr. Webb, I assume that, speaking as the Chairman of the Interstate Commerce Commission, you are also representing the views of its other members of the Commission as it relates to high-speed ground transportation?

Mr. WEBB. Yes; that is correct. This is the statement of the Commission approved unanimously by the Commission.

Mr. DEVINE. Fine. I think that should be made clear for the record. As you know, this committee is involved in a great deal of speed right now, because in addition to having the high-speed ground transportation, we are going to have to consider the supersonic transport, having to do with aircraft. So you see we have some problems.

Mr. WEBB. I understand.

Mr. DEVINE. Thank you, sir.

Mr. FRIEDEL. Mr. Pickle, any questions?

Mr. PICKLE. Your testimony, Mr. Webb, has been primarily in connection with 5863; is that correct?

Mr. WEBB. Yes; that is correct, Congressman Pickle.

Mr. PICKLE. I am not sure that I recall just how this will be financed. The money to be appropriated for this study will be entirely Federal funds; is that correct?

Mr. WEBB. Yes; that is my understanding from the Secretary of Commerce, that this would require an appropriation, I believe he said, of \$20 million for the first year, and \$35 million for the 2 succeeding years, making the total \$90 million—entirely Federal money.

Mr. PICKLE. This is entirely Federal money.

Do you think that the cities should participate in the cost of these studies—cities or regions?

Mr. WEBB. In my opinion, Congressman Pickle, it is appropriate that this be an entirely Federal contribution in view of the fact that interstate, rather than intrastate or intracity transportation, is involved.

Mr. PICKLE. Well, now, the gentleman who preceded you, Mr. Reuss, has suggested an amendment that would provide for intracity research and study. If this were then made a part of the bill, obviously we have both intercity and intracity transportation. So it would be more than just a Federal project, would it not?

Mr. WEBB. Well, I would think so.

It is my understanding of the Mass Transportation Act that those programs which are conducted under the Urban Mass Transportation Act represent joint undertakings on the part of the Federal Government and State and local communities.

Mr. PICKLE. Yes; that is correct. Perhaps that answer may be found in the Mass Transportation Act, that phase of it.

Once the research is underway, and you come to the point where you have the demonstration project, will the public be charged regular fares on these kinds of projects?

Mr. WEBB. It is intended, as I understand the program, to charge different fares for the service in order to see what effect the fare would have on the volume of travel. That is one purpose—that would be one purpose of the demonstration project.

It is my understanding, however, that no fare—no fares would be charged which would be below those of a competing mode of transportation.

Mr. PICKLE. The fares—the operation would be privately run, I assume.

Mr. WEBB. Yes; the principal contractor would be the Pennsylvania Railroad—although I understand it is hoped that one demonstration project would involve the New Haven on that portion of its line between Providence and Boston.

Mr. PICKLE. Are you saying that the Department of Commerce primarily would be most instrumental in establishing the rate of fares?

Mr. WEBB. Yes; that is right. And some of the fares would be, frankly, experimental in nature, to test their effect on volume of travel.

Mr. PICKLE. Well, is it your judgment that rail is the proper approach to this high-speed ground transportation problem?

Mr. WEBB. Yes; I would say so essentially, because they are the only form of such transportation that we now have in commercial operation, and I think it can be—that form of transportation can be tremendously improved.

Of course, that does not rule out new forms that might be developed.

Mr. PICKLE. Oh, yes; we would have to look at all forms. I am concerned, as I said earlier, that the trend in transportation in recent years has been away from the rails. Now here we are reviving or trying to pump new lifeblood into a system—it must raise a question in people's minds; is this a proper approach?

Mr. WEBB. Well, one of the purposes of the program would be to try to determine the feasibility, the economic feasibility of a really first-class, high-speed rail service.

The cost of producing the counterpart of the Tokaido Line between Washington and Boston might run as high as \$3 or \$4 billion—I don't know.

But this program might demonstrate whether or not that would ever be economically feasible.

Mr. PICKLE. Well, I just make the observation—it seems to me, in the field of research, that this could be something that would rightly be a matter of Federal sponsorship. When we get into the field, though, of actual operation, at some point it seems to me that the cities and the regions ought to participate in the cost of any kind of system that is established.

I don't suppose that is in the ICC's province or problem. But it is a feeling on my part.

I believe that is all, Mr. Chairman.

Mr. FRIEDEL. As I understand it, if this experimental research proved successful, the railroads will buy the equipment. Is that correct?

Mr. WEBB. Yes; that is my understanding.

Mr. FRIEDEL. Private industry, or the carriers, would carry on from there. And not only the east coast, or the northeast corridor, but the Western States and the Southern States, and all the States would benefit by the research authorized by H.R. 5863.

Mr. WEBB. I might add in further response to Congressman Pickle's observation that I think in any long-range program, involving inter-city transportation along the northeast corridor, that it might well be appropriate that any governmental assistance necessary might be provided in part by States and local communities.

Mr. PICKLE. Yes. We have hanging over us today a specter of a federally controlled transportation system, and I think this is something we have to be very guarded about.

Mr. WEBB. Yes. And Senator Pell and others have proposed a compact arrangement involving transportation up and down the northeast corridor, which would require assistance primarily by the States involved.

Mr. FRIEDEL. I understand that Commissioner Walrath headed a delegation to Tokyo to see the Japanese high-speed rail system. You mentioned that Mr. Longhurst was here.

Mr. WEBB. Mr. Longhurst is here.

Mr. FRIEDEL. I would like to have him come up and tell us more about it.

Mr. WEBB. Mr. Howard Longhurst.

Mr. FRIEDEL. Give your full name for the record.

Mr. LONGHURST. Howard R. Longhurst, Assistant Director of the Bureau of Railroad Safety and Service, ICC.

Mr. Chairman, is there anything in particular that you would like for me to mention about the new Tokaido Line?

Mr. FRIEDEL. Would you give us your impressions of what you saw, and whether it is working good, whether it could be accomplished here in the United States?

Mr. LONGHURST. Well, at the time we were in Japan, going over the construction of the new Tokaido Line, there was one section of about 30 miles in length that was being used for test purposes. They had four prototype self-propelled, or electrically propelled, units. The construction of the line itself was excellent, the details of track structure were far superior to anything that I have seen in this country.

The test runs were rather amazing. In fact, in one run we did reach a maximum speed of 160 miles per hour.

The automatic signal and train control system is excellent. It is designed on a fail-safe basis. Should any of the individual portions of the train control system fail, it would cause restricted speed or even stopping.

The operation is about as near as being fully automatic as any I have ever seen—and with the exception of starting the train, the motorman has practically no control over the train, other than that he could in an emergency make a stop. But the speed control is automatic. There are seven different cab signal indications that automatically adjusts the speed.

Their plans at that time were to operate at a maximum of 125 miles per hour. They intended to average 105 miles per hour—in the run from Tokyo and Osaka. And with the exception of a short period of time when new track structure, particularly new fills, did some slight settling, when they found it necessary in the interests of safety to reduce speed, they have successfully maintained their schedules.

I think due to certain municipal pressures, they up to this time have not been able to bypass any of the principal cities between Tokyo and Osaka, to make the overall run in 3 hours—320 miles. But I think as more trains are added, they will have such express trains.

They are taking every precaution known in safety—even to the extent of not at any time contemplating running trains against the current of traffic. It is a double-track line. All train movements will be following movements.

It was anticipated that should there be a breakdown, the stricken train would be pushed to the next terminal and placed in the clear.

Their equipment is comfortable, well designed, excellent air conditioning, and even at the 160 miles an hour, with the one exception of going through tunnels, the train rode very comfortably.

They have had a problem due to the sudden buildup of air pressure when entering tunnels—very much like a piston in a cylinder—there is a sudden, abrupt buildup of air pressure, which is uncomfortable to the ears, or the ear drums, but other than the discomfort there is no danger.

The maintenance standards that they were proposing were excellent. They use an all-welded rail with ample stopping distances in the spacing of their automatic train-control sections.

Should the train enter a section of track on which speed must be reduced, the reduction will be automatic. The automatic train control will cut power, and make a regenerative brake application, until the desired speed is reached, and then will automatically maintain that speed until they enter another block, where, if necessary, the same performance will be repeated.

It was planned that during the last 15 to 18 miles per hour, the motorman or driver, as they call him, would take over manual control of the train, although complete automatic operation could be adopted.

Mr. FRIEDEL. I gather you were greatly impressed. It may be a good idea for this committee to go over and review it ourselves, and see how it is.

Mr. LONGHURST. Mr. Chairman, I think that would be an excellent idea.

Mr. FRIEDEL. Did the people patronize the train to capacity—was it fully loaded, or 50 percent?

Mr. LONGHURST. Well, of course, while we were there the train was not in actual operation, it was merely test purposes. But I have understood that the business has been growing considerably, and in fact that the airlines, for instance, between Tokyo and Osaka have really felt a swing of travelers to the new Tokaido trains. Tokaido, by the way, I found, means the eastern seaway.

Mr. FRIEDEL. Mr. Jarman, any questions?

Mr. JARMAN. Mr. Longhurst, what safety precautions have they taken to keep vehicles or individuals off the tracks?

Mr. LONGHURST. I am sorry I overlooked that. The line was built with no grade crossing whatsoever. There will be no crossings at grade. Most of the line is elevated, built on fills or on reinforced concrete elevated structures.

Mr. JARMAN. Thank you.

Mr. FRIEDEL. Mr. Devine?

Mr. DEVINE. No questions, Mr. Chairman.

Mr. FRIEDEL. Mr. Pickle?

Mr. PICKLE. Mr. Longhurst, the length of the system in Japan is approximately 350 miles, did you say?

Mr. LONGHURST. 320.

Mr. PICKLE. Well, now, how many stops are there between the two terminal points?

Mr. LONGHURST. There are 10 rather large industrial cities. It was anticipated, though, that the top express runs would make only one intermediate stop between Tokyo and Osaka. But I understand the various municipalities have made it rather difficult to bypass or run through any of the 10 principal cities.

Mr. PICKLE. And this would be a constant problem on any line. We have the same problem here. And I would imagine the big problem is the frequent stops.

Mr. LONGHURST. That is right.

Mr. PICKLE. Now, in Japan, do they really have any other kind of effective mass transportation medium, other than the rails?

Mr. LONGHURST. First, in the city of Tokyo and around it there are countless automobiles. I think their traffic problems in Tokyo are just as bad or worse than they are here in Washington. However, the highways between cities have not reached anywhere near the stage of development that we have in this country. Although at the time they were building the new Tokaido line they were also building an express highway between Tokyo and Osaka—a limited-access highway.

Mr. PICKLE. I haven't been to Japan, so I really have to speculate, but I would imagine that is a rather mountainous country, narrow in dimension, and it would be difficult to ever establish a very fast or effective highway system—and I would imagine because of the shortness of distance involved, airline transportation would never be able to move people very effectively. So I just assume, that maybe about the only real system they have got is rapid rail transportation.

Now, here we have got perhaps the best highway system in the world, we have got a large country, the terrain is equipped for bus, truck, or airlines.

I am just wondering if in this country we are just trying to help the railroad get a more up-to-date system. We travel 60, 70 miles an hour now. If we have the new system we would have higher speed, but we still have to stop up and down the line.

I am not saying I am against it, but I am just thinking how much do we really improve our situation.

Mr. LONGHURST. Well, Mr. Pickle, when one sees the number of people that are transported by rail in and out of Tokyo, and think of the relatively small area of land that is used for the rail transportation, it makes you realize that the right-of-way for a railroad will handle so many more passengers than a highway system. The highway system takes up considerably more ground. And, of course, that is another feature in Japan—the productive ground is so valuable that in many cases the railroad was elevated to conserve the rice paddies underneath the structure. Some tunnels through relatively small hills or mountains were not daylighted or cut open completely as cuts, in order to preserve the ground area above the tunnel for tea plantations, for example.

But there is an average, or was an average 2 years ago of a million and a quarter passengers per day in and out of the central Tokyo station, by rail.

On their principal commuter lines, they operate 10 car trains, each car electrically propelled. They run at 2-minute intervals, and the trains are crowded, crowded to the extent that during the rush hours, they average 375 passengers per car, or in other words, 3,750 passengers in the train, and a train at 2-minute intervals on three of the more important suburban lines, rather.

Mr. PICKLE. If we had the same kind of system here that Japan is operating now, do you think this would go a long way toward solving our congested transportation problem between cities?

Mr. LONGHURST. I certainly think it would, sir.

Mr. PICKLE. Thank you.

Mr. FRIEDEL. Mr. Staggers, any questions?

Mr. STAGGERS. I might ask Mr. Webb a question, because I did not hear your testimony.

Mr. WEBB. Yes, sir.

Mr. STAGGERS. But I do take it you are for the bill, or you would not be up here.

Mr. WEBB. Yes, we favor the objectives of the bill, Congressman Staggars. As I indicated, if the bill is approved, we hope to be working closely with the Department of Commerce to solve any problems that might arise.

Mr. STAGGERS. Well, now, do you take it from the bill that it is not to build railroads, but it is research and development?

Mr. WEBB. Yes, research and development, plus the practical application in the form of demonstration projects in the northeast corridor, plus the collection of transportation statistics.

The Secretary of Commerce indicated that this would be a 3-year program.

Mr. STAGGERS. Three-year program?

Mr. WEBB. Yes, sir.

Mr. STAGGERS. Now, do you think that private enterprise could or should do this job, or not?

Mr. WEBB. I think a great deal will depend upon the results of this research and development, on the results of the demonstration project. Then I think that all concerned would be in a position to determine what is the role of private enterprise, what is the role of the States involved in a particular area, what is the role of the Federal Government. This should give everyone concerned a much better idea of what is technologically possible and what is economically feasible. This should give everyone concerned a much better idea of what is technologically possible and what is economically feasible.

For example, it should give a fairly good indication of the extent to which people living on the eastern seaboard will patronize a first-class, high-speed ground transportation service.

Mr. STAGGERS. You would not be—would you or would you be in favor of the Government building these railroads and operating them?

Mr. WEBB. I would not be in favor of that; no, sir. I am not sure—if you are thinking in terms of a Tokaido line—I am not sure that any private railroad company could undertake that on its own.

Mr. STAGGERS. Well, the Tokaido railroad is a Government-owned project.

Mr. WEBB. Yes, it is owned by the Japanese National Railway.

Mr. STAGGERS. Well, I don't believe the bill anticipates any public ownership of railroads or building of railroads.

Mr. WEBB. No, I am sure it does not.

Mr. STAGGERS. And I don't believe this committee would be in favor of it if it was. We are interested in research and development.

Thank you very kindly.

Mr. WEBB. Thank you.

Mr. JARMAN. Mr. Chairman—I have one question.

Mr. Chairman, you indicated that your position stated this morning is the unanimous position of the Commission.

Mr. WEBB. Yes, that is right.

Mr. JARMAN. Has any opposition come to you, been expressed to you, with reference to H.R. 5863?

Mr. WEBB. No, I am not aware of any opposition, Congressman Jarman.

Mr. JARMAN. That is all, thank you.

Mr. PICKLE. Mr. Chairman?

Mr. STAGGERS. Mr. Pickle.

Mr. PICKLE. I would like to ask one other question of you, Mr. Chairman.

The bill envisions the Department of Commerce conducting this study, research.

Mr. WEBB. Yes.

Mr. PICKLE. And along with the private company, the Pennsylvania Railroad conducting demonstrations. The bill also refers to the fact that the Department of Commerce would keep in close touch with the HHFA and with other private and governmental institutions.

Mr. WEBB. Yes.

Mr. PICKLE. Now, what would be your feeling if this bill also provided for the establishment of some kind of advisory committee which would be broad enough in scope to include other governmental agencies and private concerns—for instance, truck, railroad, airlines, on the advisory committee, to whom this program is actually administered on a policy level?

In other words, let a broad advisory committee be more or less a board of directors to give direction to this program.

Mr. WEBB. I would be inclined to favor your suggestion, Congressman Pickle—although, of course, I have not consulted with the Commission. But it seems that that might be desirable.

Mr. PICKLE. I think it might bring in all elements.

Surely all media are on the sideline watching this and wondering what might come of it. If they were on an advisory committee, this might make them a part of it, and perhaps to understand it and accept it and offer concrete suggestions.

Mr. WEBB. I think the motor bus industry, for example, might have some helpful contributions to make because it is frequently necessary to get the people to the station, and buses could provide a coordinated service with such a system.

Mr. PICKLE. Mr. Chairman, I would like our committee to inquire of Secretary Connor how he would feel about an advisory committee for this bill.

Mr. STAGGERS. I think we could do that as a committee.

Any further questions?

Well, Mr. Chairman, we appreciate you coming up as Chairman of your Commission to give us the benefit of your views and your official position.

Thank you very much.

Mr. WEBB. Thank you, Mr. Chairman.

Mr. STAGGERS. Our next witness will be Mr. William H. Seifert, assistant dean of engineering, Massachusetts Institute of Technology.

Mr. Seifert?

We are glad to have you with us. We are glad you have taken the time to come down and give us your views on this very important legislation.

If you would state your name and position, you may proceed.

**STATEMENT OF WILLIAM W. SEIFERT, ASSISTANT DEAN OF
ENGINEERING, MASSACHUSETTS INSTITUTE OF TECHNOLOGY,
CAMBRIDGE, MASS.**

Mr. SEIFERT. I am William Seifert, assistant dean of engineering at the Massachusetts Institute of Technology.

I appreciate the opportunity, Mr. Chairman, to testify before you on H.R. 5863 and similar bills seeking authorization for the Secretary of Commerce to undertake research and development in high-speed ground transportation.

Since last September, a group of 35-40 faculty and 25 graduate student staff at the Massachusetts Institute of Technology have been looking broadly at the problems and possibilities involved in developing a form of high-speed ground transportation which would represent a significant improvement in both speed and convenience over currently available forms. This work has been supported by the U.S. Department of Commerce. I have been serving as director of the MIT effort on this study and would like to present to this committee some of the principal conclusions we have reached.

The experience which we have gained in this area since last September, coupled with the broad background of the faculty in areas of research and development pertinent to this general problem, have convinced us that major advances in the area of high-speed ground transportation are entirely feasible. Furthermore, we feel that it is vital to the development of the country that high level talent in significantly increased amounts be focused objectively on these problems.

I believe it is significant also to note the low level of effort which has been devoted to research and development in the area of transportation in relation to the total national R. & D. effort.

While transportation as represented by highway construction, automobiles, railroads, airlines, pipelines, and ships represents approximately 20 percent of our gross national product, or approximately \$120 billion annually, the amount of research devoted to broad aspects of transportation or to radically new components for our transportation system has been extremely small. Some highway research has been sparked by the requirement in the Federal highway program that the States spend at least 1½ percent of the Federal funds on highway-related research or planning. While the railroad equipment suppliers conduct modest research programs, few of the railroads themselves carry on substantial efforts. Consequently, the total expenditure on research and development related to the railroad industry represents approximately one-fifth of 1 percent of the gross operating revenue of the railroads. A very small percentage indeed.

R. & D. efforts in defense and space have built up steadily over a period of years and the Nation has developed a large group of technical personnel ready and able to move quickly as new need arise or new areas of interest are identified. Unfortunately, compared with efforts in other fields, there has not existed in this country even one group which has developed a broad research and development capability in the field of ground transportation. Furthermore, and largely as a result of the very limited support available for research, the academic institutions of the country have not developed strong curriculums or on-campus research that would identify the scientific

bases that underlie an understanding of the sociotechnologic foundations of ground transportation. As a result, the Nation does not have a supply of bright, young students anxious to apply the latest developments of science and technology for the solution of our ground transportation problems and ready to embark on transportation as a career.

Knowledge in such areas as dynamics, control, computers and propulsion has advanced rapidly as a result of research carried on in the context of military and space programs, but we have not had an effective mechanism for transferring or adapting findings from these activities into the area of ground transportation.

Transportation and, in turn, the civilian economy in general could benefit greatly from a research and development program that would engage a variety of organizations which have been active in the military and space areas on such civilian problems. In this way, the Nation would derive significant "fallout" benefit for an area of broad importance.

The Department of Commerce asked the MIT group to study the technical feasibility of providing significantly improved transportation within the northeast corridor and, if such a system looked feasible, to identify the areas in which additional research would be required and to outline a plan for research which, if carried through, would lead to the design of a specific transportation system.

We concluded that a new high-speed ground transport (HSGT) system could be achieved technologically, but that it would differ radically from passenger trains and railways as we know them today. It would be, in fact, a new mode of transport. Just as further development of the piston engine would never have led to the advances in aircraft achieved by the introduction of the jet engine, we feel that really significant advances in the area of high-speed ground transportation would result from work directed toward innovation rather than toward piecemeal improvement of existing technology.

We feel that main-line speeds in excess of 200 miles per hour or even 300 miles per hour would be required to provide the character of service needed in the era of the 1980's and beyond. Such speeds are technically feasible. However, if the full benefit of such high main-line speeds is to be realized, a primary objective in designing a new system should be to provide effective coupling between intercity and urban transport systems so as to minimize the transit time of passengers having a wide range of origins and destinations. Thus, we must somehow obtain better coordination and interfacing of urban and intercity systems than has been achieved in the past.

In this regard, I should like to indicate that I heartily endorse the proposal being made by Representative Reuss, of Wisconsin, to amend the bills here under consideration to provide \$10 million for fiscal year 1966 and \$10 million for fiscal year 1967 to undertake a program of research designed to achieve a technological breakthrough in the development of new kinds of public intraurban transportation systems. Simultaneous funding of both aspects of the transportation research program will permit development of an integrated system having the balance that must be achieved if it is to be truly effective.

My colleagues at MIT have, thus far, purposely looked broadly

at the status of technology in the many areas that might contribute to the design of a new high-speed ground transportation system. The group comprises, either as workers or as active advisers, not only civil, electrical, mechanical, and aeronautical engineers, but also political scientists, economists, and city planners. Their work has included consideration of a variety of vehicle support and suspension systems ranging from the possibilities for using steel wheels on steel rails at much higher speeds to the use of various types of air-cushion support. We have examined also a variety of propulsion schemes ranging from conventional electric-traction motors, to linear electric induction motors, to systems in which the vehicle acts as a free piston in a tube, much like the capsule used in the pneumatic tube delivery systems found in some department stores. We are also examining the problems of locating the guideway—a term which we choose to use in place of the very specific term “rails,” to connote the spectrum of possible surfaces on which the vehicle may ride—on the surface, on elevated structures, or in a deep tunnel, and are looking at the associated problems of initial construction and the amount of maintenance that will be required to achieve the alinement and smoothness of guideway required for passenger comfort at high speed.

As well as examining individual components of the system, we are looking into a number of different system concepts and different varieties of services that might be provided. On the one hand, the HSGT system might be designed to transport people in much the same manner as aircraft but with improved access to and from intermediate cities. In order that the system may provide high speed service to intermediate cities within the corridor, such as Providence and Wilmington, we are examining means for accelerating vehicles from a local station to main line speed and connecting them with the main line vehicle, at speed. While such a scheme may appear rather farfetched, I might point out that the development of rendezvousing techniques is essential to our space program and should be equally feasible in an earthbound transportation system. Some such procedure would be highly desirable in any system which is to provide high speed service throughout the corridor and ready access to the major cities in the corridor. We are, nonetheless, looking at other means for achieving essentially equivalent results. For example, we are looking into vehicles which would have the capability of operating as conventional cars or buses in the urban system but at high speed on the main line. We are also considering schemes whereby a person wishing to make an intercity trip in the corridor could drive his own automobile onto a special train and be carried with his car to the other city where he would proceed to his destination in his own car.

As I hope you can see from these brief comments, our program is quite broad and embraces a wide variety of possible alternatives. Later, attention will be focused on a few of the more promising areas and, finally, a detailed design program can be initiated.

While this approach will necessarily take several years, we feel that it maximizes the probability of achieving a satisfactory long-range solution. However, it is extremely important to the effectiveness and even the ultimate success of such an effort that its funding

be continuous over several years because if once it is turned off, it will be expensive and time-consuming to turn it on again.

The bills now before the Congress and our efforts are directed toward the problem of transportation in the northeast corridor of our Nation. However, it should be pointed out that focusing attention on a new mode of high speed ground transportation should serve as a powerful stimulus to research in the whole field of transportation and have significant fallout leading to improvements which should permit existing systems to perform more effectively. If these efforts are to be truly successful, they must, however, encompass not only the technological aspects of the problem but also the social, political, and economic. Research in these latter aspects should be carried on hand in hand with research in the technological area. Industry and research groups across the Nation can and should share in this effort.

Mr. Chairman, this concludes my prepared statement. I shall be happy to answer any questions that the committee may have. However, if I may ask your indulgence, I was in Japan in March of this year, and would be very happy to make a few remarks in regard to my observations concerning the new Tokaido line.

I rode the normal service on the new Tokaido line in March, and I should like to pay tribute to the Japanese for the very excellent job that they did. This was truly a systems design job in the broadest sense.

They had the rather unique opportunity to design a complete railroad system, the guideway, the trains, the stations, the control systems, the whole works.

I should, however, like to point out that I felt that the trains of the new Tokaido Line, while they are an excellent design, represent a good realization of the present state of the art, and they are not anything that is so very unusual. They do provide a very excellent ride. The top speed of the train on which I rode was, I think, 128 miles an hour.

Beginning October 1 of this year, 1965, the Japanese will start 3-hour service from Tokyo to Osaka. On the 3-hour service trains, there will be two stops.

As the gentlemen before me said, they also have a limited express which makes 10 stops.

The tunnel problem, which resulted in a bothersome increase in air pressure on a passenger's ears as a train entered a tunnel, was alluded to before. It has been essentially remedied. This was a design difficulty which they were able to correct.

The reason that the train gives such an excellent ride, I think, is very largely due to the excellent maintenance program that they have.

The guideway, the tracks that is, in a high speed transport rail system of this nature must be kept in excellent alinement. The Japanese have a very extensive maintenance program for achieving this track alinement.

The point that I think we cannot overstress, as we try to interpret the Japanese experience for this country, is that their existing transportation system and, as a result, their overall transport problem is entirely different than ours.

In this country approximately 91 percent of the intercity travel is by private automobile, and something of the order of 21¼ percent is by rail.

In Japan, approximately 70 percent of passenger traffic is by rail, and only 8½ percent is by private automobile.

The low use of automobiles in Japan stems largely from the fact that they have not thus far developed an extensive expressway system. In fact, the expressway between Tokyo and Osaka will not be completed until the latter part of 1970. At that time they do expect that a short-term dip will occur in the traffic on the new Tokaido Line. But their demand for transportation, particularly passenger transport, is so high, they feel this will only be a temporary effect.

Now, while the new Tokaido Line very well satisfies the demand as it now exists, and as it will exist in Japan over the next 10 or 12 years, I feel that we need something which is much more than that in this country. I feel that we will not really get at the heart of our transport problems which at the moment I think are primarily congestion on the highways, particularly around the major cities, unless we have a system which will really be attractive. And I feel that to be attractive, the system should offer main line speeds in the range in which I have spoken—200 miles an hour or above.

With that, I should like to offer to answer any questions the committee may have.

Mr. STAGGERS. Well, thank you very kindly, Mr. Seifert. I was interested in your explanation of the Tokaido Line.

Do they use that railroad to capacity, just about to capacity?

Mr. SEIFERT. At the time that we rode the new Tokaido Line, all of the seats, I believe, were reserved. We received from the conductor the reports of the number of passengers on board, and on 2 of the 5 occasions on which I rode the train, actually there were 5 or 10 more people on board than the approximately 900 seats on a train. A few people will get on regardless of the fact that they don't have a reservation—that is what accounts for that problem.

Looking at the reports over a long period of time, of the load factors on the train, we find that on the trains which make only two stops, they have very excellent load factors—something like 95 or 97 percent. On the trains which make 10 stops, the load factor gets down to approximately 80 percent.

The primary reason for this, I believe, is not the lack of desire on the part of people to travel, but the fact that full utilization represents an impossible scheduling task. It becomes impossible to dovetail the various trips of all the people wishing seats so that people wanting to go from Tokyo to Nagoya don't overlap with other people who want to travel somewhere else in the corridor as, for example, from Atami to Kyōto. It thus becomes impossible to fill out all the seats for the whole distance. Therefore, I think it is more a scheduling difficulty than lack of interest in the train.

They do have an excellent load factor.

Mr. STAGGERS. Is it a profitable organization for the Government?

Mr. SEIFERT. I don't really feel qualified to answer that question. I think that they are making revenue which is, as I recall when we were there in March, slightly below what they had predicted for that time—partially because more people were making shorter trips in proportion to people making the whole trip.

Their rate schedule is, of course, regulated by the Government, and my impression is that the fares are extremely low and they give large

groups, groups of schoolchildren, for example, very substantial discounts, which I understand range up to 92-percent discount, to encourage students to travel around the country and see the national sights. If there were really the feeling that they had to make more money, I believe that they could increase the fares without driving away business.

Mr. STAGGERS. Thank you, Mr. Seifert.

Mr. Jarman?

Mr. JARMAN. Mr. Seifert, as I understand your testimony, you feel that the Government should conduct its research program in both intercity and intracity high-speed transportation at the same time.

Mr. SEIFERT. Yes; Congressman Jarman, I do. I feel that what we really should be seeking in this transportation problem is a solution which permits people to travel from a variety of locations around each city to a variety of locations around each other city and not merely from city center to city center.

I see very little reason why we should spend a great deal of effort at the present time in trying to get people from the center of Boston just to the center of Washington—if we cannot serve a variety of situations within this corridor or any other comparable corridor which may now exist or develop, I feel that we will have missed the boat. And I feel that in order to achieve a really effective solution, we must look at both the urban problem and the interurban problem simultaneously.

Mr. JARMAN. And it is estimated that the research program would cost \$10 million for each of the 2 fiscal years for which it is being recommended?

Mr. SEIFERT. I believe that we could certainly make very good use—"we," the Nation—of this much research directed toward ground transportation. As I pointed out in my testimony, this is a very small percentage, really, and the level of effort is small in comparison with the research that we are doing in many other areas.

Mr. JARMAN. Well, you mentioned ground transportation—but you are referring specifically to the intra?

Mr. SEIFERT. My testimony, except what I said in support of Congressman Reuss, was referring to the intercity problem.

Mr. JARMAN. Which would require another \$10 million.

Mr. SEIFERT. More or less; yes. If we are going to do both, it is obviously going to take considerably more than to do either one. But I think that the benefit which would result from looking at both as a package would be more than the sum of doing the two independently, or in series.

Mr. JARMAN. Thank you.

Mr. STAGGERS. Mr. Devine?

Mr. DEVINE. Thank you, Mr. Chairman.

Mr. Seifert, I think your testimony has added immeasurably to the record here, and has helped up in this very important study. You have proposed a number of alternatives, as I see.

Your group, in going into this problem—other than the research features—have you gone into the possible safety factors when we are talking about high-speed ground transportation? I know in our previous testimony—it escapes me now just exactly who testified in this area—they planned to utilize presently existing rights-of-way of

some of the transportation media here in the northeast corridor. The thing that occurs to me is the safety factor when you are talking about traveling 200 or 300 miles per hour. Is that in your area of research, have you gotten into that at all?

Mr. SEIFERT. Yes. At this point, Congressman Devine, we have necessarily had this as one of our more secondary efforts, because we are more concerned with first identifying what the research areas would be, what form a system might take. Then as we really begin to see both what the location of the system might be, and what the particular equipment might be, we could come to grips more effectively with this problem.

But this is certainly in the background of our thinking.

Now, if we are going to achieve speeds in the range that I have spoken of, we must necessarily have a completely separated right-of-way. There can be no crossings at grade, there must be no access except the controlled access provided at terminals.

One of the problems that occurred in the new Tokaido line, when they first began to operate service, was that track crews were surprised—just not accustomed to having trains come that fast. The trains would rush up on the men without their knowing it—although they would be forewarned that the train was coming—they would know what the schedule was. And there were one or two accidents because of this. Furthermore, the rush of air with the train would tend to suck people into it.

Now, they have taken excellent precautions. But we would have to do likewise. And this certainly would be within the thinking as a program of this nature proceeded.

Mr. DEVINE. It occurred to me that there would have to be highly limited access—livestock, children, automobiles, everything else—because of this high speed.

Mr. SEIFERT. Right.

Mr. DEVINE. Now, perhaps unrelated, but related to transportation generally, as I mentioned to Mr. Webb, this committee is also involved in supersonic transport. Have you in your very fine institution at MIT gotten into that area at all in your studies?

Mr. SEIFERT. Some of the people on other programs at MIT, and as consultants to various Government groups, have been involved in the supersonic transport program. It has not been part of our effort under this Project Transport.

Mr. DEVINE. But you do have people that have a view that might be of benefit to us at a later time?

Mr. SEIFERT. Yes.

Mr. DEVINE. Thank you very much.

Mr. STAGGERS. Mr. Pickle?

Mr. PICKLE. A couple of quick questions, Mr. Seifert.

The study being conducted by your organization, MIT, you say is supported by the Department of Commerce. Is it a grant?

Mr. SEIFERT. We received a contract of slightly less than \$500,000 last September to carry on the research which has been conducted thus far.

Mr. PICKLE. Then you are not quite yet a year into it? This is the first year you have had this grant?

Mr. SEIFERT. That is correct. I believe it was awarded September 16, 1964.

Mr. PICKLE. In other words, we are doing this research by the Department of Commerce. And this is going to up their ante to \$90 million, instead of \$500,000—is that correct?

Mr. SEIFERT. Yes. I think that we should point out that in order to lay out a sensible research program of the order of \$10 million for this next year—and in view of the fact that we have not had a background of research and development in the high-speed, ground transport area, as I mentioned—we don't have a group of people who are really well versed in this—right at MIT we have a large number of people who have been deeply involved over a number of years in the missile programs and the aircraft programs: a backlog of people on which to draw if an updated program were undertaken—we have not had an equally strong, in fact it has been very weak, group in the transport area; and this has been so nationally.

My own feeling is that it is quite appropriate to start off with a low-level effort. We were, in fact, asked to identify research—we were not asked to do research—we were asked to identify the research which, if carried through, should lead to a good system.

Mr. PICKLE. I really would like to discuss with you what you mean by identifying research. You sound a little bit academic and gobble-dygook to me. But we don't have time to go into that.

But instead of asking \$500,000, you are asking for \$90 million for a 3-year period, plus possibly another \$20 million if we get into intricate transportation problems. This is something we can discuss later.

Now, you say that the railroad systems themselves have contributed less than one-fifth of 1 percent of their revenue to research. I assume you have that documented. It sounds like an amazingly and staggeringly small amount. Do the railroad systems agree with you on this figure?

Mr. SEIFERT. The way in which I got these numbers—they are given in a National Academy of Sciences-National Research Council report entitled "Science and Technology in the Railroad Industry. It indicates that for the years 1960-62 the railroads themselves spend something like 0.06 percent of gross on research, and that the suppliers spend, I believe, some 1.7 percent. But when you take into account the number of dollars spent for equipment and the total railroad operating gross, and combine these, it averages out to 0.2 percent.

Mr. PICKLE. I don't question your figures, I am sure you have taken them from some publication; but I will be interested in hearing from the railroad people. Do we have other people to testify, Mr. Chairman?

I will be interested in hearing them.

Now, I don't want to be blunt about this, but I assume that what you are saying this morning is that you are just making an observation that you are looking at this problem, you are identifying the research. You are not making any recommendations. You just are telling us you have a study underway.

Mr. SEIFERT. We feel that it would be a mistake, with this short look at the problem, to make specific recommendations—for specific

propulsion equipment or specific systems, yes. This will take several years.

Mr. PICKLE. Again, you are spending \$500,000 just to identify the problem.

Mr. SEIFERT. That is correct.

Mr. PICKLE. That is all, Mr. Chairman.

Mr. STAGGERS. Mr. Ronan?

Mr. RONAN. No questions.

Mr. STAGGERS. Thank you, Mr. Seifert, very much for coming down and giving us the benefit of your views.

Our next witness will be Mr. Richard L. Lich, chairman, Committee on Passenger Traffic, Railway Progress Institute, and vice president, General Steel Industries, Granite City, Ill.

Do you have someone to accompany you?

Mr. LICH. Perhaps if questions warrant later, we can ask them to attend me. They are Mr. Lennartson, who is the president of RPI, and Mr. R. A. Harris, who is treasurer.

Our comments this morning are approximately 10 minutes in length. If I may, I would like to read them.

Mr. STAGGERS. Go right ahead.

STATEMENT OF RICHARD L. LICH, CHAIRMAN, COMMITTEE ON PASSENGER TRAFFIC, RAILWAY PROGRESS INSTITUTE AND VICE PRESIDENT, GENERAL STEEL INDUSTRIES; ACCOMPANIED BY MR. N. A. LENNARTSON, PRESIDENT OF RPI, AND R. A. HARRIS, TREASURER

Mr. LICH. My name is Richard L. Lich. I am vice president of engineering of General Steel Industries, Granite City, Ill. I am appearing before you today as chairman of the Committee on Passenger Traffic of the Railway Progress Institute.

The Railway Progress Institute is the national organization of the railway equipment and supply industry. The institute's membership consists of 135 of the principal companies in the industry. For the record, I am offering, herewith, a complete list of these companies, together with a list of our officers and staff, our executive committee, and our governing board.

The institute maintains a number of active member committees which deal with matters of importance to our industry. One of these is the Committee on Passenger Traffic whose members represent 35 of the major Railroad Progress Institute member companies with an interest in rail passenger transportation.

Starting several years ago, the Committee on Passenger Traffic recognized the developing transportation problem in our rapidly expanding metropolitan areas as the trend toward urbanization continued. We further recognized that providing only more and more expressways for automobiles would not constitute the answer to the problem. We concluded that the solution to effective metropolitan transportation was in a balanced concept in which all transportation modes were blended together in a coordinated system. The mass transportation modes: commuter railroad, rapid transit, and bus systems would efficiently provide the great capacity needed for handling peak-hour

loads. Automobile and expressway systems would provide for the variable and low volume travel patterns.

Our committee concluded that commuter railroads would be a vital component of many balanced transportation systems which would be established in our metropolitan areas because of their inherent economies and great passenger-carrying capability. In addition, in most metropolitan areas there are extensive railroad networks which could be used for new commuter and rapid transit operations. However, our committee found that many commuter railroad operations were in dire economic straits and in danger of serious curtailment or abandonment of services.

Our committee, in considering these factors and in view of the collective background and experience of our members, decided to assist actively in the development of sound and equitable solutions to the commuter service problem and, thereby, help to achieve the bigger objective: effective balanced transportation for our metropolitan areas.

Since 1961 our committee has worked actively with the railroads, the transportation industry, business and civic organizations, and governmental agencies to advance this objective. The committee has developed and distributed educational material on commuter services and balanced transportation. Our committee, through its chairman, testified before House of Representatives and Senate committees in 1962 and 1963 on behalf of the Urban Mass Transportation Act. With passage of the act in 1964, we believe a major step was taken to assist the redevelopment of commuter services; to help expand established rail rapid transit operations; and to encourage the building of new rapid transit systems.

The Railroad Progress Institute Committee on Passenger Traffic is continuing in its efforts to help achieve balanced transportation systems in our metropolitan areas. During the past 2 years, however, we have directed increased committee attention to the burgeoning intercity transportation requirements in the northeast corridor, that is in the developing megalopolis of Boston, New York, Philadelphia, and Washington, and as well in other corridors, in the process of formation throughout the Nation. Our committee concluded that the role of rail passenger services in such corridors is fully as important as in metropolitan areas.

Early last year our committee made preliminary contacts, to develop background information, with the Department of Commerce which had undertaken a comprehensive study of the northeast corridor transportation requirements at the urging of the White House and Congress. Subsequently, Dr. Grosvenor Plowman, then director of the Department of Commerce research group conducting the study, spoke before our committee. Extensive investigation of the corridor's transportation requirements was subsequently undertaken by us. Last fall our committee leadership met with Senator Pell and his staff to learn their views. This led to Senator Pell speaking on the northeast corridor before our full committee in October.

Last fall our committee also held meetings with the Pennsylvania Railroad to develop and understand their position. In December we met with members of the Princeton University Transportation Department where considerable research is being conducted on the corridor's transportation requirements. Also, in December our commit-

tee met with Dr. Robert Nelson, manager of the Department of Commerce corridor project, and his staff. We received a thorough briefing and the opportunity to examine all of the study reports received up to that time. It was subsequently agreed with the Department of Commerce that briefing sessions with our committee would be held on a bimonthly basis. Four such meetings have now been held.

The Department of Commerce has proposed a three-part corridor transportation program consisting of a railroad demonstration; research and development of new ground transportation systems; and statistical research. The purpose of such a program would be to develop the necessary technological, sociological, and economic information which would permit conclusions to be drawn and recommendations to be made as to what forms of transportation, and in what combinations, would be utilized in the future in the northeast and other corridors.

Our committee concluded that the demonstration program, which would be carried out cooperatively with railroads in the corridor, should be designed so that the full potential of the most advanced form of high-speed rail passenger service available today would be thoroughly demonstrated and properly evaluated. Our recommendations for such a meaningful program were presented to the Department of Commerce during the course of our periodic meetings. I am offering, herewith, a summary listing of these recommendations together with a description of the beneficial role which can be played by our committee in the demonstration program. Our principal recommendations, including that covering high-speed capability of the equipment, have been recognized by the Department of Commerce and, we understand, are being incorporated in the program.

(The document referred to follows:)

**POSITION OF THE COMMITTEE ON PASSENGER TRAFFIC, RAILWAY PROGRESS INSTITUTE,
RELATIVE TO THE PROPOSED NORTHEAST CORRIDOR DEMONSTRATION PROGRAM**

I. OBJECTIVE OF THE DEMONSTRATION

We believe that any demonstration program in the northeast corridor should be designed so that the full potential of the most advanced form of rail passenger service available today can be thoroughly demonstrated and properly evaluated.

II. ENHANCEMENT OF THE DEMONSTRATION PROGRAM

Consistent with the above objectives we believe that any demonstration program should include:

- (a) A substantial reduction in overall running time and a substantial increase in maximum speed.
- (b) Sufficient equipment with high standard of excellence.
- (c) Frequent service.
- (d) Corollary improvements in fixed system facilities (roadbed, catenary, stations, signaling, etc.).
- (e) Improved passenger services (ticketing, baggage handling, food, etc.).
- (f) Corollary improvements in complementary transportation (bus feeder systems, parking lots, etc.).
- (g) Adequate demonstration time period.
- (h) Adequate marketing (advertising, sales, promotion, etc.).
- (i) Provision for continued high-speed rail research and development.

III. THE INSTITUTE'S ROLE

The Railway Progress Institute, as spokesman for the railway equipment and supply industry, is uniquely suited to help assure the success of a demonstration program through the following:

(a) Continuing the bimonthly briefing meetings between the Department of Commerce and the Institute's Steering Subcommittee of the Committee on Passenger Traffic.

(b) Consulting with the Department of Commerce in forming expert industry groupings which will provide expert industry groupings which will provide advice and council on specific aspects of the demonstration program as well as demonstration facilities and equipment.

(c) Encouraging individual company members of the railway supply industry to advise and counsel the Department of Commerce and/or its agents, regarding their products.

(d) Continuing contacts with all principal parties having an interest in these problems, the solution of which is important to the railway industry and the entire Nation.

Mr. LICH. Such a program would demonstrate the real capability of advanced railroad operations and, in addition to providing facts on which to base plans for a future transportation system in the corridor, would provide an answer for improving corridor transportation almost immediately. The railway supply industry stands ready with the technology and capability available today to provide the necessary advanced equipment and facilities.

Starting many years ago the industry demonstrated the capability to build and operate comfortable and safe trains with top speeds of over 100 miles per hour. In special test runs passenger trains have been operated regularly in service runs at speeds of 110-115 miles per hour. In recent years, because of the growing market for rapid transit and commuter car equipment, major advances have been made and are being made in passenger comfort, equipment esthetics, and in the design and performance of all equipment components. This background and experience as well as these new developments are available through the railway supply industry to apply to the demonstration program.

In regard to the research and development program covering new ground transportation systems, our committee has reservations. Technological investigation into such systems should, of course, be undertaken to insure that the combined corridor transportation system of the future represents the ultimate attainable. However, great care should be taken that undue emphasis of the Department of Commerce program is not placed on the development of some, as yet, unknown and unproven system concept at the expense of developing the full capability of existing railroad systems. The Nation cannot afford to place major reliance on some new system that might not prove practical and applicable for many years in the future. The developing transportation problem in the northeast corridor demands a solution starting now.

In regard to the statistical research program, our committee believes this effort would be beneficial. More information must be gathered to determine in detail the parameters of the northeast corridor transportation problems. More must be known about the interrelationships between various transportation modes, sociological and economic factors and governmental jurisdictions in the eight-State corridor.

The bill before this House of Representatives subcommittee, H.R. 5863, states that the Secretary of Commerce is authorized "to undertake research and development in high-speed ground transportation, and for other purposes." The bill does not specify the areas into which this authority would be directed nor does it describe the three-part program proposed by the Department of Commerce.

However, our committee believes that if this authority is exercised in accordance with the recommendations in our testimony today, particularly our recommendations concerning the demonstration program, the legislation would prove constructive and beneficial not only to the northeast corridor but to the Nation as a whole as we continue toward an increasingly urbanized society.

Thank you for permitting us to present the views of our committee on H.R. 5863 before this House of Representatives subcommittee.

I would be pleased to try to answer any questions that may be directed to me, Mr. Chairman.

Mr. STAGGERS. Thank you, Mr. Lich.

Mr. Pickle?

Mr. PICKLE. Well, Mr. Lich, how much of the railway supply industry is contributed for research now? The gentleman who testified before you said it was less than one-fifth of 1 percent.

Are you familiar with these figures? What are you spending now?

Mr. LICH. I believe he said that the research effort by the supply industry was 1.7 percent. We do not contest this figure. I do not believe, however, that this figure includes the research and development expenditures in urban mass transportation—that is, in rapid transit and commuter equipment development.

In regard to the railroad expenditure, I am frankly not in a position to comment on the validity of those figures.

In general, I would say these figures are far below what both the railway operating people and the railway supply industry would like them to be. I believe looking back, however, through the years of our activity it has been demonstrated when market opportunities present themselves to our private enterprise operations, we react, and we do spend money for research and development.

Mr. PICKLE. How much do you spend?

Mr. LICH. How much will we spend?

Mr. PICKLE. How much are you spending now?

Mr. LICH. As I said, Congressman, I cannot contest—I don't contest the figure of 1.7 percent presented previously. This is far less than we would like it to be.

Mr. PICKLE. Somewhere between one-fifth of 1 percent and 1.7?

Mr. LICH. Yes, sir.

Mr. PICKLE. Now, you said on page 6 of your testimony that you support the proposed research and development for the improvement of our systems. But yet you said you had reservations about research and development of the ground transportation system.

Now, I just wondered why you come here supporting this bill, and yet you say you ought not to get into the research and development—and in the face of this you say you haven't given but one-fifth of 1 percent, or 1.7 in this same research field.

Now, how can you be for the bill and yet have a reservation, when you say you don't do much in this particular field?

Mr. LICH. Our reservations have to do with the emphasis. We do not oppose the research and development program broadly.

We feel, however, that the results of the research and development program are going to be necessarily long term in nature before we are able to utilize them. In the interim, we feel that every opportunity, every effort should be made to develop the full capability of the railroad system that we presently have at our disposal.

We are not opposed, Congressman, to the research and development program per se.

Mr. PICKLE. Now, we have got in this country a great deal of research going on by the railroad supply industry, I assume. I understand you have got a new engine out now that will go up to 130 to 150 miles an hour, and they say it is going to be as revolutionary as the diesel was 20 years or more ago. This sounds to me like some research is being carried on in this field.

Mr. LICH. Well, that is correct. As I said, the figures that were cited—I do not believe they include that research and development being expended by our member companies in the area of urban mass transportation. When we look at the development programs going on in San Francisco—we have many of our member companies participating in this program, injecting funds of their own as well as utilizing funds made available through HHFA.

Mr. PICKLE. Now, if we have got railroad cars, engines, that will go 130, 150 miles an hour now, why do we need to expend a hundred million dollars a year to look into research? We have got the speed now, do we not?

Mr. LICH. Well, in the testimony here today and in other comments we have heard, we believe that undue emphasis is being placed on top speed.

Our aim is to produce an attractive and economic service, and this necessarily involves a number of components. One of these, of course, is top speed. But perhaps more important is terminal-to-terminal speed, comfort, and convenience offered by the total transportation system. All of these factors must be blended together.

We are very hopeful that the demonstration part of this program, which would be authorized by this bill, would permit the railway supply industry to assist in showing this Nation what a really advanced high-speed railroad system can provide. And this would necessarily include great attention to the details of comfort and convenience as well as producing a relatively high speed of the order of 125 to 150 miles an hour.

Mr. PICKLE. Then the money that is to be expended, then, according to your view, would be more appropriately put in the field of demonstration, rather than in the field of research and development; is that correct? Is that what you believe?

Mr. LICH. We believe that sufficient emphasis should be placed on the demonstration program so that we develop and demonstrate the full capability of railroad systems as they exist today.

Then in developing new types of ground transportation systems, we can properly compare those against the highest standard that we can raise today. We believe this is a logical way of looking at it.

We would like to see additional emphasis placed on the demonstration program and the results that it could give starting immediately.

Mr. PICKLE. Well, the major companies that you represent have done a great deal in the field of research and development. You are not saying they won't continue to do an adequate job in this field, are you?

Mr. LICH. I think they will do—

Mr. PICKLE. I am talking about Westinghouse, and American Steel Foundry, and General Electric, General Motors. These companies spend a tremendous amount of money, I assume. They have got the equipment now to provide this high-speed problem, which you say is not the primary problem.

Now, won't they continue to do their job?

First, I want to ask you, do you think they will continue to do enough research in this field?

Mr. LICH. Yes, I do, Congressman.

Mr. PICKLE. Then why do we need a hundred million dollars more for this kind of project—\$90 million for the first 3 years?

Mr. LICH. Well, the elements of the program—the demonstration program, which would direct itself to upgrading, advancing that which we have today in ground transportation, as well as the research and development program directed to what improved forms we might ultimately be able to develop—we believe that both of these areas are necessary. One is a shorter term outlook, and the other is a longer term outlook. And certainly in looking ahead to the transportation requirements within the corridor, as we approach the end of this century, we believe that effort must be made in both of these areas.

Mr. PICKLE. Well, here again, I don't want to be blunt about an observation, but it would seem to me if you say that the companies you represent do a great deal of research and development, and if they do, I would think it ought to be a lot higher than 1.7. But if they do this and have the equipment now, it would seem to me what you want to do is put all this money into the demonstration project—as well as the statistical field—but primarily demonstration.

Now, my question to you would be this: Are you saying in effect that you want the Government, through this appropriation of \$90 million, to more or less bail out your railroad operations of money that they have expended on research and development and other operations?

It sounds to me like you are asking the Government to pay at least half of this cost, and put the Government in the operation business.

Am I wrong or right?

Mr. LICH. No, sir; there is no understanding in our minds whatever that the purpose of this legislation or the intent of it is to involve itself in operations of transportation systems.

Mr. PICKLE. No. But you sell the equipment to the companies—in this instance, the Pennsylvania Railroad, after it is built.

And none of us need to kid ourselves that you would not like 25 cents on the dollar, or some appropriate sum. Do you disagree with that?

Mr. LICH. Perhaps I don't understand your question completely, Congressman.

Mr. PICKLE. If it cost \$90 million, you would probably end up buying it for \$25 million, the private companies would.

Mr. LICH. You are talking about the railroads that might be involved?

Mr. PICKLE. The Pennsylvania, in this case, or any of them, where it was in operation.

Mr. LICH. Well, I understand there would be some agreement concerning the residual value of the equipment involved in the demonstration program following the demonstration, and then the railroads might acquire the equipment at some reduced value. I am not acquainted with the arrangements that might be made there.

Mr. PICKLE. Well, Mr. Chairman, I do not want to prolong this—but I cannot get over the point that he is saying that here is an industry that has got the equipment, they do the research, and he wants to see the money primarily put in the field of demonstration, which means not operation, but the procurement of equipment necessary to operate.

It seems to me like you are asking the Government just to pay for your equipment.

Mr. LICH. Well, the purpose of the demonstration program would be to demonstrate with an actual system arrangement what the railroads can do. This would not certainly obligate the Federal Government to continue its support.

We can see, though, that the interest in this program by Congress has already spurred tremendous interest on the part of private enterprise railroad suppliers and railroads. I think this gives them great encouragement to invest money and effort of their own to apply to this field.

This has already occurred.

Mr. PICKLE. Mr. Chairman, I won't prolong this any further. I would just like to see some figures on how they intend to spend \$90 million broken down into the three categories.

Mr. STAGGERS. Thank you.

Mr. Ronan?

Mr. RONAN. No questions.

Mr. STAGGERS. I might explain this, Mr. Pickle. Mr. Lich is a supplier. He doesn't represent the railroads in any way. They are only suppliers. And when the previous witness mentioned that they only spent one-fifth of 1 percent, he said of the operating revenue of the railroads. And he is talking about suppliers.

It is a completely different aspect.

But I think there is a little misapprehension.

But we do appreciate your coming to give your testimony. And I hope that for the benefit of Mr. Pickle we will clarify these questions.

We have other witnesses coming before the committee I think who can answer it.

I am sure you were talking primarily for the suppliers.

Mr. LICH. That is correct, Mr. Chairman.

Mr. STAGGERS. Not the railroads themselves.

Mr. LICH. That is correct.

Mr. STAGGERS. We thank you for coming and giving us the benefit of your views. As I gather from your testimony, you are for this bill.

Mr. LICH. Yes, we are.

Mr. STAGGERS. Thank you.

Mr. LICH. Thank you.

Mr. STAGGERS. That will conclude the hearings for today.

We will adjourn to resume tomorrow morning at 10 o'clock.

(Whereupon, at 12:15 p.m., the subcommittee recessed, to reconvene at 10 a.m., Wednesday, June 30, 1965.)

COMMERCE DEPARTMENT TRANSPORTATION RESEARCH

WEDNESDAY, JUNE 30, 1965

SUBCOMMITTEE ON TRANSPORTATION AND AERONAUTICS,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room 2123, Rayburn House Office Building, Hon. Harley O. Staggers presiding.

Mr. STAGGERS. The committee will come to order.

This morning, we have with us witnesses from the transportation and supply industries who will present to us some of the projects which are contemplated to be undertaken under the proposed legislation if enacted, H.R. 5863 and related bills on transportation.

Our first witness this morning is Mr. Stuart T. Saunders, chairman of the board, the Pennsylvania Railroad Co.

We are glad to welcome you, Mr. Saunders. And you may proceed.

STATEMENT OF STUART T. SAUNDERS, CHAIRMAN OF THE BOARD, THE PENNSYLVANIA RAILROAD CO.

Mr. SAUNDERS. Mr. Chairman and members of the committee, I am grateful for this opportunity of appearing before you in support of H.R. 5863 to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation for the purpose of improving the national transportation system.

One of the activities contemplated under this legislation is a railroad passenger demonstration program which is an important part of the Northeast corridor project as proposed by President Johnson. I would like to describe proposed participation by the Pennsylvania Railroad with the Department of Commerce in this program.

You, of course, are aware of the importance to commerce and to virtually every aspect of our economy. You also are familiar with the transportation problems of our Nation and how they are intensified by the concentration of our population into urbanized communities. Already some 75 percent of our people live in urban areas, and this percentage is increasing rapidly.

First of all, I would like to emphasize that while the project to develop high-speed rail service will take place in the megalopolis between Boston and Washington, its more significant purpose will be to devise a means for coping with similar conditions which are becoming increasingly more serious in all the great metropolitan areas of the United States.

Intercity mass transportation problems are now most acute in the Washington-Boston corridor, but they are either already critical or

becoming so in areas such as Pittsburgh, Cleveland, Toledo, and Detroit; Chicago-Milwaukee and the Twin Cities; Washington and Richmond; Atlanta and Jacksonville-Miami; Dallas and Houston; Seattle and Portland; and Los Angeles and San Francisco. And I could mention others. It is becoming more and more difficult to move people and goods quickly and safely in these and other metropolitan complexes. Preventive means must be taken now not only to alleviate the traffic problems already upon us, but to keep them from reaching overwhelming proportions in the future.

While the northeast corridor project will benefit the Nation's largest and most heavily populated complex of metropolitan areas, it also will be a testing ground for accumulating invaluable data and experience which will be helpful to every major section of the country. It will provide a start toward attaining the administration's objective of developing high-capacity, time-saving surface transportation which will facilitate the economic growth of the entire Nation.

The northeast corridor is a highly suitable laboratory in which to examine transportation problems and seek their solutions. Just in the area between Washington and New York, an estimated average of 50,000 intercity trips are made each day, in addition to the millions of commuter trips inside the various metropolitan units themselves.

Highways are crowded to the saturation point at peak periods. It is not unusual to see the six lanes of expressways filled virtually bumper to bumper. Traffic volume on the New Jersey Turnpike has increased to an average of more than 166,000 vehicles daily. With the projected 40-percent increase in automobiles in the next 10 years, it is extremely doubtful that new road construction can keep up with demand.

Airspace is already in short supply at major airports. Between Washington and New York alone, there are 155 scheduled flights daily, each requiring the same amount of controlled-approach space as the longer distance transcontinental and intercontinental flights.

Moreover, both highway and air travel are subject to disruption because of weather conditions. On eight occasions in a 2-month period last fall, the New Jersey Turnpike was closed to traffic for substantial periods. During one day of the Christmas holiday season last year, a major airline was able to complete only 18 of 126 planned shuttle flights in the Washington-New York-Boston area.

In contrast with the overburdened highways and airlines, the railroads are not utilizing anywhere near their capacity to transport passengers safely, reliably, and comfortably. Perhaps the primary reason for this underutilization is the factor of speed and time and quality of equipment. In the search for improvement of the national transportation system it is logical that a thorough investigation should be made of the traffic potential of modernized, high-speed rail service.

The Pennsylvania Railroad's main line between New York and Washington lends itself ideally to the study and demonstration of this kind of service. Between terminals at New York and Washington, this line intersects five other major cities—Newark, Trenton, Philadelphia, Wilmington, and Baltimore. It is directly available to serve some 25 million people. Here, if anywhere, the market potential exists to test public response to high-speed intercity rail passenger service.

Furthermore, our New York-Washington line is in good physical condition for the type of service currently performed. In the past 4 years we have spent \$25.5 million in maintaining and improving it. We have laid 25,000 tons of new rail, renewed 400,000 crossties, put in some 850,000 tons of stone ballast, rehabilitated main line bridges, and overhauled the catenary system.

In the past 2 years, we have added 70 modern stainless steel coaches to the New York-Washington service at a cost of another \$10 million.

As one of the Nation's great transportation arteries, our Washington-New York line is a readymade base on which fast, high-volume passenger service can be developed quickly and economically.

The existence of this railroad minimizes the cost of the project. It will not be necessary to start from scratch and build anything like the new Tokaido line in Japan, which cost more than \$1 billion—actually nearer a billion and a half. Another example of the tremendous expense of entirely new rail facilities is the San Francisco metropolitan transit system. This is being built at an outlay of \$1 billion for 75 miles of railroad, or an average of \$13 million a mile.

The Pennsylvania's line between New York and Washington could not be reproduced today for less than \$1 billion.

By way of comparison, it would cost \$1.6 billion to build a new highway between New York and Washington, with all supporting facilities.

Our company has an investment of about \$400 million in the line between New York and Washington. There is, however, little inducement to add to this investment. The amounts required and the prospective low rate of return, particularly in view of the continuing probability of ever-increasing Government expenditures for paralleling highway and airline facilities, make the venture too speculative for private enterprise.

Last year \$12 billion was spent on highway programs—\$6 billion in Federal and \$6 billion in State and local funds. By contrast, the Nation's railroads invested only \$1.4 billion in capital improvements, and most of this went into equipment rather than roadway facilities.

During 1964 the Pennsylvania's passenger service lost more than \$34 million because of patronage siphoned off by subsidized competitors. Half of the deficit was incurred in intercity operations. More than 47 percent of our net freight operating income goes to underwrite our passenger deficit.

These figures make it obvious that we cannot afford to undertake alone any program as large as the high-speed passenger project. Yet, I am convinced that in collaboration with the Department of Commerce, we can make it a great success.

It will show, I believe, that high-speed rail transportation can make a real contribution to the solution of our mass transportation problems. The Government and the public will receive substantial benefits from the expenditure of the relatively small amount of money here involved.

The Pennsylvania is prepared to cooperate fully in order to assure this success. We already have worked closely with the Department of Commerce in formulating the high-speed test project for which funds are requested. If the project is approved, we will continue to render staff and administrative assistance. We will agree to provide

the right-of-way, tracks, and supporting facilities in which we have invested millions of dollars, and to upgrade these for the proposed tests. This will include substantial improvement of our trackage, revising the signal and catenary systems and strengthening bridges.

Likewise, we will participate in the acquisition of a fleet of as many as 50 self-propelled electric passenger cars of a design satisfactory to both the Government and the railroad. With these cars, we can within a relatively short period of time inaugurate safe, comfortable, and reliable Washington-New York service at 100-mile-per-hour speeds, with a maximum elapsed time of 3 hours, making four intermediate stops.

The new cars will be the finest passenger equipment in the world, electrically powered and capable of accelerating to 125 miles per hour in 150 seconds, and of operating in the future at speeds up to at least 150 miles per hour. They will embody the latest concepts in propulsion systems, structural design, and passenger comfort.

Four high-performance motors in each car will provide uniform power throughout the train and assure maintenance of schedules even if a unit should fail.

These cars will be wider than conventional equipment and will seat 80 people in reclining seats. The noise level will be about that of a modern executive office—whatever that means—and there will be electrical heating and no-draft air conditioning. Food service will be provided.

These units will be the first in the country in medium-range intercity service to have remotely controlled sliding doors for quick loading and unloading.

Under the present plan, based on 100-mile-per-hour operation in the first stage, these cars will operate alternately with our regular trains between New York and Washington.

Daily trains will be increased from the current 50 to 72 in order to provide hourly service between Washington and New York and half-hourly service between Philadelphia and New York from 7 a.m. until midnight.

We will cooperate with the Government in testing patronage response to the improved service by adjusting speeds, schedules, and fares, and by assisting in the collection and analysis of statistical information.

The expenditures to be made by the Pennsylvania in helping carry through a valid demonstration under the legislation are contemplated to be comparable to the Government's expenditures. This is not money we would spend in any event, but funds specifically required to support the Federal program. In addition, the Pennsylvania will bear the operating costs of this and other portions of its Washington-New York service.

The question has been raised as to whether this project will lead to Government control of rail transportation and eventual nationalization of the railroads. Actually the opposite is true. It is a means of joint Government and business experimentation with the basic problem of how masses of people can be transported most efficiently, economically, and safely in a highly urbanized society.

The Pennsylvania knows from experience that joint efforts with public authorities can be successful, and that they do not lead to na-

tionalization or Government ownership. To illustrate this, I would like to place in the record a summary of projects in the Philadelphia and New Jersey commutation areas which have utilized assistance from local governmental sources and from the Federal Housing and Home Finance Agency.

(The summary referred to is as follows:)

PENNSYLVANIA RAILROAD OPERATION LEVITTOWN COMMUTER PROJECT

Operation Levittown is partially financed by the Southeastern Pennsylvania Transportation Compact, with matching grants from the Housing and Home Finance Agency.

This 3-year demonstration program of improved suburban rail service on the Pennsylvania Railroad between Philadelphia, Pa. and Trenton, N.J. began December 3, 1962.

The number of trains was increased almost 50 percent, from 25 to 37, on weekdays. Fares were reduced as much as 45 percent. All suburban parking lots were made free, with four of them being expanded and improved. Further improvements were made in August of 1963 when new air-conditioned, stainless steel, electric cars, owned by the city of Philadelphia, were operated on most of the trains, permitting a 25-percent reduction in running time, from 60 to 45 minutes for 33 miles with 13 intermediate stops.

To preserve this service from ultimate abandonment, the city of Philadelphia had begun a small program in 1960, underwriting the cost within the city limits. The public response to the combined programs has been phenomenal:

Year:	Revenue passengers
1959.....	381, 336
1960.....	¹ 490, 571
1961.....	² 647, 630
1962.....	² 652, 804
1963.....	1, 093, 920
1964.....	1, 275, 179

¹ City program began Oct. 30, 1960.

² HHFA program began Dec. 3, 1962.

Public contract payments (made possible in this program through \$1,200,000 worth of HHFA matching grants) under the 3-year period have (1) preserved an essential rail service, (2) met a critical urban transportation need and assisted in alleviating some of the highway congestion problem, (3) provided improved rail service, and (4) helped reduce railroad losses which would have eventually required elimination of the service.

Annual results have been:

	1960 ¹	1963	1964
Revenues ¹	\$274, 000	\$582, 000	\$702, 000
Expenses.....	1, 094, 000	1, 586, 000	1, 480, 000
Net railway operating income ²	(820, 000)	(1, 004, 000)	(778, 000)
Contract payment.....		588, 000	578, 000
Net deficit.....	(820, 000)	(416, 000)	(200, 000)

¹ Passengers, parking, and car card advertising.

² Loss.

³ Prior to HHFA program.

PASSENGER SERVICE IMPROVEMENT CORPORATION, PENNSYLVANIA RAILROAD COMMUTER PROJECT

The first suburban transportation experiment on a contract basis with the city of Philadelphia began October 26, 1958, on our Chestnut Hill branch for the purpose of determining if the congestion in midcity metropolitan areas could be relieved by stimulating use of suburban rail transportation. Fares were reduced as much as 45 percent and service was increased from 48 to 72

trains on weekdays with some additional service on Saturdays and Sundays.

Under the terms, the city was obligated to pay the Pennsylvania Railroad a portion of the additional operating costs incurred in providing the increased service. The company assumed any revenue losses resulting from the reduced fares.

Encouraged by the success of this experiment from the city's standpoint, responsibility for contracting was placed in the Passenger Service Improvement Corp. of Philadelphia, with whom contracts began August 1, 1960. Services to Manayunk and Torresdale were covered by a contract with PSIC beginning October 30, 1960. Fares were reduced and the number of weekday trains increased from 19 to 28 on the Manayunk line from 18 to 25 in the Torresdale service. Parking improvements were made at several stations. Thirty-eight new air-conditioned cars were placed in service in October 1963.

Volume on the PSIC contract lines has shown significant growth since the beginning of the experimental program of October 28, 1958.

Average weekday volume for October

Chestnut Hill line	Average weekday revenue passengers	Percent change versus 1958
October 1958.....	5,629	
Subsequent to October 1958:		
October 1959.....	6,676	+18.6
October 1960.....	6,773	+20.3
October 1961.....	7,535	+33.9
October 1962.....	7,762	+37.9
October 1963.....	8,580	+52.4
October 1964.....	8,928	+58.6

Manayunk line comparison	Average weekday revenue passengers	Percent change versus 1960
October 1960.....	899	+26.0
October 1961.....	1,133	+26.0
October 1962.....	1,050	+16.8
October 1963.....	1,317	+46.5
October 1964.....	1,392	+54.8

STATE OF NEW JERSEY "PARK-AND-RIDE" DEMONSTRATION PROJECT, PENNSYLVANIA RAILROAD TRI-STATE-HOUSING AND HOME FINANCE AGENCY

Tri-State Transportation Committee, representing a cooperative regional effort in the New Jersey, New York, and Connecticut metropolitan area, inaugurated on October 28, 1963, an 18-month HHFA-approved demonstration project providing a new park-and-ride station at "County" interlocking, west of New Brunswick, N.J. This demonstration was intended to test whether a station having convenient vehicular access with ample parking space established outside the central business district of a suburban city would attract new patrons to rail commuter service and relieve local vehicular congestion.

Capital costs of providing the new station, called Jersey Avenue building and platforms, and a 300-space parking lot, amounting to about \$88,000, were paid by Tri-State under an HHFA grant. Tri-State has also paid the direct costs of operating the station and parking lot, averaging \$1,300 per month, together with some incremental capital costs incurred during the program.

The results have been somewhat spectacular with an average utilization running about 100 cars per weekday until September 1964, when the average daily use rose to 225 cars, and to as high as 310 cars on days when the New Jersey Turnpike was closed on account of fog. In January of this year there were 237 cars parked daily and the ridership over 300. It is estimated that there has been a net increase in ridership on the New Brunswick local trains of approximately 200 passengers daily as a result of the new park-and-ride lot, helping to reduce the Pennsylvania Railroad's losses in its suburban operations by at least \$40,000 annually.

This project was concluded in April of this year. The Pennsylvania Railroad is continuing the operation and feels it will continue to expand.

Mr. SAUNDERS. These experiments enabled us to increase substantially the number of passengers carried and to help alleviate highway congestion. A combination of new equipment, reduced fares, faster schedules, more frequent service, and parking at suburban stations is rebuilding rail commuter traffic.

You will note that our Operation Levittown more than tripled revenue passengers in 5 years, each year showing a significant increase. The year before the public assistance program began, patronage had dwindled to 380,000 passengers. Last year the line carried 1,275,000 passengers. In 5 years, our net deficit has been cut from \$800,000 to \$200,000 on this particular line by means of almost tripled revenues and supplemental payments for contract operations.

Essentially, the same formula applied to two other Philadelphia area commuter lines also has brought substantial year-by-year increases in passenger volume. On our Chestnut Hill line—which is just outside of Philadelphia—passenger volume increased more than 58 percent, between October 1958, when the assistance program began, and October 1964. On our Manayunk line—also in the Philadelphia area—the passenger volume increased nearly 55 percent between the beginning of the present program in October 1960 and last October.

A park-and-ride project financed under a Housing and Home Finance Agency grant provided a commuter station and parking lot west of New Brunswick, N.Y., designed to relieve traffic congestion in the central business district of New Brunswick. By January of this year, the new facility was attracting an average of 237 automobiles a day and more than 300 commuter passengers. We estimate a net increase of 200 new users of rail service.

These programs began as experimental projects. Public response to them has been so satisfactory that we hope to extend this type of service throughout our commuter areas.

Although the amount of money involved in this legislation is extremely modest in comparison with Government spending for highways and airways, I would suggest that you do not underestimate the significance of what can be accomplished.

This measure will provide an incentive and an example to show what rail service, with its extremely high capacity for transporting large numbers of people safely, comfortably, and efficiently can do to relieve the necessity of spending by Government of additional vast sums on less economical forms of transportation.

But it will do far more. One of its most important byproducts will be to stimulate innovation and experimentation in the railroad industry just as the Government has spearheaded and encouraged progress in the aircraft industry, in highway development, and in many other fields of technology.

Innovation in passenger equipment and high-speed roadway will, of course, extend to freight services. Adaptation of passenger train research and development will bring faster and more efficient delivery of freight shipments. Thus, the beneficiaries will include business and industry of all types and the pace of commerce throughout the country will be quickened.

Meager earnings have severely restricted research and development in the railroad industry. The amounts that we have been able to spend are infinitesimal compared with the billions the Federal Gov-

ernment spends each year for research and development in other fields, including more than \$300 million on projects related to air transportation, highways, and waterways.

The legislation you are considering marks the first real effort by Government to participate in research and development in behalf of improved intercity rail service. Like all efforts, if constructively pursued with vigor and determination, it will bring on advances far beyond those we can now foresee.

As a practical step toward solving a critical national problem of mobility in highly populated areas, this legislation has tremendous potentialities.

As a step aimed at strengthening the Nation's transportation system in the years of great growth ahead, it is manifestly in the public interest.

I therefore respectfully urge this committee and the Congress to approve at this session legislation to make this proposal a reality.

Mr. STAGGERS. Thank you, Mr. Saunders. Your statement is very frank and forthright and it will be very helpful to the committee. I appreciate your taking the time to come and give us the benefit of your views.

You have outlined your interest in cooperating with the Department of Commerce in this study and what can be done. There are some questions I would like to ask.

Will it be necessary to make any changes in the track structure?

Mr. SAUNDERS. Yes. We will have to strengthen our tracks in a number of places. We will have to put in more welded rail. We will have to improve the roadbed in a number of instances, ballast, cross-ties. In other words, we will have to strengthen the track. We will have to strengthen our bridges in order to take care of speeds of this magnitude, and in order to give a comfortable ride. In other words, if we didn't it would be hazardous in the first place, and secondly, it would be a very uncomfortable ride. But what we are trying to do is get a very smooth, fast, safe, and comfortable form of service. We will have to spend something over \$10 million in order to put our track in condition to operate trains at schedules of a hundred miles an hour. And this is not money which we would spend anyway.

Mr. STAGGERS. That would take care of the curvature of track and your stations?

Mr. SAUNDERS. For the purposes of a hundred-mile-an-hour schedules; yes.

Mr. STAGGERS. The committee has received a letter from Mr. Alfred D. Pearlman, president of the New York Central Railroad and head of the Eastern Railroad Presidents Conference supporting the legislation here being covered. Do you know what the attitude of the Southern Railways and the Association of Western Railways is on this?

Mr. SAUNDERS. I do not. As far as I know, they have not taken any position on it. I have not talked to individual railroads about what their attitude is. In all frankness, I would say this, sir. I do not know of any of them that are opposed to it. I think some of them may be indifferent because they do not have this problem immediately.

Mr. STAGGERS. You do not know what the attitude of the American Association of Railways is?

Mr. SAUNDERS. They have not taken any position on it, I know that to be a fact.

Mr. STAGGERS. Just as a matter of information, I would like to bring up another point. Last January in Pittsburgh at the Pittsburgh Traffic Club, you were quoted as saying:

It is ironic that railroads are now showing a remarkable progress in every major phase of our business excepting the most important of all, the best employment of the human skills and talents which are indispensable to the success of any enterprise.

You, then, proposed that the leaders of railroad management and railroad labor get together for the sole purpose of exploring and developing ways to improve collective-bargaining procedures.

Has anything developed from this proposal?

Mr. SAUNDERS. Things of this sort develop very slowly, Mr. Chairman, as you perhaps know. We have been attempting to implement the suggestion made there. It has been made by others as well. And we have had several meetings with the heads of the railroad labor organization. In fact, within the last 6 weeks, the presidents of all of the members of the boards of the Association of American Railroads, which runs some 20 railroad presidents, met with the representatives of all the railroad unions here in Washington in the evening, and we had a very friendly discussion.

But that was preliminary to trying to set up some mechanism or groups to consider the various problems with which we are confronted. And we are in the process now of working with Mr. Leighty, whom, as you know, is the chairman of the Railway Labor Executives, to try to work out something.

I do not want to leave you under the impression that we have done it yet, but we are trying to. And I think there is good will and good faith on the part of both sides in an effort to improve the relations between management and labor. And I sincerely hope that we can.

Mr. STAGGERS. I thought it was a very statesmanlike gesture.

Mr. SAUNDERS. Thank you very much.

Mr. STAGGERS. In your testimony here, you discuss passengers. As I remember, this takes into account freight too?

Mr. SAUNDERS. That is correct. As a matter of fact, while my testimony emphasizes the passenger aspect of it, I think the freight aspect is equally important, and that freight shippers will be the beneficiaries of this research. You cannot measure in what degree, but they will be substantial beneficiaries of this research. And I think the benefits will spread throughout the transportation industry, particularly rail, but other forms of transportation as well. And there will be great benefits to be derived throughout the country by all types of users of transportation.

Mr. STAGGERS. I know the Department in commenting said that one of the great expenses of the railroads was damage to freight. I was wondering if in the new transportation system this would be taken into account, and if the railroad will bear this too in the research and development project?

Mr. SAUNDERS. I think undoubtedly, they will to the extent of their capacity to do so, financial ability, and that they will participate in it. How far they will go. I cannot say. The railroads are doing a lot of research already, but it is relatively small, because of our meager earnings; we cannot afford to do it.

The railroad industry, for a long time, has been a sick industry; it has tremendous problems. And we still have great problems. And when you have the lowest rate of return of any major industry in this country—we are at the bottom of the list, and have been there for a long time—we just have not got the money. You cannot get blood out of a turnip.

But despite that, we are spending great sums of money, considering our meager earnings and so forth, on research and development.

Mr. STAGGERS. We appreciate your statement this morning.

Mr. Harris, do you have any questions?

Mr. HARRIS. Thank you, Mr. Chairman. I am very glad to be here this morning to have the benefit of Mr. Saunders' presentation on this important subject, since his company is apparently going to be very important in any program that is finally consummated.

I do have some questions, Mr. Chairman, but I think I will forgo them at the time and give other members an opportunity. And then I may have a few questions later.

Mr. STAGGERS. Mr. Friedel?

Mr. FRIEDEL. Mr. Saunders, I want to compliment you on your very fine statement.

Mr. SAUNDERS. Thank you, sir.

Mr. FRIEDEL. I notice that you went into other aspects to increase the passenger service. As far as parking to get to the railroads, I think this is very essential. And as you say around Philadelphia, and Levittown this has increased rail passenger traffic. I would like to make a suggestion that if you did something like that in Baltimore, your passenger traffic would increase tremendously. You should have some such arrangement between 7 and 8:58 a.m. I believe that if you put a train on during that time, you will get a lot of passengers which you are now losing.

I want to have this inserted in the record. This is from the Editors News Service:

SECRETARY CONNOR EMPHASIZES RAILROADS IN TESTIMONY—SPECIAL INTERVIEW

The transportation industry now represents nearly a fifth of our gross national product.

Connor is particularly anxious to speed up railroads and reduce rate costs because he believes that they make more efficient use of cars, high-speed land near metropolitan areas than do the highways.

He points out that on the same width of land, rails carry five times as many passengers than cars and buses. The same is true of rail-hauled freight versus truck.

Like the President, Connor champions a high-speed rail service from Washington to Boston.

Both think private enterprise will meet the challenge, but that private capital cannot finance expensive preliminary research, because of the large risks involved in developing systems which must depend on Government positions for adoption.

Railroads have been gradually curtailing passenger lines and service during the past decade, but Connor wants the trend radically reversed in view of our population explosion.

I think that is a very fine statement. I think this bill would help to accomplish that. And I am glad to hear you say that your company is willing to spend some million dollars of your own capital.

There are other questions that I would like to ask as we go along, but I will defer now to the other members.

Mr. STAGGERS. Mr. Devine?

Mr. DEVINE. Thank you, Mr. Chairman.

Mr. Chairman, I am quite encouraged by the contents of your statement here, particularly on page 7 where you are talking about the equipment which is expected to be used to accommodate passengers. Very frankly, I have been disturbed over the years at the downgrading and the falling away of efficient passenger service, not only on the Pennsylvania, but all of our major railroads.

Now, on page 6 at the top of the page, you make a categorical, and almost a dogmatic, statement, that during 1964 the Pennsylvania passenger service lost more than \$34 million because of patronage siphoned off by subsidized competitors. I do not think that is the only reason the patronage has dropped off. Frankly, I have not ridden in a passenger train for over 5 years because of the nature of the service, the lack of comfort, the arrogance and the insolence of some of the employees, and the failure to meet schedules, and things of that nature. So would you say that that is the only reason your passenger service has fallen off, because the other carriers are perhaps subsidized?

Mr. SAUNDERS. I do not think that is the only reason, but that is the principal reason. It is a question of the chicken and the egg, sir. We have to borrow the money in the first place. We have not got it. And you cannot borrow money for a losing project. Nobody is going to lend it to you. And we have not been in a position financially to buy new equipment to test whether or not the public would use it.

But I will go further than that and say that long-haul passenger service in my judgment has no future. You cannot compete with the airlines, we cannot compete with them at all in time or comfort—we perhaps could in comfort in a way if we had the equipment, but we cannot compete with them in time. And you have witnessed a complete transportation revolution in this country in the long-haul movement of people. The great bulk of them are turning to air travel as it becomes safer and more convenient. And the railroads are never going to be able under private enterprise to compete with that type of transportation.

Mr. DEVINE. Do you think that that program—

Mr. SAUNDERS. Now, on shorter transportation up to 400 miles, if we give first-class service, high-speed transportation such as we are talking about here, we can compete with them. As a matter of fact, if we can go to 2½ hours or 2¾ hours or even 3 hours, we are competitive with the airlines to New York or Philadelphia. In other words, you will be able to make your trip to the center of the city as quickly by rail, if we go 2 hours or 2½ hours, you can do it quicker. And in a market like that we can compete with the airlines. But when you talk about going to Chicago or to New Orleans or Miami or someplace like that, we are never going to be able to do it. You cannot put enough money in rail transportation to afford the speed and comfort that is competitive.

Mr. DEVINE. Do you expect, then, that this high-speed transportation program will just benefit the Northeast section?

Mr. SAUNDERS. No, indeed. As I mentioned to you before, there are developing all over this country great urban areas where this will apply. For instance, Chicago to Minneapolis, and Milwaukee and St. Paul, that is ideal for that. From Cleveland-Toledo-Detroit to Chi-

cago. From Atlanta-Jacksonville to Miami. From Washington to Richmond. From Dallas to Houston and Galveston. From Los Angeles to San Francisco. From San Francisco to Portland and Seattle. There are many areas of the country where, as your urbanization continues, particularly with your rapid growth along the west coast and other sections of the country, this is going to become, I think, an equally acute problem—it is a matter of degree, but a very acute problem in many sections of the country. As a matter of fact, it already is. And you are spending billions of dollars in highway transportation when you could buy rail transportation for about one-twentieth of the cost. And it is nothing but sheer economy for the Federal Government to put some money in transportation of this sort. And you will have a lot more money left to put in other highway projects to benefit the whole country.

Mr. DEVINE. I would agree with you that there is a lot of merit to legislation of this nature. I am just talking about comparative services, and the fact that railroads in the last 25 years have discouraged passenger services, not necessarily in the northeast section of the country, but in other sections of the country. And I make reference to my district in Ohio; you can come here in 1½ hours by air, and it takes 13 hours by train.

Mr. SAUNDERS. That can be turned around. The railroads have not left the passengers, the passengers have left us.

For instance, we are operating one of the finest passenger trains in the United States today, the Broadway Limited, an all-pullman train from New York to Chicago. You could not get better equipment. And how many people are riding it? Sixty-one people. They would not ride it. We have not left the passengers. They have left us. And it is happening throughout the country.

And this idea that the railroads have discouraged passenger service is not true. We have, in certain instances. But by and large, that is not true. And that is a statement that has been accepted without any examination whatsoever. And we have done it in the face of billions of dollars poured into competition which we cannot stand, the airlines, particularly.

Mr. DEVINE. Apparently I have hit a nerve.

Mr. SAUNDERS. No; I feel very strongly on this.

Mr. DEVINE. You and I could spend quite some time on it.

Mr. SAUNDERS. We could. But there are two sides of this coin.

Mr. DEVINE. Thank you, Mr. Chairman.

Mr. STAGGERS. Mr. Williams?

Mr. WILLIAMS. I want to join in complimenting you on a very interesting statement. I think the data you have submitted along with your statement is quite informative.

The thing that concerns me about legislation of this type is whether or not it is the responsibility of the Congress to legislate in this field. It seems to me that the primary responsibility for bearing the brunt of the burden of this research rests with the railroad industry. And I think, of course, you will agree with that.

Secondly, I think if the railroad industry is not able to do the job which needs to be done to promote their own industry, then the local areas affected which would be served would come into the problem. And then if they were unable to undertake this, then, and only then,

might it fall within the sphere of Federal jurisdiction. I am wondering—I am assuming that you take the position that the railroad industry is not able nor would it be sound business for them to make this outlay to develop this high-speed commuter transportation. And I accept that premise for the purpose of developing this question.

My next question is, Have the railroads been to the States of New York, New Jersey, Pennsylvania, the District of Columbia, Maryland, and the other States which will be served by this commuter service to seek State assistance in this research and development program?

Mr. SAUNDERS. I am very glad you asked that question, sir. They definitely have. And the States are contributing.

For instance, the State of New Jersey is proposing to—is contributing this year some \$7 million to commuter operations in the State of New Jersey, and they propose to go about \$12 or \$13 million next year in demonstration projects, and various projects of that sort.

The State of New York, we are working with them right now. And they are already making substantial contributions. We are working with them on a joint undertaking in commuter operations.

We have just sold the Long Island Railroad to the State of New York at a cost of some \$65 million, plus. And that is the State of New York's contribution. And they are going to put \$200 million in new equipment on the Long Island Railroad.

The State of Massachusetts last year passed its mass transportation bill which allocated some \$225 million—not all for rail transportation, but a significant part of it—to protection of commuter operations.

The State of Pennsylvania has just passed, at this current session, within the past week a bill providing for \$13 million for commuter operations in the State of Pennsylvania.

In other words, these States are participating in these programs. They recognize their responsibility—they have been slow in recognizing it, but they are now recognizing it as a governmental responsibility to handle these people just like it is their responsibility to build highways or offer other public service.

Mr. WILLIAMS. Government has a responsibility in this field, of course. But it does not necessarily follow that it must be Federal responsibility.

Mr. SAUNDERS. I think the Federal governmental responsibility applies to projects that are nationwide in scope, that are nationwide in benefit. And that is exactly what this legislation is for. If it is not for that, it should not be passed.

Mr. WILLIAMS. Mr. Saunders, I am asking the question objectively and not argumentatively.

Mr. SAUNDERS. I understand.

Mr. WILLIAMS. My State of Mississippi, Mr. Harris' State of Arkansas, and Mr. Jarman's State of Oklahoma, for example, do not have this problem. It is rather difficult for me to reconcile why an additional tax burden should be placed on the people who do not have this problem in order to accommodate the people who do have the problem.

Has the possibility of an interstate compact among these several States to carry out the purposes of this legislation been considered or explored?

Mr. SAUNDERS. Not for this purpose. It would not be practical.

Mr. WILLIAMS. Why would not it be practical?

Mr. SAUNDERS. In the first place, the States have not the revenues. And in the second place, I do not think it is primarily—

Mr. WILLIAMS. Mr. Saunders, you know that the States, from the standpoint of solvency are in much better shape than the Federal Government. This would benefit the richest States in the Union, and it would seem to me that the primary responsibility should rest with them to take care of their own affairs.

Mr. SAUNDERS. Let me suggest to you, Mr. Williams, that I cannot accept your major premise. This is not a State responsibility or the responsibility of any group of States, it is the responsibility of the entire country. And this legislation, it is not talking about just a demonstration project between here and Boston, it is talking about research and development in every phase of surface transportation in this country. And the State of Mississippi is just as much involved in this as any other State in the Union. Now, you may not have the peculiar passenger problem, but you have the freight problem just as much as any other State in the Union. And your State will benefit from this. The passenger is one aspect of it, but it is not the sole or even the major. The other aspect is other research and development. And your State will benefit from it immeasurably. The major aspect of this is not passenger.

Mr. WILLIAMS. The major aspect of it would be national rather than local?

Mr. SAUNDERS. Of the \$90 million that is involved, the corridor part is a relatively small part of the total research and development program that is involved for the surface transportation involved here. And the State of Mississippi will benefit from that. And in fact, you will benefit, I think, in several ways even from this so-called demonstration project between here and New York, in that a lot of things that we have learned from this demonstration project will flow over into the benefits to freight transportation.

But the major portion of this is going to research and development of land transportation generally, which will benefit your State. And as I pointed out earlier, if this project works, if you can buy 20 times as much transportation for your dollar by putting it in rail transportation, it is good economy for the Federal Government, and it is going to help the people of Mississippi, it is going to help your taxpayers, and it is going to make more money available to build highways in your State.

Mr. WILLIAMS. I still think some of that is subject to argument. I won't pursue it further. But I still have my doubts as to whether it is a Federal responsibility—let me modify that by saying, until all other avenues of relief have been exhausted.

Mr. SAUNDERS. The other avenues, I think, have been exhausted, sir. I do not think that this is a practical thing—it could never be worked out, there is not any possibility. In the area of commuter transportation we are making great progress. But we still have a long ways to go in working with the States and the localities. But as to intercity problems of this sort, and as to general national research in transportation, which this is, surface transportation, the States, no group of States—it is not their responsibility in the first place, and in the second place, they are just not going to do it.

Mr. WILLIAMS. I would question that it is not their responsibility, I think they are primarily responsible for solving their programs.

Mr. SAUNDERS. This is just as national in scope as the money you vote in every day for highway experimentation or research for airline research, it is just as much as that and more so.

Mr. STAGGERS. Mr. Jarman?

Mr. JARMAN. Mr. Saunders, I want to join my colleagues in welcoming you to our committee this morning, and thanking you for a very informative statement.

I was very much interested in your expression of personal opinion that this project would not lead toward Government control as has been contended by some, but that it would be the opposite, and would simply be a means of joint government and business experimentation on a problem that is basic to the country.

One question I would like to ask. With reference to a proposal that the committee has received that the bill before us, H.R. 5863, be amended to include authorization for intracity research and study as well as intercity, both continuing at the same time, interrelated and beneficial to the overall solution to the problem, I would be interested in your comments, sir.

Mr. SAUNDERS. I think that would be a perfectly legitimate thing to do. It does take only a little bit more of a local color, but it, nevertheless, is still a national problem.

On this whole problem of urbanization, you cannot segregate, in my judgment, the rural and the urban areas in this country any more, the Federal Government cannot. If your urban areas go to pot, it is going to affect your rural areas. They are their markets. If we cannot keep this country moving ahead, if we cannot handle the people in and out of our great cities, our metropolitan areas, it is going to affect our entire economy.

These are national problems, in my judgment, and there is no question about that.

I see no reason why research should not also go forward with reference to intracity transportation. I am a little concerned—we are talking about a lot of research for mighty little money. When you talk about the total program that is involved here, and what you are trying to do, it is a tremendous undertaking. And the more you broaden this out, the question is, how good a job are you going to do in any field?

But I do think it is a legitimate matter for research under this bill.

Mr. JARMAN. I think one natural concern that we have here is based upon our experience with so many projects and that is the amount of money for the field of research to be done. It is so often true that we start out with a reasonable or comparatively small amount of money, but then it begins to build and continues from then on at a tremendous cost to the Government. I am interested in whether you think we are justified in going into intracity research studies also, whether it is something that should be made a part of this program at this time.

Mr. SAUNDERS. I see no objection to the legislation being broadened to authorize the Department of Commerce to include that as a subject of research if they see fit, subject to the amount of money that they have available.

Mr. JARMAN. But it has been suggested that \$10 million be appropriated for that purpose.

Mr. SAUNDERS. I certainly would not oppose that. I think it is another real problem that you have and that the Federal Government has got to face up to.

Mr. JARMAN. Thank you.

Mr. STAGGERS. Mr. Pickle?

Mr. PICKLE. Mr. Saunders, I regret that I have come in here late and did not get to hear your testimony. I have been trying to look over some of your remarks.

Yesterday, a gentleman representing the suppliers testified that the railroads over a period of years have spent less than one-fifth of 1 percent in research and development keeping new equipment up to date. Do you agree with those figures?

Mr. SAUNDERS. No; I do not.

Mr. PICKLE. What are the figures?

Mr. SAUNDERS. I do not know that I can give you the exact figures, and I do not think anybody can.

Mr. PICKLE. You can give me an approximation?

Mr. SAUNDERS. I do not know that I can do that. It depends on what you call research. We do a lot of things that I might call research and someone else may not. I do not think anybody can give you an amount of money spent by the railroads in this country. But when you talk about one-fifth of 1 percent, I think that is a great understatement.

(See Railway Progress Institute letter at end of Mr. Saunders' testimony.)

Mr. SAUNDERS. I think we are doing a lot of things in the railroad industry, and have been doing for years—as a matter of fact, on the Pennsylvania Railroad we have spent over a hundred percent of our net income for several years, because we were in the red, for research. We have been spending some \$2 to \$3 million a year on research.

For instance, we spent that much, almost, in 1963 when we had a \$3 million deficit. And what percent is that? Last year we spent \$2 million on research, what we call research—and it is research—when we made \$29 million. That is about 7 percent. Actually, if you take the true figures on our net railroad operating income, last year we showed a net income on the Pennsylvania Railroad of \$29 million. But our outside income was \$30 million. We had a deficit of \$700,000 for our railroad operations last year. So we spent over a hundred percent of our railroad operating income on research last year.

And that is true of a lot of the railroad industry. The New York Central, last year—

Mr. PICKLE. Then, the suppliers have rendered you a great damage, so to speak, by making those statements?

Mr. SAUNDERS. I do not think they are accurate.

Mr. PICKLE. I assume that the suppliers themselves spend a greater portion of money in research and development than any other one segment, considerably more than the railroads themselves, would not they?

Mr. SAUNDERS. It all depends there again on what you call research and how you look at it. They should spend more in the first place—I do not say they should—but we are spending—all I can say is this.

I do not undertake to pass on what the suppliers are spending or what they ought to spend; that is their business and not mine. But all I am saying to you, sir, is for a particular industry—and that is basically what the railroad industry has been for a long, long time, and regulated to death—we have been spending a high percentage, far higher than we can afford, for research and development, than any industry I know in this country.

I think you have got to look at this, sir. Last year, and for a number of years, the railroad industry has had the lowest return of any major industry in this country. We have been living on a starvation diet for years. And we are still. People think that the railroad industry is doing a little bit better now, and we are doing relatively better. But when you look at the fact that last year all the class I railroads in this country had a net income of something around \$700 million, which is a billion dollars less than General Motors had, all the railroads in this country together—A.T. & T. had a billion dollars more income than all the railroads in this country. And Standard Oil had it—you see that the railroad industry is an important industry. We have not got the money.

For instance, on the Pennsylvania Railroad this year we are spending \$165 million for equipment. And we are having to borrow practically every cent of it. And when we put money in research and development it comes out of our hide, not like these other people we are talking about.

Mr. PICKLE. The gentleman who testified indicated that he had reservations about the additional appropriations of research and development funds. Instead, he would like to put it into what we would, for want of a better term, call equipment. As I understand the budget submitted by the Department of Commerce originally showed that of the first \$20 million the first year at least \$8 million would go to equipment.

Mr. SAUNDERS. That is correct.

Mr. PICKLE. You say on page 6 at the end of it: "Likewise, we will participate in the acquisition of a fleet of as many as 50 self-propelled electric passenger cars," and so forth. I assume what you are saying there is that the Government would buy these 50 passenger cars for your railroad?

Mr. SAUNDERS. That is not correct, sir.

Mr. PICKLE. Then what is it?

Mr. SAUNDERS. The amount of money that the Government will put up will only buy 28 cars. And then we also are working out a deal whereby we will repurchase these cars at the end of the demonstration project.

Mr. PICKLE. If less money were put into research, then that amount would be raised for equipment?

Mr. SAUNDERS. I am not advocating that less money be put into research.

Mr. PICKLE. You would be satisfied if you got 28 cars purchased by the Government?

Mr. SAUNDERS. No, I would not. We do not think that 28 cars is enough cars to put to a practical demonstration project. In other words, we think that you have got to have about 50 cars in order to operate enough trains, and to operate them with enough units on

each train in order to get a real, practical demonstration project. And so we are willing to go beyond the 28 cars that would be purchased by the Government money.

Mr. PICKLE. I will say this, Mr. Saunders. You do have a problem. Your industry is not faring financially as well as some of the other modes of transportation?

Mr. SAUNDERS. Not as well as any of them.

Mr. PICKLE. I realize that you have a problem there. But I think the research shows that you have got engines now, and a new one coming out that will do 130 to 140 miles an hour. And I do not think we, the Members of Congress, should appropriate money for these cars for purely demonstration purposes at a cost to the Government.

Mr. SAUNDERS. If I may say so, sir, I do not think that is the problem before you. It is not a question of whether you are going to buy 28 cars. The question is whether or not you are going to carry on experimentation and research in the field of how you are going to handle the hundreds of people who live in your areas and intercity areas which are going to be spread all over this country, and whether the Congress of the United States or the Government is going to sit back and let this problem just take its own course, or whether the Government is going to recognize its responsibility to see that these great metropolitan areas are not clogged off, like San Francisco and Los Angeles, Dallas and Houston, and recognize that you have the same problem here that you have in developing economical highway transportation and economical air transportation, for which you have appropriated hundreds of millions of dollars.

Mr. PICKLE. That is all, Mr. Chairman.

Mr. STAGGERS. Mr. Harris?

Mr. HARRIS. Mr. Saunders, I again want to express my gratitude to you for your forthright statement and your complete fairness in your presentation today. I observe that you spoke with some feeling about, and I think perhaps it is understandable. Personally, from my experience in getting worked up on something with which I have been deeply involved over the years, it does me a little good to see somebody bristle up and stand up for what they think is right, and particularly in a situation where a person has given the greater part of his life to it from the standpoint of what the future proposes.

This committee, in my judgment, has a tremendous responsibility along with the agencies of the Government who are involved and with the transportation industry of the country in providing for the needs of our people. Over the years it has been, of course, somewhat dramatic to get involved in the development of special techniques in transportation where you are traveling by air, the thrill of flying and taking off and landing and all of the things that go with it, and the individual satisfaction that one derives in making this or that thing work.

We have seen in our merchant marine development hundreds of millions and actually billions of dollars which have gone, I think sometimes, more in the field of actual construction and operation than in the field of research and development and better ways of doing it.

That is because certain areas of the country primarily are involved. And not only is the transportation which is the primary purpose of this thing a part of it, but the economic aspects in a local community based on how it affects the national picture.

We have observed, and I have actually participated now for almost 25 years, in the research programs and developments in promoting a mode of transportation in the area in which the Government has put itself virtually out on the limb and has virtually guaranteed the cost. And so far as I can recall, there is one we have never consummated in any program in this field, and that is the effort in which Carl Henshaw of California, who was very enthusiastic in the aviation field, proposed a prototype airplane to accomplish certain things, and the industry voiced that it was not advisable and it would not offer the competition, and so it was not successful. And we have seen in the field research sponsored and paid for by the Federal Government in powerplants and motors.

We have actually visited the U.S. aircraft industries and other aircraft industries in the production of these powerplants. And we have seen them grow from the old C-47 in the early part of World War II until we are seeing now the fanjets and even improvements over that development.

That was all paid for by the Federal Government through research and development. It is true that much of it came through military as a necessity for our national defense. But the transportation industry got the benefit of it and the people got the benefit of it.

And so we have seen the highways develop on the basis of meeting the demand and the requirement.

I was a little bit surprised—I should not have been surprised—I will put it this way. It came to me as somewhat of a revelation a few days ago when we were in hearings on another proposal that there are 96 million automobiles now in operation in the country. That is a lot of automobiles when you think that we have got 195 million people in the country. But that is the way things have developed, as I see it.

Now, in my own judgment, if I am inclined to be critical of anybody, I am critical of the Federal Government. I am critical of the railroad industry, and I am somewhat critical of those who are in the transportation, and particularly surface transportation, for not rising up to it so that this mode of transportation can keep up with the others. As far as I am concerned, there is a joint responsibility here between the Federal Government and the industry and the States. And I would like to see something worked out that would contribute to the long-range picture.

My criticism of the States, if I may have any, and of the industry itself—and I hope you will pardon me if this seems like a lecture, but you are the best example I have run across for this purpose in a long time—my criticism of them grows pretty much out of the problems in sponsoring these Government guaranteed loans and other provisions. But that has not added to our long-range picture at all. That has been used for the purpose of trying to bail out a particular bad situation. And some of them did help, and some of them went from bad to worse.

But we did not tackle the problem at all; you know that.

Mr. SAUNDERS. That is correct.

Mr. HARRIS. The industry did not, the States did not. All the States did in many instances of that kind was to give a little relief, a little money to continue operating on a deficit basis. And I think it is fine

after all these years that we tackle this problem. If this is the way to do it, all right. And I want to see everybody—we are talking about a supersonic right now. For 3 years, I have been pretty much in the midst of it with the Government, we have been just about on the verge of committing ourselves to a billion-dollar expenditure over a long-range program to developing a supersonic plane. And I think maybe I would be for it. I am not for a crash program. But if we are going to continue to lead in this mode of transportation, and if our country is going to maintain a healthy average industry, we have got to tackle it.

Now, if we are going to save the passenger business of this country and take some of these people off the highways and take them out of the air terminals—which are running over themselves, and they are getting as bad now as the railroad industry was 30 or 35 years ago when it could not very well handle the situation and it had all this equipment which had long ago become obsolete.

I think Mr. Devine's comment about the old equipment was true in many operations. But I am afraid the industry gave up on it. Now let us come back. And I would like to see a research and development program between here and New York. If there is any place in the world where a research and development program should tell us whether or not it can work and the people cooperate with it, whether it can be done, this is it. And I do not know, I would not want to say 28 cars would do it. I agree with you, if we are going to do it, let us do it. If it takes a hundred cars, let us do it.

I do not know that I would agree with what you say here that we will have so many trips a day with so many stops on each trip. I would like to see maybe an arrangement where you go from here to there, like they do in an airplane.

Mr. SAUNDERS. We will experiment with that.

Mr. HARRIS. Without stopping.

Mr. SAUNDERS. We are going to do that. And also schedules, fare, frequency of service, nonstop, all of that will be done, I am sure.

Mr. HARRIS. I certainly want to have that as one of the necessities or requirements in connection with this program.

Mr. SAUNDERS. In other words, we want to test every aspect as far as we can of this whole transportation pattern, in conjunction with the Department of Commerce.

Mr. HARRIS. I would like to see an effort made on research and development under a short interstate operation.

Mr. SAUNDERS. We are going to do that between Philadelphia and New York, 91 miles.

Mr. HARRIS. And then, I would like to see a long haul, maybe not as frequent, but efforts may be from New York to Chicago, or from Chicago to Washington, or maybe from here clear across the country, and see how it could develop. People will ride trains in my judgment, if we can develop a program that will attract them. I just know from my experience, and what people are saying, that if it will meet their own requirements, they will use it.

Sometimes when I see what is going on in the airport out here, National Airport, I just have a feeling that we ought to do something about putting some of these planes somewhere else. I know the industry does not like it. And I know even the private flyers, they

want to go out to Bolling Field. Nobody wants to go beyond two steps and a jump from where they are in order to fly 500 miles or 2,500 miles.

It seems that the impact situation is that the individual feels that just so he can get from here to Los Angeles, that is fine. But you spend too much time in getting out to the airport and through the terminal. And everybody else is trying to use the most convenient way to get where they are going. And that adds to it. And I know they will change, this is the Government using the strong arm. But if they are going to use the Government finances and the Government facilities on it, it seems to me like we ought to recognize the factual situation, and put things where they ought to be put.

And that is true in the industry you represent, the way I see it. So far as I am concerned, I am glad to see you say that your industry is going to cooperate. I commend you for it.

I would like to see a kind of a program developed that we can get something out of. If the Department of Commerce can do it, which it says it can, I would like to see all of these working together in a cooperative program of this kind, the suppliers that Mr. Pickle talked about a moment ago along with the Government and the transportation industry itself, I would like to see it done. And I for one, am willing to undertake it.

I think this business of saying who is going to get what out of it is important. But I do not think that is the real question here. The question is, trying to work together for some kind of a program to get the right answer.

I am not for just turning loose this thing. They want an open-end transportation authorization here under which you do not know where we will wind up.

So, Mr. Chairman, my idea about this is to get from the spokesman of the industry here to see how his feelings jibe with reference to the requirements with what Secretary Connor tells us, and so, then, if we cannot write legislation to carry out what the committee then would accept as being appropriate.

MR. SAUNDERS. I have read the Secretary's testimony before the committee, and I agree with what he said there, particularly as to the restrictions which were suggested, and things of that sort. I think the bill does need some tidying up which I think you can do.

MR. HARRIS. Do you think that we could prepare, say, what the requirements would be the first year of authorization, the second and the third year, until the original research program? We have been carrying on research in supersonics now for 3 years. And it is going into certain contracts. If we do not extend it, or something happens to it—it is going to be extended, I know that, because we cannot lose it. And I see no reason why this same responsibility cannot be applied to something as important as this where millions of people have got to be moved, there has got to be transportation to get there.

MR. SAUNDERS. I think the suggestions that have been made, particularly by you, and by others, sir, in connection with the standards in tightening up the legislation are entirely appropriate and necessary.

(See Pennsylvania Railroad letter at end of Mr. Saunders' testimony.)

Mr. HARRIS. Have you given the committee what you think would be necessary to meet this research program?

Mr. SAUNDERS. Only what I have said in my testimony. Of course, we have been working with the officials of the Department of Commerce as to what we think would be necessary for a valid, reasonable demonstration project between here and New York. And then when I say that we have talked about schedules, traffic flow, rates, we have not gotten into specific rates or anything like that, but we have had very extended discussions with the Department of Commerce as to how this program would be implemented. And I think that certainly the Secretary of Commerce and his staff could suggest to the committee, or working with you, put into the legislation any appropriate safeguards that you want as to how the project is handled and how it is to be carried out.

Mr. HARRIS. What I am really concerned with down the line is, if we can, through this cooperative effort develop the kind of transportation that would provide the needs. Are you satisfied, then, that the industry, having seen this work, would pick up the ball from there and move on to provide this service to the public in the future?

Mr. SAUNDERS. I do not know that I could go that far, Mr. Chairman.

First of all, let me say that I think this project will be a success.

Now, as to whether or not the industry alone will be able to do the entire job, or what proportion of it, I think that remains to be seen, because it depends upon what the tests show. I think it is certainly going to lead to greater participation, and I think it is going to suggest a solution to many of our mass transportation problems. But I would not want at this juncture to undertake to say that it will mean that the Government can forget this problem, or it is going to solve anything, or anything of that sort. I think I would be less than frank—

Mr. HARRIS. You have no doubt but what the transportation is going to be provided?

Mr. SAUNDERS. I think it has got to be. And I think that the hope of having a far greater measure of participation of private enterprise in your transportation system, that this is suggesting the way to do it. If you do not do it, you are going to have to spend more and more public funds for other means of transportation. And your railroad passenger service is going to deteriorate, you are going to put more people on the highways and more people in the Government. And it is going to cost the Government—

Mr. HARRIS. In other words, you are approaching this on the basis that you think this effort is going to tell us whether or not this kind of ground, surface transportation, the railroad method, is going to survive or not?

Mr. SAUNDERS. I think it is whether it is going to survive, and also what place it will occupy in your future transportation needs.

You spoke a moment ago of holding our leadership in airpower, in air travel, in water transportation. Think of the billions of dollars that you put into waterway travel development, and look what the Japanese Government put into a rail line—a billion, six hundred million dollars for mass transportation between Tokyo, Hokkaido, and Osaka. That is government money. And you take your great passen-

ger trains in Europe, like the Rapidos, the transcontinental trains, far superior to the trains in this country. But they are government supported.

Mr. HARRIS. Of course, they are government owned.

Mr. SAUNDERS. This is correct. But the research and everything has gone into it. You have had nothing like that in this country. And we have got to test whether or not private enterprise—it cannot afford to make the investment, it has not got the money, it is too speculative. We think it will succeed, but we cannot do it. And we are suggesting to you a program here, so far as this project here is concerned, which we think will contribute immeasurably to a solution of this problem.

Mr. HARRIS. I think that one of the greatest contributions that we could make in this committee of the Congress is to instill some real confidence in the people of the industry. And to that I am dedicated, and I will do what I can.

Mr. SAUNDERS. We would appreciate it, Mr. Chairman. And may I say to you and the members of this committee that we think that you and the members of this committee have made a great contribution to the understanding of our problems. We have got a lot of them left. But we certainly appreciate the dedicated attention given to them.

Mr. HARRIS. Thank you very much.

That is all, Mr. Chairman.

Mr. STAGGERS. Thank you, Mr. Chairman.

And again, I want to thank you, Mr. Saunders, for coming before us and to compliment you on your presentation.

(Following are the letters referred to in the preceding testimony:)

RAILWAY PROGRESS INSTITUTE,
Chicago, Ill., July 1, 1965.

Congressman HARLEY O. STAGGERS,
Chairman of the Subcommittee on Transportation and Aeronautics of the Committee on Interstate and Foreign Commerce, Washington, D.C.

DEAR CHAIRMAN STAGGERS: I am submitting this letter in accordance with our conversation at the close of your committee's hearing on H.R. 5863 and related bills on Wednesday, June 30.

During a discussion between Congressman Pickle and Mr. Stuart Saunders, chairman of the Pennsylvania Railroad, some misunderstanding may have developed as to the source of the amount estimated as spent by the railroads on research and development.

For the record, we would like to point out that in a prepared statement before the committee on Tuesday, June 29, Mr. William Seifert, of the Massachusetts Institute of Technology, said: "Consequently, the total expenditure on research and development related to the railroad industry represents approximately one-fifth of 1 percent of railroad operating revenue."

When asked later Tuesday morning about this estimate, Mr. Richard L. Lich, testifying in behalf of the Committee on Passenger Traffic of the Railway Progress Institute, said: "In regard to the railroad expenditure (in research and development), I am frankly not in a position to comment on the validity of those figures." Mr. Lich did say that he could not "contest" a figure of 1.7 percent for research and development expenditures of the railway supply industry, a figure which was contained in an explanatory statement (see p. —) prepared by the Transportation Research Staff of the Office of the Under Secretary for Transportation, Department of Commerce.

In other words, the railway supply industry was not the source for the estimated percentage which was used in connection with railroad expenditures.

As per our conversation, it would be appreciated if this letter could be made part of the record.

Sincerely,

NILS A. LENNARTSON, *President.*

THE PENNSYLVANIA RAILROAD CO.,
OFFICE OF THE CHAIRMAN,
Philadelphia, Pa., July 20, 1965.

HON. OREN HARRIS,
House of Representatives,
Washington, D.C.

DEAR MR. CHAIRMAN: In your letter of July 6, you requested that I amplify my comment that the phraseology of H.R. 5863 could be "tightened up." I had in mind three areas:

(1) In section 3, "the Secretary is authorized to enter into agreements and to contract with public or private agencies, institutions, and individuals * * *." While "private agencies" and "individuals" might be construed to include corporations, etc., I believe that the language could be clarified by inserting "firms, copartnerships, corporations, companies, associations, or joint stock associations, including trustees, receivers, assignees, or personal representatives thereof" somewhat as in the definition of "person" in the Interstate Commerce Act, Bankruptcy Act, Clayton Antitrust Act, etc. This broader language seems appropriate in view of the fact that the Secretary may want to enter into agreements with certain trustees, such as those of the New Haven.

(2) I agree with Secretary Connor that a time limit would be advisable, probably, in section 5. This would have the dual effect of forestalling any attempt to establish the project as a permanent function of the Department and also of expediting the progress of the project. I would suggest a 3-year limit for the time the funds of the act are made available.

(3) I think that a top limit of \$90 million should be incorporated in the bill. This would have a strong tendency to keep the research projects within practical and realistic fields. While I think there should be some definition of the areas within which research should be undertaken, I do not think that the Secretary of Commerce should be too narrowly circumscribed in the exercise of his judgment. It seems to me that his actions in this regard could be further reviewed by requiring periodic reports to the Congress as to the fields in which research is being pursued.

Respectfully,

STUART T. SAUNDERS.

Our next witness will be Mr. Robert E. Kirby, group vice president, Westinghouse Electric Corp.

STATEMENT OF ROBERT E. KIRBY, GROUP VICE PRESIDENT, INDUSTRIAL GROUP, WESTINGHOUSE ELECTRIC CORP.

Mr. Kirby. Mr. Chairman and members of the committee, my name is Robert E. Kirby. I am group vice president of Westinghouse Electric Corp. with responsibility for our industrial group, which is a major developer and supplier of transportation equipment. On behalf of our company, I want to recommend the enactment of H.R. 5863, which would authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation.

In his message to Congress requesting Congress to enact the bill which became H.R. 5863, President Johnson enumerated many of the factors which have brought about the imminent need for improving intercity transportation in the densely populated areas along the east coast, and Secretary Connor has emphasized that there is similar need in other areas of the country. In planning how to maintain and increase Westinghouse participation in the market for equipment to serve the changing human and social needs in the field of transportation we have concluded that improving ground transportation in the United States will be a highly complex matter. Enormous investment in new facilities will be required, and we believe that careful analysis of this is needed before the major decisions are made

concerning the types of systems which will provide the most practical service.

The research and development envisaged in this legislation needs to be undertaken as soon as possible in order to insure that improved ground transportation can be developed promptly and that the most modern technology can be incorporated in it. For the period beginning 10 or 15 years from now exotic ideas are being advanced, such as futuristic cars in tubes or tunnels. I agree with Secretary Connor that the increasing population density in metropolitan areas in all parts of the country requires us to explore new ideas to meet future transportation needs before they become acute. Government assistance is needed to explore new transportation concepts, especially to determine which are likely to be worthy of development and which may prove impractical.

Meanwhile, in trying to solve the problems in intercity travel, it would be shortsighted to ignore the benefits obtainable from applying modern technology to existing railroad investments in land, facilities, and talent. We believe that programs of research and development to achieve better utilization of these assets, both for the near term and the more remote future, should be encouraged. Radical transportation concepts may become practical in the future, but we think a substantial improvement in the performance of modern rail passenger systems can be achieved while other concepts are undergoing research.

We also believe that it is important to carry out demonstration and evaluation of new equipment and methods in order to determine public reaction to them. The recommendations of the President to make "improvements in the present rail service for the purpose of measuring market response to high rail speeds, variation in fares, greater travel comfort and convenience, and more frequent service," and doing so "at relatively low cost" will be a major undertaking.

The unprofitability of passenger service in recent years has made it difficult for the railroads to finance significant research and development. The improvement and demonstration of any version of rail transport will be most expensive. Equipment suppliers, such as ourselves, can and are undertaking research and development at our own expense to improve propulsion, braking, electronic controls and programming, and passenger comfort. However, much of our research must necessarily be directed toward products having tangible market potential.

We recognize that intercity transportation is becoming a serious public problem which needs Government "seed" money for initiating solutions and demonstrating their acceptability. Assuming this can be done in a reasonable period of time, we believe industry will then be stimulated to devote its research and development resources adequately to meet future needs.

Much research and development effort is needed in technical areas of ground transportation, such as propulsion methods, aerodynamic factors, foundation stability, vehicle size and shape, and reliability.

However, passenger transportation involves economics and people—their motivation, comfort, and safety. A program of research on ground transportation must identify and resolve all factors affecting financial feasibility as well as operating capability in order to be worthwhile.

American industry can design and build a highly efficient transportation system, but it is necessary to know that people will use the system and pay an economic fare. Therefore, we are convinced that the President's recommendation of demonstration projects utilizing and improving existing technology, together with a program of data collection, is a sound approach.

The new Tokaido rail system in Japan is an outstanding accomplishment in design, construction, and operation, and yet performance limitations, such as roadbed stability and track alinement, have been experienced. We are confident that the work being done by the San Francisco Bay Area Rapid Transit District on its test track will result in significant technical advances in automatic train control and car design, but at the same time will indicate areas requiring additional investigation.

Research and development which includes a well-executed program of systems analysis can determine a high-speed ground transportation system or systems having optimum balance of performance and economics. Such a program would logically investigate what needs to be known about roadbed, such as soil behavior, foundation and structural materials and design; about the manufacturing and installation aspects of achieving needed guideway tolerances; about vehicle suspension and propulsion; about power sources and control methods; and finally, about the interaction between these factors.

Furthermore, operational requirements such as the desired schedules and speed must be given appropriate consideration. The number of stations, the distances between them and the delays in entering and leaving them have a marked influence upon elapsed time from origin to destination. Rates of acceleration and braking obviously affect elapsed time, but they must be geared to human safety and comfort. Speed between points is limited by many factors other than the performance of the mechanical and power features.

The economics of alternative systems must be carefully considered. In addition to land costs, other capital costs must be analyzed to determine comparative values of subway, elevated and grade-level construction. Capital costs also must be analyzed in conjunction with operating costs, and choices must be made between types of energy sources, vehicle design, degree of automated control, and many other elements. Utilization of systems or portions of systems for both passenger and freight transportation must be thoroughly evaluated.

I have pointed out many elements which require investigation in determining what are acceptable high-speed ground transportation systems to meet the intercity travel needs of the future. The costs of doing this research and development and demonstration will be great under even the most desirable circumstances. However, I believe the final cost of acceptable systems will be much less if the research and development envisaged by this legislation can be undertaken before major steps are taken to bring modernized systems into being.

I am assuming that rail passenger service between major cities operating on systems such as we are discussing will be investor-owned. However, initial financing of the research and development of the systems to meet the growing public need should be supplied by the Government under H.R. 5863.

With the required "seed" money and with realistic timetables for meeting program objectives, I feel confident that Government-financed research will not become and should not be permitted to become a self-perpetuating activity.

In conclusion, my main purpose in testifying before you is to emphasize the variety of factors which need to be carefully considered, and the complex planning which will be required to devise the most economical and technically satisfactory intercity transport systems. If we let such systems evolve merely through piecemeal development, we could conceivably end with a hodgepodge of working elements much inferior to systems carefully planned in advance.

Therefore, I recommend that the committee and the Congress approve H.R. 5863 to authorize this research and development.

Mr. STAGGERS. Thank you, Mr. Kirby.

I understand you have a film of the Japanese line?

Mr. KIRBY. Yes, sir; we do.

Mr. STAGGERS. I think you have expressed a desire that the committee see it. I do not think we could this morning. I am wondering if at some future date or before the full committee we could see it?

Mr. KIRBY. We would be delighted to show it at your convenience.

Mr. STAGGERS. Are you located here in Washington?

Mr. KIRBY. No; I am in Pittsburgh. But we have Mr. Hobbs in Washington who will make the arrangements.

Mr. STAGGERS. We know him. So we can get in touch with him.

It appears that the railroad supply industry uniformly is in support of the legislation which is being proposed; namely, that the Federal Government undertake research and development in high-speed ground transportation. And we have heard industries' expression of support and readiness to cooperate with the Government. I am just wondering how far the industry has taken into consideration the treatment which should be accorded to patents that might arise out of the results of this research financed by the Government?

Mr. KIRBY. I missed one word, sir, I am sorry.

Mr. STAGGERS. Have you taken into consideration the treatment of any patents that might arise out of the Government-financed operations?

Mr. KIRBY. Yes, indeed. We have run into this problem off and on in many phases of our business. And I believe that the research and development program that we are discussing here has got to be for the industry. I would expect that anything financed by the Government should become the property of everyone.

Mr. STAGGERS. You think it should be freely available, then—is that your expression—freely available to all industry?

Mr. KIRBY. Yes.

Mr. STAGGERS. Thank you.

Mr. Friedel?

Mr. FRIEDEL. No questions.

Mr. STAGGERS. Mr. Devine?

Mr. DEVINE. Mr. Kirby, I think your statement is quite good. The only thing I would invite your attention to is, in the middle of page 6 you said that you feel confident that the Government-financed research will not become and should not be permitted to become a self-

perpetuating activity. Obviously, you have not had too much experience with the Government.

Mr. KIRBY. Yes; I have had. As a matter of fact, I have had considerable experience. And this is why I made the statement so strong, because I do not think it should be.

Mr. STAGGERS. You say that it should not be permitted to become? I would certainly agree with you, because there are so many things in Government that start out initially as a one-shot deal and continue into perpetuity. I agree that this should not be done. When the project is done with, as you say, "seed" money should not go on.

Mr. KIRBY. I think one of the answers is that if we have a system that is economically feasible, is a profitable operation, then research money will come from private sources. It would not need to be Government-financed. The problem comes when we get involved in projects which are not profitable after they work out, and then the Government has to stay in them.

Mr. DEVINE. I will share your view that this should not be a self-perpetuating activity.

Mr. STAGGERS. Mr. Jarman?

Mr. JARMAN. No questions.

Mr. STAGGERS. Mr. Pickle?

Mr. PICKLE. Mr. Kirby, you recommend the passage of this H.R. 5863. But I believe your recommendation was embodied in words—you recommended an initial financing of the research and development of the system. You point out that there are a lot of factors to be considered—roadbed, suspension, and power, and a dozen other factors. Now, you refer to this as "seed" money. Perhaps I have missed it, but I do not notice anywhere in here where you said that the money to be appropriated would go for purchase of equipment. And this constituted approximately half of the money that is involved. Are you just for the research and development, and make no stand on equipment?

Mr. KIRBY. No, sir. Any successful transportation system has got to be concerned with three main factors—the human, the economic and the technical. Now, the program as presented by Secretary Connor envisaged, as I believe you will recall, three different things, each one aimed at one of these factors. The human factor is the part that requires the demonstration roadbed.

Mr. PICKLE. You want this money to be used for the purchase of equipment?

Mr. KIRBY. I would like to see the money used for a demonstration roadbed so that we can test passenger reactions to it as well as the technical reactions to what happens at these high speeds.

Mr. PICKLE. I am sure this was not intentional, but I cannot find anywhere in here that you recommend this money be spent, most of it, for equipment for demonstration purposes. But in your overall picture, in addition to the research and development which you do express, you include the purchase of this equipment for the railroads?

Mr. KIRBY. Yes, sir.

Mr. PICKLE. That is all.

Mr. STAGGERS. Mr. Cunningham?

Mr. CUNNINGHAM. No questions.

Mr. STAGGERS. Thank you.

Next we have Mr. Marvin E. Walsh, vice president and general manager, Safeway Trails, Inc.

Mr. Walsh, you may proceed. You may file your statement, and you may brief it if you will.

STATEMENT OF MARVIN E. WALSH, VICE PRESIDENT AND GENERAL MANAGER, SAFEWAY TRAILS, INC., REPRESENTING THE NATIONAL ASSOCIATION OF MOTOR BUS OWNERS

Mr. WALSH. As you can see by the statement, I am vice president and general manager of Safeway Trails, Inc., and we operate a bus company between Washington and New York. I am also a member of the NAMBO. We compete with the Greyhound and we operate about an equal number of trips.

And our position is that if you are going to make a study of the transportation system, particularly on the surface, why we should be included. And our statement more or less bears that out.

And we do not agree that we are subsidized, we think we are not subsidized. We operate on private money, with no subsidy. And we pay as much for tax on a gallon of fuel as we pay for the gallon of fuel. And we also pay \$600 million a year for tolls. So therefore, we are not a subsidized organization. I do not agree with Mr. Saunders that we are subsidized. And I do not agree that highways are built just for us, we use them and pay our tax.

(The prepared statement of Mr. Walsh is as follows:)

STATEMENT OF NATIONAL ASSOCIATION OF MOTOR BUS OWNERS

Mr. Chairman and members of the subcommittee, my name is Marvin E. Walsh, vice president and general manager, Safeway Trails, Inc., 1200 Eye Street NW., Washington, D.C. I appear this morning on behalf of the National Association of Motor Bus Owners, commonly called NAMBO, of which my company is a member. NAMBO is the national trade association for the intercity bus industry and serves as spokesman for some 1,000 carriers. Its members include the Greyhound, affiliates of Trallways and independent carriers who provide approximately three-fourths of such service throughout the United States and a number of Canadian Provinces. In addition to passengers, they also transport substantial volumes of package express and mail.

Our interest in H.R. 5863 and related bills is apparent from the fact that the intercity bus industry transports about half a billion passengers annually, or approximately one-fifth more than the railroads and the airlines combined.

Interstate Commerce Commission figures for 1963 show 21.9 billion intercity passenger miles traveled by bus as compared with 18.6 billion by rail, if commutation is included, or 14.5 billion miles of noncommutation rail travel. Preliminary data for 1964 show an even greater proportion of surface travel by bus. These figures indicate the enormous achievement and still greater potential of a mode of passenger transport which often appears largely overlooked or ignored in our national transportation planning.

Data for the northeast corridor, which is the area proposed for high-speed rail demonstration projects, are particularly significant in pointing up the capabilities of bus transportation. These services provide frequent schedules, competitive traveltime, comfortable equipment, unmatched flexibility in routing, capability for fulfilling great variations in type and volume of travel requirements, and an excellent safety record. At the same time, they require a minimum of highway space and are operated without public subsidy.

The Greyhound and Trallways systems operate a total of 43 nonstop express schedules daily from Washington to New York and 44 schedules from New York to Washington. Daily scheduled service also includes approximately 50 runs operated in each direction between these cities making a limited number of

passenger stops en route. In addition, extra buses are provided whenever necessary. Such extra service supplementing regular schedules is a frequent occurrence, particularly on holidays and weekends, but at times it reaches almost phenomenal proportions. For instance, on January 3 of this year, the Greyhound and Trailways systems ran 153 extra buses from Washington to New York and 129 in the reverse direction.

Regular nonstop express bus service between Washington and New York provides seats for more than 1,750 passengers daily in each direction between those cities, and buses making limited numbers of stops between those points provide an additional 2,000 seats in each direction. Extra buses add to these totals on holidays and weekends. The extra service provided on January 3, for instance, was sufficient to carry at least 5,800 passengers from Washington to New York and more than 4,900 in the reverse direction. Including regular nonstop express schedules, regular service with limited intermediate stops, and extra buses, a total of about 9,000 passenger seats was provided on January 3, in each direction, between Washington and New York.

Between New York and Boston, the picture is similar but with somewhat smaller totals. About 20 nonstop bus schedules are operated daily in each direction between these points in addition to an average of 27 schedules with intermediate stops and varying numbers of extra buses. Between 54 and 60 extra buses were run in each direction on January 3. Seats are provided for about 1,900 passengers, each way, in regular daily service (800 in nonstop express service and 1,100 in service with intermediate stops). Extra buses operated on January 3 provided an average of 2,160 passenger seats in each direction between Boston and New York.

Scheduled traveltime by bus between downtown Washington and downtown New York is 4 hours and 10 minutes on nonstop express schedules, about 9 percent over the comparable rail time (3 hours and 50 minutes) and approximately 45 percent in excess of air traveltime (2 hours and 53 minutes, if allowances are made for traveltime to and from the respective airports and for required check-in time). The passenger fare by bus between these points is \$8.25 one way or \$14.85 round trip as compared with rail coach rates of \$10.65 one way or \$21.30 round trip and with average airline fares of \$17.04 one way or \$34.08 round trip in daytime coach service, including the 5-percent Federal excise tax. With respect to the cost of air travel, additional costs of about \$2.85 one way or \$5.70 round trip are required for travel to and from airports, making the total cost to the passenger \$19.89 one way or \$39.78 round trip.

Between Boston and New York, bus traveltime is 4 hours and 30 minutes, only 5 minutes longer than rail time and about 55 percent over effective air traveltime. The bus fare between these points is \$7.70 one way or \$13.90 round trip while passengers traveling rail coaches pay \$11.58 one way or \$20.85 round trip. The average daytime aircoach fare is \$15.07 one way or \$30.14 round trip, inclusive of the Federal excise tax but excluding transportation to and from the airports. This latter item adds about \$2.75 one way or \$5.50 round trip to the cost of aircoach travel.

The excellent safety record achieved by intercity bus transportation is evidenced by comparative passenger fatality rates. Passenger fatalities resulting from accidents to buses of class I carriers reporting to the Interstate Commerce Commission averaged 0.14 per 100 million passenger-miles of travel during the 3 years 1962, 1963, and 1964. This experience is typical of most years for which figures are available. Fatality rates for bus passengers are less than one-fifth the comparable rates for automobile travelers (as published by the National Safety Council). The rate for buses has been, in most years, roughly equivalent to that for rail travel and somewhat under the rate for air travel.

Intercity bus service is provided in the best tradition of the free enterprise system, without subsidy. The "Supplementary Report of the Highway Cost Allocation Study," transmitted by the Secretary of Commerce March 24, 1965, and printed as House Document 124, shows (p. 10) an allocated cost responsibility for intercity buses averaging \$727 per bus or 1.075 cents per bus-mile by the differential benefit method and \$967 per bus or 1.430 cents per bus-mile by the incremental method. This report also shows estimated 1964 payments of highway trust fund taxes, by intercity buses at current rates, averaging \$779 per bus or 1.151 cents per mile.

These estimated payments, which incidentally exceed allocated cost responsibility under the differential-benefit method by about 7 percent, fail to take into account several factors which markedly affect any valid comparison.

Particularly important relative to express passenger transportation in the northeast corridor are the tolls paid for the use of highways, bridges, tunnels, and ferries. Such tolls paid by the class I carriers totaled more than \$6 million in 1964 and added more than 20 percent to the total of nearly \$30 million in special taxes on highway users paid to Federal, State, and local governments by these companies. These toll payments averaged more than \$500 per bus owned by the carriers. Buses used in nonstop express service between Washington and New York accumulate more than 80 percent of their mileage on toll facilities, and almost as large a proportion of toll-road use is required for buses on this route making limited numbers of intermediate stops. Tolls paid on each express trip between Washington and New York total \$7.20, or nearly nine-tenths of one full passenger fare, and more than 3 cents per mile between these points. Each Boston-New York run costs \$5.40 in tolls, or nearly three-fourths of a passenger fare and about 2½ cents per mile. Express bus routes in the northeast corridor, therefore, are paying more in tolls than the entire responsibility allocated to them by the Bureau of Public Roads for Federal-aid highway costs. These tolls are in addition to the regular tax payments mentioned above, the proceeds of which accrue to the highway trust fund but are not used for the construction of these toll highways.

All of the achievement outlined briefly above has been accomplished by private enterprise and, as described, without subsidy. The industry believes firmly that substantial further progress is possible within the same framework unless hampered by subsidized competition and one-sided Government research and development. Demonstration projects aiding rail transportation have already had serious results for bus operations despite the absence of any longrun benefit to the railroad involved or the economy of the area. A project which increased service and reduced fares on the Fitchburg Division of the Boston & Maine Railroad caused a 20-percent reduction in travel, during the period of the demonstration, on a busline partly competitive with the railroad. This entire rail passenger operation has subsequently been discontinued, and substituted bus service was found by the Interstate Commerce Commission, after investigation, to be fully adequate in every respect. This demonstration project was competitive with Englander Coach Lines, Inc., and there is attached as appendix A to my statement data showing the impact of this project on the bus line.

We are convinced that broad-scale research and development in all aspects of transportation are essential to continuing progress. The motorbus industry has participated actively with manufacturers in developing new and improved equipment and has cooperated extensively with highway and safety agencies to improve service and make it safer. As in the case of some of the problems facing the railroads and airlines, there are areas for significant potential improvement which are beyond the research capabilities of the bus industry. An example of this is the design and use of exclusive bus lanes on highways, particularly those segments in metropolitan areas where congestion is acute. No comprehensive test of this nature has been undertaken to date despite the fact that some preliminary studies have indicated extremely encouraging possibilities. For instance, a study by General Motors indicates that it is entirely practicable for as many as 1,400 buses per hour to travel at expressway speeds on an exclusive bus lane, transporting as many as 60,000 passengers per hour.

It is our position that research and development, as well as demonstration projects, which may be authorized by the Congress should not be directed to a particular mode to the exclusion of other modes. Any such program should be designed to develop and test the potentialities of all modes for the benefit of our national economy. We believe such an approach is in the public interest and would be consistent with the national transportation policy of the Congress.

APPENDIX A

Subject: Impact on Englander Coach Lines, Inc., of Housing and Home Finance Agency demonstration project on Fitchburg division of Boston & Maine Railroad in 1963 and 1964.

The inroads on travel volume and revenues of this bus company attributable to subsidized fare reductions and increased schedule frequency on the railroad are shown in detail in the testimony relative to S. 325 and related bills, given in New Haven, Conn., by Mr. George M. Sage, president of the bus company, on March 11, 1965, before the Senate Committee on Commerce.

It should be noted that the data in Mr. Sage's statement on passengers carried and revenues show successively sharper declines as the demonstration project progressed. During the first 3 months of the project (the first quarter of 1963) little or no effect was reflected in the operating results of the bus company. The second quarter, however, saw a decline of 22.5 percent in the number of passengers carried relative to the corresponding period a year earlier. This was followed by a third-quarter decline of nearly 39 percent in passenger count and a fourth-quarter decrease of almost 47 percent, while the last 3 months of the demonstration period saw a decrease of 45 percent from the preceding year. With respect to passenger revenues, the pattern was similar. There was little or no change in the first quarter of the project, but year-to-year decreases of 24, 29, 35, and 37 percent followed during the second, third, fourth, and fifth 3-month periods that the demonstration project was in progress.

The pertinent part of Mr. Sage's statement, which appears on pages 331 and 332 of the printed report of the hearings of the Senate committee (serial No. 89-11) is as follows:

"The present operation of Englander Coach Lines, Inc., was established as a result of the Boston & Maine Railroad abandonment of passenger service on its route from Troy, N.Y., to Boston, Mass. Service was established between Williamstown, Mass., and Boston, Mass., where surveys indicated patronage would sustain a private carrier. The B. & M. Railroad continued to operate passenger service between Boston and Fitchburg, a distance of about 50 miles, out of the total distance of 140 miles. This operation was started in 1958 and operated at a loss until the year 1962. For the year 1962 the gross revenue was \$208,500. Expenses were \$176,000 with a profit of approximately \$32,500. This was the first year the company had shown a respectable profit. Equipment and facilities investments of \$170,000 had been made to establish this enterprise. Revenues appeared to be on a continued increase, and then the experimental program was put in which provided a subsidy for the B. & M. to increase service and reduce fares between Fitchburg and Boston, where the railroad competed with the buslines. Approximately 50 percent of the revenues earned by Englander Coach Lines were earned in this competitive segment of its route. We therefore found ourselves in direct competition with a Federal program in which one mode of transportation was being subsidized to the direct detriment of another.

"The competitive impact was substantial; our one-way fare from Ayer to Boston was \$1.65; under the new program, the rail fare dropped from \$1.99 to \$1.10. In addition, there were eight trains on weekdays compared to six. The following tabulation of passengers carried and passenger revenues, by quarters for the years 1961 through 1964, will show the direct effect on Englander Coach Lines:

	1961	1962	1963	1964
Passengers carried:				
1st quarter.....	10,912	20,294	1 20,371	1 11,180
2d quarter.....	11,558	20,040	1 15,517	15,828
3d quarter.....	13,586	21,230	1 12,984	17,886
4th quarter.....	16,843	22,638	1 12,070	19,159
Total.....	52,899	84,252	60,942	64,053
Passenger revenues:				
1st quarter.....	\$26,980	\$44,630	1 \$44,560	1 \$28,243
2d quarter.....	28,340	45,015	1 34,843	38,821
3d quarter.....	35,792	48,251	1 34,129	45,237
4th quarter.....	37,652	48,271	1 31,632	49,164
Total.....	128,764	186,167	145,164	160,965

¹ Rail subsidy in effect.

"As can readily be seen with the initiation of the experimental program in January 1963, and continuing until the program was terminated in March 1964, Englander's revenues and passenger count showed a continued decline. Had the experiment continued there is no doubt in my mind that Englander Coach Lines would have had to go out of business. With the termination of the subsidy program, and reinstatement of higher fares on the railroad, Englander's patronage began to increase and present indications show it will continue to do so."

Mr. WALSH. I will be glad to answer any questions.

Mr. STAGGERS. I thank you. There might be some dispute about the tax, but we won't go into that. I think each member has his own view on that. And you certainly have a right to your view too.

Are there any questions?

Mr. FRIEDEL. No questions.

Mr. STAGGERS. Mr. Devine?

Mr. DEVINE. No questions.

Mr. STAGGERS. Mr. Jarman?

Mr. JARMAN. No questions.

Mr. STAGGERS. Mr. Pickle?

Mr. PICKLE. What is your position about the superfreightways where your trucklines would more or less have your own highways?

Mr. WALSH. We are in the passenger transportation business, and we only carry package express. The single lanes for the buses have been tried out in some places. We think it would be beneficial, although we have made a test between the Delaware Memorial Bridge and New York City, 125 miles, we find that by using one single lane with no other traffic in it there is only about 2 minutes difference in the running time. So that so far, with the possible exception of the 1 or 2 days a year where all the people are trying to go back to New York through the Lincoln Tunnel, it would not affect us very much.

Mr. PICKLE. If we had superfreightways could not the same stretch of road be used for passenger transportation likewise?

Mr. WALSH. Yes, sir.

Mr. STAGGERS. Any other questions?

Thank you very kindly, for your appearance. We will give your statement careful consideration.

Mr. WALSH. There is one other thing I would like to mention. It has been brought up before in other meetings.

On this fare structure, I believe this ought to be compensatory and the Government should not subsidize insofar as our fares are concerned, our system or the rails under this test. I think the people should pay enough to keep it operating, and it should not be subsidized by the Federal Government. I am more or less against subsidy.

Mr. STAGGERS. Thank you.

Mr. Gilman?

STATEMENT OF ROGER H. GILMAN, PORT OF NEW YORK AUTHORITY, REPRESENTING AMERICAN SOCIETY OF CIVIL ENGINEERS

Mr. GILMAN. I am appearing here this morning on behalf of the American Society of Civil Engineers (ASCE), which is a national professional organization with a membership of 55,000 civil engineers. We have a committee on transportation policy which has carefully reviewed this legislation. Its findings and conclusions are presented in the statement, which I would like to submit for the record, together with a statement prepared by the ASCE itself in 1963 on what we feel to be the principles of a sound transportation policy.

The American Society of Civil Engineers endorses and respectfully urges favorable action by your committee and the House of Representatives on H.R. 5863.

With your permission, Mr. Chairman, I would like to file my statement, together with this short ASCE statement of sound transportation principles.

Mr. STAGGERS. It will be made a part of the record.
(Mr. Gilman's statement is as follows:)

STATEMENT OF ROGER H. GILMAN, CHAIRMAN, COMMITTEE ON TRANSPORTATION
POLICY OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

I appreciate the opportunity to present before this committee, the views of the American Society of Civil Engineers on the proposed legislation which would authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation (H.R. 5863).

The American Society of Civil Engineers is a national professional organization with a current membership of 55,000 civil engineers. The civil engineering profession is intimately associated with all aspects of transportation. Its members are involved directly and personally in the development, planning, design, construction, operation and administration of every form of transportation.

Since its organization in 1852, ASCE has had an active interest and participation in transportation matters. The creation of its committee on transportation policy is evidence of the society's determination that it will give comprehensive, coordinated and increased attention to this vital subject.

The makeup of the committee on transportation policy reflects the broad range of private and public responsibilities and activities of the society's total membership. Its five-man committee, all of whom are experienced in transportation planning, operation and administration, include representatives of a large railroad system, two consulting engineering firms, a Federal agency, and a bi-State agency.

The American Society of Civil Engineers endorses and respectfully urges favorable action by the House of Representatives on H.R. 5863. Our committee on transportation policy has reviewed the proposed legislation and is convinced that it is sound and much needed and that it can benefit the entire Nation and its citizens. We feel certain that such a study, undertaken by the Secretary of Commerce, with the full participation and cooperation of all concerned professions including civil engineering, will assure that competent technical persons will be engaged in this important research and development. The ASCE and its technical organizations are most anxious to provide assistance and advice in this pending study as a matter of public service.

I believe it is pertinent and of interest that a statement on "principles of a sound transportation policy" adopted 2 years ago by the ASCE board of direction, reflects the objectives of H.R. 5863 expressed in the bill itself as well as the supporting statements submitted to Congress by administration officials.

Thus, the opening remarks of the 1963 ASCE statement, in my judgment, conform with the basic purposes of the legislation:

"The most important basic principle of a sound transportation policy is that it serve adequately, within the means of economic practicability, the needs of the people for transporting both passengers and goods. The economy and welfare of a nation are measured in large part by the degree to which the many modes of passenger and freight transportation have been developed. So, too, an individual's freedom of choice in selecting his mode and place of living and working and in the use of his leisure time is largely determined by his freedom of choice and ability to travel, for both pleasure and business purposes, short or long distances in his own country or to and from overseas points. Finally, history has proven that the security of a nation is dependent to a large extent upon the continuing availability and adequacy of transportation facilities and services to meet both its normal and emergency needs.

"The encouragement and development of transportation in all its modes and roles is significant and vital to the entire Nation. There can be little doubt that the constant upward trend in the demand for more flexibility and maneuverability in transporting persons and goods, will make this increasingly true in the years ahead. With the economy and security of the United States dependent on the transportation industry, its sound development demands the attention and concern of everyone."

In listing the basic principles which the society considers as essential for the establishment of a sound transportation policy, the ASCE statement contains the following which we believe reflect the objectives and authorization contained in H.R. 5803:

BALANCED SYSTEMS REQUIRED

The importance of, and the requirement for, all forms of transportation should be recognized and accepted, so that balanced systems may be provided to serve the public needs and foster the Nation's economy. Economic, technological, and other pertinent developments will determine the extent to which various modes will be required and utilized. At the same time, the public interest may in some instances require public support to assure the availability of needed transport modes, if economic returns are not sufficient.

EQUALITY FOR TRANSPORTATION MODES

Equality in policies of encouragement, assistance, and regulation among the various modes of transportation is essential. In the initial stages of development some form of Government aid is usually required for every mode of transportation but this should be adjusted so that impartial treatment is ultimately afforded to all modes. Control and regulation should be minimized, but be sufficient to prevent unfair or monopolistic penalization of transportation for a particular area or service.

COORDINATION OF TRANSPORTATION PLANNING

Coordination of planning of facilities and operations should be encouraged, to eliminate or forestall unnecessary and wasteful duplication of services. Such coordination becomes more urgent as the demand increases and limitations of space, funds, resources, and other controlling factors become more severe.

ENGINEERING STUDIES

Studies and presentation of results of project planning must provide complete information on all significant facets such as costs, benefits, purposes served, and economic justification, so that decisions can be made on the basis of proper analysis and evaluation of all pertinent data. Thorough engineering studies, to determine the relative economic feasibility of alternative plans and modes, are vital to the determination of sound transportation development.

GOVERNMENT ACTIVITY AND ASSISTANCE

Public need at times requires Government activity or assistance. The determination of the proper role and responsibility of Government is difficult and complex. However, the following basic principles are pertinent:

(a) There is a need in today's economy for industry and Government to collaborate in determining the general principles and guidelines for meeting transportation requirements. This will include such considerations as regulation and control, financial needs and assistance, compensation and reimbursement for services and benefits, planning for future needs, utilization and development of resources.

(b) Government should afford equal and fair treatment and consideration to all forms of transportation and to all regions.

(c) The Federal Government can and should play an important role in encouraging, stimulating and supporting research, studies, demonstration projects and other activities, which will develop new techniques, technology, methodology, and other transportation services which have nationwide applicability. By such a strong and coordinated approach, the Federal Government can contribute vital financial and other assistance, to achieve the above objectives, which no single or even group of localities and industries can or will be able to accomplish.

I would like to make a few observations in relating the ASCE statement of principles to the legislation which is now before your committee.

Our society has urged the vital need for full attention and consideration of all forms of transportation and for participation by the Government in providing proper assistance to transportation in its initial stages of development. The authorization contained in this legislation would permit the research and development of new facilities, equipment, techniques, and methods of high-speed ground transportation facilities, which could then be benefited by practical and prompt

testing and demonstration. Under this authorization, the research studies would also explore and experiment with new forms and concepts of high-speed ground transportation. We would assume that these various studies would examine the physical, economic, and functional feasibility of such technological developments, keeping in mind the practical considerations involved in the application and implementation of such concepts and their applicability to the transportation requirements of all parts of the Nation.

Our ASCE statement of principles points to the need for collaboration and joint participation between industry and Government in meeting transportation requirements. We are pleased that this project is considering demonstration projects involving existing railroads, which encourages us to believe that the program will be progressed along sound and realistic lines.

Finally, the ASCE statement of principles calls for complete information and thorough studies on all significant facets of transportation planning and development. We therefore endorse the proposed authority in H.R. 5863 for the Secretary of Commerce "to collect transportation data, statistics, and other information which he determines will contribute to the improvement of the national transportation system."

Again may I express the appreciation of the American Society of Civil Engineers and its committee on transportation policy for the opportunity to present its views in support of H.R. 5863. With your permission, Mr. Chairman, I would like to submit for the record also a copy of the 1963 ASCE statement of "Principles of a Sound Transportation Policy," to which I have referred in my testimony.

PRINCIPLES OF A SOUND TRANSPORTATION POLICY

(Adopted by the Board of Direction of the American Society of Civil Engineers as official policy of the society, May 1963)

The most important basic principle of a sound transportation policy is that it serve adequately, within the means of economic practicability, the needs of the people for transporting both passengers and goods. The economy and welfare of a nation are measured in large part by the degree to which the many modes of passenger and freight transportation have been developed. So, too, an individual's freedom of choice in selecting his mode and place of living and working and in the use of his leisure time is largely determined by his freedom of choice and ability to travel, for both pleasure and business purposes, short or long distances in his own country or to and from overseas points. Finally, history has proven that the security of a nation is dependent to a large extent upon the continuing availability and adequacy of transportation facilities and services to meet both its normal and emergency needs.

The encouragement and development of transportation in all its modes and roles is significant and vital to the entire Nation. There can be little doubt that the constant upward trend in the demand for more flexibility and maneuverability in transporting persons and goods will make this increasingly true in the years ahead. With the economy and security of the United States dependent on the transportation industry, its sound development demands the attention and concern of everyone.

PUBLIC INTEREST OF THE CIVIL ENGINEER

This concern for sound transportation is especially significant to the civil engineer. More than is the case for the average citizen, the civil engineer has been directly and personally involved in the planning, development, construction, operation, and administration of each form of transportation from its earliest stages to its full development and usage. It is, therefore, the public duty of the civil engineer to play an increasingly active role in assuring principles of sound transportation policy.

The American Society of Civil Engineers similarly has a responsibility in its service to the public. A major portion of its members are engaged in one or several aspects of transportation. Many of them in government and in private practice play leading roles in the development and implementation of transportation policy.

It is of interest that the first subject for professional discussion by members of the society after the American Society of Civil Engineers had been organized in 1852, was "The Relief of Broadway," a plan for placing railway tracks above the level of the street. This presentation was made some 110 years ago by James Laurie, first president of the society.

So, too, the first issue of "Civil Engineering," in 1930, presented a scholarly study, entitled "Solving Manhattan's Transportation Problem," prepared by Francis Lee Stuart, a consulting engineer.

In the intervening years, transportation has been the subject of countless conferences, programs, papers, articles, and other activities of the society.

The society has established technical divisions dealing with various forms of transportation. The divisions currently devoted to transportation are aerospace transport, city planning, highways, pipeline, waterways, and harbors. These and the other technical divisions, in their conferences and publications, provide opportunity to consider, study, and discuss all engineering aspects of every mode of transportation.

The establishment of the committee on transportation policy by the ASCE board of direction in May 1962 is evidence of the society's determination that it will give comprehensive, coordinated, and increased attention to this vital subject. It will also enable the society, on behalf of the membership, and within the framework of this and subsequent official society statements on transportation policy, to express its views in the public interest, promptly and forthrightly.

NEED FOR PRINCIPLES OF TRANSPORTATION

At the dawn of history, each man was dependent upon his own ingenuity in the solution of his personal transportation problems. As his personal limitation of mobility was reached and as man's inventiveness increased, he devised simple vehicles to extend his radius and speed of travel.

Spanning many centuries, the world's population has expanded greatly, and has been compressed into highly compact and complex groupings of society. It is no longer feasible to consider the transportation problems of single individuals, out of context with multiple or mass needs. Each form of transportation affects, and is affected by, other forms.

To complicate the situation further, the character of man's living has changed so that there are constantly increasing demands for the simultaneous movement of large numbers of persons along similar paths and for transporting vast amounts of raw materials and finished products for man's use. As these needs increased, ever-larger organizations, both private and public, have come into being to meet the transportation demands. This has brought about complicated intra- and inter-relationships which necessitate a determination of sound principles for guidance in the analysis and development of solutions of transportation problems which will best serve the public.

BASIC PRINCIPLES OF SOUND TRANSPORTATION POLICY

This society believes that the following basic principles are essential to the establishment of sound transportation policy and should guide those both in public and in private activities who are responsible for dealing with transportation:

1. *Individual choice of mode.*—Freedom to select the vehicle or system the individual prefers, for any reason, is the inherent right of the individual and should be a consideration in all transportation planning.

2. *Group needs.*—Group behavior and group needs should be criteria for provision of transportation facilities.

3. *Role of private enterprise.*—Reliance, to the maximum extent feasible, should be placed on the initiative, management and direction of the transportation industry by private enterprise. This recognizes that the imagination, ingenuity, business and financial judgment of individuals based on the economic laws governing a free enterprise competitive system can be expected to yield the greatest and longest lasting benefits.

4. *Balanced systems required.*—The importance of, and the requirement for, all forms of transportation should be recognized and accepted, so that balanced systems may be provided to serve the public needs and foster the Nation's economy. Economic, technological, and other pertinent developments will determine the extent to which various modes will be required and utilized. At the same time, the public interest may in some instances require public support to assure the availability of needed transport modes, if economic returns are not sufficient.

5. *Equality for transportation modes.*—Equality in policies of encouragement, assistance, and regulation among the various modes of transportation is essential. In the initial stages of development some form of government aid is usually

required for every mode of transportation but this should be adjusted so that impartial treatment is ultimately afforded to all modes. Control and regulation should be minimized, but be sufficient to prevent unfair or monopolistic penalization of transportation for a particular area or service.

6. *Coordination of transportation planning.*—Coordination of planning of facilities and operations should be encouraged, to eliminate or forestall unnecessary and wasteful duplication of services. Such coordination becomes more urgent as the demand increases and limitations of space, funds, resources, and other controlling factors become more severe.

7. *Engineering studies.*—Studies and presentation of results of projects planning must provide complete information on all significant facets such as costs, benefits, purposes served, and economic justification, so that decisions can be made on the basis of proper analysis and evaluation of all pertinent data. Thorough engineering studies, to determine the relative economic feasibility of alternative plans and modes, are vital to the determination of sound transportation development.

8. *Government activity and assistance.*—Public need at times requires government activity or assistance. The determination of the proper role and responsibility of Government is difficult and complex. However, the following basic principles are pertinent:

(a) There is need in today's economy for industry and government to collaborate in determining the general principles and guidelines for meeting transportation requirements. This will include such consideration as regulation and control, financial needs and assistance, compensation and reimbursement for services and benefits, planning for future needs, utilization and development of resources.

(b) Government should afford equal and fair treatment and consideration to all forms of transportation and to all regions.

(c) The Federal Government can and should play an important role in encouraging, stimulating and supporting research, studies, demonstration projects, and other activities, which will develop new techniques, technology, methodology, and other transportation services which have nationwide applicability. By such a strong and coordinated approach, the Federal Government can contribute vital financial and other assistance, to achieve the above objectives, which no single or even group of localities and industries can or will be able to accomplish.

(d) Whenever Federal financial assistance is made available, under appropriate legislative action, it should be advanced to the States and local governments for their use under the prescribed legal provisions, but in accordance with locally determined needs and directions. The Federal Government should not determine detailed local decisions, although it must of course assure that funds are utilized as specified by law.

(e) Improved coordination among the various Federal agencies responsible for regulating, assisting, and promoting the different forms of transportation must be achieved, to foster a more unified and equitable approach to the provision of such services.

(f) State and local governments should play a stronger role in seeking solutions to transportation problems and providing the general framework within which private enterprise and public agencies can carry on their activities. They should encourage long-range and coordinated planning to assure the meeting of future transportation needs.

9. *Urban transportation.*—Development of urban complexes intensifies the need for solution of very special problems in transportation.

(a) The evolving pattern of land use is the primary determinant of urban travel demand. Conversely, the supply of transportation influences land use. Travel behavior, and the demand characteristics of urban transportation, reflect the profound changes that have taken place in the form and character of our cities—above all, the dispersal phenomenon. Suburbanization is deeply rooted in technological advance and economic growth.

(b) Provision must be made for the accommodation of all the various components of urban transportation of people and goods. Each of these components exhibits its own characteristics, which require separate consideration.

(c) Individual and public transportation each has its appropriate role to play in urban transportation. Where travel demand is concentrated in time or in space, mass transportation may be required; when travel is dispersed over time or space, public transportation may not be justified.

The foregoing statement was prepared by the Committee on Transportation Policy of the American Society of Civil Engineers. Members of the committee were: Roger H. Gilman, chairman; executive director, Tri-State Transportation Committee, New York, N.Y.¹; Rudolph H. Beeder, chief engineer, system, A.T. & S.F. Railway, Chicago, Ill.; Charles E. De Leuw, consulting engineer, De Leuw, Cather & Co., Chicago, Ill.²; Bertram D. Tallamy, consultant engineer, Washington, D.C.; John C. Kohl, head, Office of Transportation, Housing and Home Finance Agency, Washington, D.C.

Mr. STAGGERS. Thank you very much for coming and giving us the benefit of your view.

Mr. Friedel?

Mr. FRIEDEL. No questions.

Mr. STAGGERS. Mr. Devine?

Mr. DEVINE. No questions.

Mr. STAGGERS. Mr. Jarman?

Mr. JARMAN. No questions.

Mr. STAGGERS. Mr. Cunningham?

Mr. CUNNINGHAM. No questions.

Mr. STAGGERS. Mr. Pickle?

Mr. PICKLE. No questions.

Mr. STAGGERS. The record will be kept open for a period of 5 days.

The committee will now go into executive session.

(The following material was submitted for the record:)

STATEMENT BY ROBERT M. JENNEY, CHAIRMAN, MASS TRANSPORTATION COMMITTEE,
GREATER BOSTON CHAMBER OF COMMERCE

I am Robert M. Jenney, member of the Board of Directors of the Greater Boston Chamber of Commerce, chairman of its Mass Transportation Committee, and president of the Jenney Manufacturing Co. On behalf of the chamber's membership, I sincerely appreciate the opportunity to testify before this committee in favor of the comprehensive research and development program in high-speed ground transportation as provided for in S. 1588 introduced by Senator Warren Magnuson of Washington and cosponsored by Senators Pastore and Pell of Rhode Island.

The Greater Boston Chamber of Commerce is a voluntary, nonprofit organization which speaks for 3,500 individuals and business firms located in the Boston metropolitan area.

Earlier this year, our Boston Chamber's Transportation Committee invited the chambers of commerce along the corridor to attend a briefing session on the proposed research and demonstration program. Representatives of the U.S. Department of Commerce, Senator Claiborne Pell's office, and the Massachusetts Institute of Technology gave us a thorough and instructive review of the high-speed ground transport project. At the conclusion of that meeting, I expressed the opinion as the chairman of the meeting that the kind of breakthrough that we need in our transportation policies will only come about in a truly significant manner if business joins with Government in an endeavor to create a climate and framework for intelligent forward-looking decisions.

Today, the Boston metropolitan area is on the threshold of realizing a balanced metropolitan mass transportation system for its inhabitants which will hopefully insure its continuing as a healthy and economically viable metropolitan area.

More people in more cars making more trips per day with fewer people per car is reducing the effectiveness of our highway system (see appendix I).

Airports are facing an increase in congestion but for different reasons. Airplanes are flying at higher speeds and carrying more passengers per plane. How-

¹ Now director of port development, the Port of New York Authority, New York.

² Since replaced by Donald A. Lochhead, consulting engineer, Coverdale & Colpitts, New York, N.Y.

ever, as planes arrive at the airports faster at the higher speeds, an increasingly disproportionate part of their time is spent in landing patterns over the major airports or in waiting time on the runways holding for takeoff.

Airplanes have dominance in long-range transportation. Whether a plane is coming from a distant city or a close-by city makes little difference in its effect on traffic pattern delays. It is obvious that the planes from the nearby cities add to the traffic volume delays of the planes from longer distances.

Hence, for very different reasons we are experiencing intensified congestion both on the highways and the airports of our major cities. The need for a third transportation dimension is becoming increasingly apparent if we are to achieve mobility. Millions of hours of delay on the highways and both in and over our air terminals is wasting the most priceless resource of our people—their time.

Innovation has been the source of America's greatest strength. Certainly when we have men capable of traveling through space at 17,000 miles per hour, we cannot say that we do not have the technological capacity to innovate high-speed ground service in the heavily populated corridors of our Nation.

The proposed research and demonstration program before this committee embraces this philosophy and offers the promise of a more intelligent framework for transportation policies, and the Greater Boston Chamber of Commerce urges its approval and support by the Congress.

APPENDIX I

LOSS OF HIGHWAY EFFICIENCY AS A RESULT OF INCREASED TRAFFIC VOLUME

1. If a car length is 15 feet and spacing between cars of one car length for every 10 miles of speed is maintained, as recommended by the safety council, then the number of cars occupying one lane of highway at a given constant speed of traffic movement is as follows:

Speed	Number of cars per lane, 1 mile of highway per lane
0	352.0
10	176.0
20	117.3
30	88.0
40	70.5
50	58.7
60	50.3
70	44.0

2. Under the same terms and conditions, the flow of cars per lane through 1 mile of highway is:

Speed	Traffic flow per hour
0	0
10	1,760
20	2,360
30	2,640
40	2,810
50	2,930
60	3,020
70	3,080

The traffic volume figures must be further modified downward since at higher speeds drivers for safety reasons increase the space between cars at a faster rate.

STATEMENT OF THE CONNECTICUT DEVELOPMENT COMMISSION

The Connecticut Development Commission is the official State agency charged with the responsibility of furthering Connecticut's economic development.

Within the structure of the Connecticut Development Commission is the Connecticut interregional planning program which is a comprehensive state-

wide land use, resources, and transportation planning effort. This program is a mechanism for the preparation and sponsorship of a long-range, statewide comprehensive plan to cope with the problem and exploit the opportunities of Connecticut's indicated growth and development.

Through the program, in concert with our State highway department and department of agriculture and natural resources, we are trying to discover the most efficient patterns of development for Connecticut's future. In so doing, we recognize that we are already working from a base of one of the most densely populated States in the Union and one which is growing faster than any other New England or Middle Atlantic State. We are fully aware that the efficient intercourse between our communities, as well as between Connecticut communities and the great metropolitan centers of New York and Boston, is essential if we are to avoid a static society.

Based on studies made in our planning program it was revealed that Connecticut's population has grown from 237,946 in 1790 to 2,525,234 persons in 1960 and is projected to be 3.1 million in the year 1970, 3.7 million in the year 1980, 4.6 million in the year 1990, and 5.6 million in the year 2000.

Although there are no published data on the carriage of passengers by auto and ferry in Connecticut, in 1960 the railroads carried about 21 million passengers, intrastate buses 85 million, and airlines 541,000. The 1960 census revealed that 70 percent of the State's population use automobiles in their journey to work, 9 percent ride buses, 2 percent use trains, 10 percent walk to work, and 4 percent work at home. (Data on the remaining 6 percent were not reported.)

The Interstate Highway System that is presently under construction is expected to be completed by 1972 or 1973. This system has been designed to carry the traffic that will exist in approximately the year 1985-90. One can expect that after 1980 further plans will have to be forthcoming to accommodate the increase in population. Automobile registrations in Connecticut are expected to rise from their current level of about 1 million vehicles to between 1.5 and 2.1 million autos by the year 1990. This great increase in traffic will undoubtedly lead to considerable congestion on the States highways, part of which could be alleviated by the construction of new high-speed ground transportation facilities.

It has been estimated that within 20 years the population of the northeast corridor will have increased 30 percent on the basis of present projections. Some groups are convinced that improved rail facilities are the answer to the corridor problems. Others have suggested revolutionary new modes of transport. Which one shall it be?

Due to the complexity in nature of intrastate and Interstate transportation problems, we believe the assistance of the Federal Government in research and development is not only most helpful but absolutely necessary in large metropolitan areas such as the northeast corridor. We must also emphasize the tremendous sums of money that must be committed to even the least costly new transportation systems that have been suggested by various private and governmental bodies.

While this statement is oriented principally to the problems of the northeast corridor, and more particularly Connecticut we are fully aware that the impact of metropolitanization and increased transportation needs, if not met with integrated transportation systems, can stagnate development in other major areas of our country. It is not necessary to repeat such testimony as already related to you from the Department of Commerce. We feel it is not only essential to our State, but also in the national interest that major research and development be undertaken by the U.S. Government to find the answer to a continually deteriorating transportation system.

The above reasons, in brief are why the Connecticut Development Commission supports and urges passage of House of Representatives bill No. 5863.

STATEMENT BY MR. SUMNER MYERS, NATIONAL PLANNING ASSOCIATION

Mr. Chairman, I am Sumner Myers, associated with the National Planning Association in Washington and the Institute of Public Administration in New York. I recently had the privilege of serving as a member of the Corson Panel, an advisory group to the Secretary of Commerce in the field of technology and transportation.

In its recent study of the current status of research and development in transportation, the Panel found serious deficiencies in high-speed ground transportation and in transportation statistics.

H.R. 5863 will go a long way toward implementing the recommendations of the Corson Panel. I would, therefore like to express my support for this legislation. I would especially like to stress the importance of section 2 of the bill which authorizes the Secretary to collect transportation statistics that will contribute to sounder national transportation policymaking.

As the problems of this urbanized and industrialized society become more and more complex, solutions increasingly depend on the availability of reliable data. This is especially so with respect to transportation problems.

There has long been a need for coordination and systematization of the extensive and diversified Government programs that produce transportation statistics. Much of the statistical information now available is produced as a byproduct of the performance of the regulatory or operating functions of agencies in the transportation—yet the information is also the principal source of statistics for policy-oriented studies.

H.R. 5863 will authorize the Secretary of Commerce to bring together systematically a wide variety of essential transportation statistics. The bill will further authorize the Secretary to collect data to fill gaps in the existing information. Every user of transportation data has been aware of the need for more comprehensive and detailed information concerning transportation.

The transportation industry contributes more than \$100 billion annually to the GNP. An industry of this magnitude must be better understood than it is now if effective policy is to be made.

Mr. Chairman, I urge favorable consideration for this legislation.

Thank you.

STATEMENT OF THE AEROSPACE INDUSTRIES ASSOCIATION

The Aerospace Industries Association of America, Inc., whose members have had extensive experience in research and development and systems engineering in many facets of transportation, is pleased to offer its views on H.R. 5863, a bill "to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation, and for other purposes."

We recognize the necessity for comprehensive consideration of the Nation's transportation requirements, and believe that Federal commitment for research and development in high-speed surface transportation, as H.R. 5863 would provide, could be an important step in the right direction. Certainly, an adequate and balanced transportation system is an essential national need and one that must be met if we are to come to terms with the transportation requirements arising from the increasing growth, urbanization and mobility of our population.

In high-speed ground transportation, technology which would provide a new level of capability is now available. However, there must be an organized research and development effort if this technology is to be adapted properly. Such an organizational effort would consist of establishing requirements against present and future needs, identifying feasible methods of achieving established goals, determining technological areas that demand specific efforts, and applying resources to those areas.

If progress is to be achieved, our transportation systems must provide speed, convenience and safety that will win public and business acceptance. Where high-speed ground transportation is called for, it must be both efficient and reliable. And this involves investigation into several technical areas which offer substantial promise.

For example, if speeds considerably in excess of those of present surface vehicles are to be attained, advanced aerodynamic characteristics must be incorporated. The configurations must take into consideration such properties as external shapes, weights, strength, methods of propulsion, stabilization and control, and shock and noise attenuation. Also, the vehicles will require advanced suspension systems, braking and other safety devices, and instant and reliable instrumentation. These are but a few of the specific areas in which research and development can offer a few substantial benefits.

Then there are those less direct but no less important advanced engineering processes which should be applied to determine the best design of a transportation network. Included would be the integration of all travel modes, the

best interfacing of intercity and intracity systems and the best scheduling routines for highest utilization of capacity.

Computers could be used for the control of individual vehicles as well as for the control of complete systems. These same computers may be designed also to handle customer billing and future scheduling. In such a high-speed system, the latest communication techniques can be applied to great advantage.

In order to achieve a high degree of efficiency within the overall transportation complex, the relationship between any high-speed ground system and other advanced modes of travel must be considered. One such system, which merits serious investigation, would be the use of vertical takeoff and landing aircraft as a network intercity link. This innovation would provide both an alternative and a supplemental system for use in many congested areas of the country.

Against a background of considerable experience in conducting research and development in pursuit of many of the most complex and imperative goals that the United States has established, the members of our association cannot stress too strongly the benefits to be realized by committing resources to research and development in the proper manner, and at the opportune time. It is our firm conviction that the time has come, not only for beginning research and development in high-speed ground transportation, but for launching a comprehensive effort toward the development of an integrated transportation system which will make efficient use of all modes of transportation and will help meet the growing transportation needs of the Nation.

Therefore, in supporting this legislation, we propose that the bill be expanded so that research and development can be undertaken to explore all forms of high-speed transportation systems—whether by ground, air, or sea. For it is only in a comprehensive approach and in thinking that does not restrict itself to any one mode of transportation that we can begin to find the solutions for one of the most increasingly complex problems of our times.

STATEMENT OF DONALD S. BEATTIE, EXECUTIVE SECRETARY-TREASURER, RAILWAY LABOR EXECUTIVES' ASSOCIATION

My name is Donald S. Beattie. I am executive secretary-treasurer of the Railway Labor Executives' Association. I respectfully submit the following statement on behalf of that association which consists of the chief executive officers of 21 standard national and international railway labor organizations and the president of the Railway Employees' Department, AFL-CIO, and speaks for virtually all of railroad labor on H.R. 5863. I wish to thank the committee for affording us the opportunity to have our views on this important legislation included in the record of the hearing.

H.R. 5863, if enacted into law, could well provide the means of appreciably diminishing the serious traffic congestion problem which exists in the area between Washington, D.C., and Boston, Mass. This problem grows more serious daily and we think it obvious that the solution to this problem must be found quickly. H.R. 5863 would seem to be the only practicable means available to find a solution to that problem. H.R. 5863 could also be the means of preserving to this Nation its rail passenger service which has eroded swiftly since the passage of the Transportation Act of 1958 which amended the Interstate Commerce Act by the inclusion of section 13a permitting the railroads to discontinue interstate passenger trains at will unless the Interstate Commerce Commission, within 4 months, can determine that the particular trains involved are required by the public convenience and necessity and that their continued operations are not an undue burden on the railroads or interstate commerce. As the Secretary of Commerce has noted, even in the northeast corridor which has a relatively high volume of passenger traffic, the railroads lack the economic incentive to make improvements in the quality of service. In almost all of the remainder of the country the incentive of most of the railroads has been to rid themselves of passenger service with the aid of section 13a. If rail passenger service is to be preserved, as it admittedly must be, legislation of this type must be enacted.

While the association supports the end toward which H.R. 5863 is directed, it recognizes that many of the employees represented by its members will be adversely affected by the demonstration projects contemplated in sections 1 and 3 of the bill. In the recently enacted Urban Mass Transportation Act of

1964 (Public Law 88-365) there was included section 10(c) which provided protection to employees who would be adversely affected by the carrying out of the purposes of the bill. In section 5(2)(f) of the Interstate Commerce Act the Congress provided protection for employees affected by the carrying out of its provisions. The same is true with respect to section 1(18) of the Interstate Commerce Act. Indeed, as far back as 1933 the Congress, when enacting legislation which would adversely affect the employees of the railroads, provided for the protection of their interests. H.R. 5863 falls within the same category as the Urban Mass Transportation Act of 1964 and the Interstate Commerce Act in that the gains to be made, will be made, to some extent at least, at the expense of employees who have devoted their lives to the railroad industry.

For these reasons the association proposes an amendment to H.R. 5863 based upon section 10(c) of the Urban Mass Transportation Act of 1964. This amendment would continue the congressional policy of amelioration of the adverse effects which employees suffer as a direct result of a congressional act.

If amended, along the lines of section 10(c) of the Urban Mass Transportation Act of 1964, we are convinced that H.R. 5863 will go a long way toward solution of the problem of highway strangulation now confronting the east coast of this country between Washington, D.C. and Boston, Mass., and the preservation of rail passenger service in this country. With the amendment which we propose H.R. 5863 will have the wholehearted support and cooperation of railroad labor in the effective and efficient carrying out of its purposes.

PROPOSED AMENDMENT TO H.R. 5863, SUBMITTED BY THE RAILWAY LABOR
EXECUTIVES ASSOCIATION

Section 5 of H.R. 5863 shall be redesignated section 6 and a new section 5 inserted as follows:

"SEC. 5. In carrying out the purposes of this Act, the Secretary shall provide fair and equitable arrangements, as determined by the Secretary of Labor, to protect the interests of employees affected by the exercise of the authority conferred by this Act. Such protective arrangements shall include, without being limited to, such provisions as may be necessary for (1) the preservation of rights, privileges, and benefits (including continuation of pension rights and benefits) under existing collective-bargaining agreements or otherwise; (2) the continuation of collective-bargaining rights; (3) the protection of individual employees against a worsening of their positions with respect to their employment; and (4) paid training or retraining programs. Such arrangements shall include provisions protecting individual employees against a worsening of their positions with respect to their employment which shall in no event provide benefits less than those established pursuant to section 5(2)(f) of the Act of February 4, 1887 (24 Stat. 379), as amended. Contracts and agreements entered into pursuant to the provisions of sections 1 and 3 hereof for the purpose of developing, testing or demonstrating new facilities, equipment, techniques and methods shall specify the terms and conditions of the protective arrangements."

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C., July 7, 1965.

HON. ROBERT C. WEAVER,
Administrator, Housing and Home Finance Agency,
Washington, D.C.

DEAR MR. WEAVER: Your letter of May 24 in support of H.R. 5863, a bill to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation, states that "the proposed research and development will be closely related to intraurban transportation research and development assisted by this Agency under the Urban Mass Transportation Act of 1964."

Inasmuch as in the hearings conducted on this and related bills the opportunity did not present itself for your appearance to describe just what type of transportation research your agency is engaged in and how it differs from that proposed to be authorized by this bill, I should welcome your informing me of just what it is that you are authorized to do and are doing in this field and how this differs from that which is proposed to be done under this legislation.

I must confess that I am somewhat perplexed about the differentiation in the work of the two agencies and do not fully appreciate your reference to "Intra-urban" transportation research and development in the light of the press announcements of a few days back to the effect that they were assisting the New Haven Railroad passenger service in the amount of \$3 million and a more recent announcement of your assistance to passenger service of the railroads in New Jersey in the amount of some \$8.7 million. It would appear that this is in the nature of "Interurban" and thus makes it difficult clearly to distinguish the difference in the activities now being undertaken by you and those proposed to be undertaken by the Secretary of Commerce.

We have written to the Under Secretary of Commerce for Transportation, Mr. Alan Boyd, also requesting a clarification of the respective jurisdictions of the two agencies in the event this legislation be enacted. It would seem appropriate to me that in the reply to the request being made of you, the two of you might consult with one another so that we might have the full picture of just what each of you would be authorized to do and what you propose to do.

Sincerely yours,

OREN HARRIS, M.C., *Chairman.*

HOUSING AND HOME FINANCE AGENCY,
OFFICE OF THE ADMINISTRATOR,
Washington, D.C., July 14, 1965.

HON. OREN HARRIS,
*Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives,
Washington, D.C.*

DEAR MR. HARRIS: This refers to your letter of July 7 concerning H.R. 5863, a bill to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation. Particularly, your request for clarification is noted with respect to the existing research activities of the Housing and Home Finance Agency as authorized by the Urban Mass Transportation Act of 1964, and the program which would be authorized by H.R. 5863.

The basic purposes of the urban mass transportation programs of the 1964 act, for which responsibility was assigned to this Agency, are:

- (1) To assist in the development of improved mass transportation facilities, equipment, techniques, and methods;
- (2) To encourage the planning and establishment of areawide urban mass transportation systems needed for economical and desirable urban development;
- (3) To provide assistance to State and local governments and their instrumentalities in financing such systems, to be operated by public or private mass transportation companies as determined by local needs.

Section 6 of the act authorizes the Housing Administrator to undertake research, development, and demonstration projects in all phases of urban mass transportation (including the development, testing, and demonstration of new facilities, equipment, techniques, and methods) which he determines will assist in the reduction of urban transportation needs, the improvement of mass transportation service, or the contribution of such service toward meeting total urban transportation needs at minimum cost.

Section 8 requires that the Housing Administrator and the Secretary of Commerce consult on general urban transportation policies and programs and exchange information on proposed projects in urban areas to assure coordination of highway and railway and other mass transportation planning and development programs.

Thus, the Housing Agency is primarily concerned with mass transportation as it serves an urbanized area, and as it may influence the development of communities. This concern is, however, closely coordinated with the broader transportation interests of the Department of Commerce through close liaison and consultation.

The distinction between "intracity," or urban transportation and "intercity" is largely related to the inherent characteristics of the two services. While there is some overlapping, as in the case of existing commuter rail services, the trend is clearly toward separate operations with careful planning of their interchanges.

As you indicate, the HHFA program has already become involved in certain (commuter rail) problems of the New Haven Railroad, and of the railroads in New Jersey. The distinction is that HHFA is concerned with suburban commuter services, while the Department of Commerce is concerned with longer line intercity passenger services. Our objectives in such situations are those associated with creating a stable and improved commuter service as a part of unified or coordinated metropolitan transportation systems, rather than continuing it as an incidental, and seemingly unwanted, part of long-haul railroad operations.

In the development of the HHFA New Haven project, for example, communication was maintained with the Department of Commerce and with the Interstate Commerce Commission to make sure that no duplicating or conflicting efforts were being undertaken by the Federal Government. Where individual efforts of one agency could support those of others, information has been readily available and exchanged.

Urban transportation, characteristically, is primarily a service to large volumes of regular riders whose trips average 30 minutes or less, and whose maximum travel times rarely exceed 60 minutes. Trip purposes are primarily to get to and from work, or school, with shopping a third but somewhat lesser category. Stops must be conveniently located and are spaced short distances apart; between Grand Central and New Haven on the New Haven commuter service, for example, there are 29 commuter stations in the 72 miles, averaging 2.5 miles apart.

Equipment for such service requires much lower top speeds than intercity transportation of the type contemplated in H.R. 5863 studies—a maximum of, perhaps, 80 miles per hour as contrasted to 150 miles per hour or more in "high-speed ground transportation." Acceleration and deceleration associated with frequent stops, however, are much more important. Also, provisions for rapid loading and unloading of passengers are critical in minimizing time at stops; and seating arrangements, as well as capacity for standees at peak hours, are developed from different criteria than those applied to the development of intercity passenger equipment.

To the extent that the proposed H.R. 5863 research might provide basic technical developments which could be adapted to the needs of urban transportation, it is believed that existing relationships are adequate to insure that the proposed research and development can be of support to, and avoid any duplication of intracity transportation research, development and demonstration projects assisted by this Agency under the Urban Mass Transportation Act of 1964.

Sincerely yours,

ROBERT C. WEAVER, *Administrator.*

THE UNDER SECRETARY OF COMMERCE FOR TRANSPORTATION,
Washington, D.C.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Pursuant to our correspondence with Chairman Stagers, and your letter of July 7 to Dr. Robert C. Weaver, Administrator of the Housing and Home Finance Agency, a copy of which was sent to me, I shall try to explain the Department of Commerce's views of the differences between the New York-Connecticut commuter demonstration project supported by HHFA and the demonstration projects which the Department of Commerce plans under H.R. 5863.

Our understanding is that the demonstration project to which HHFA will contribute \$3 million is intended to seek new and more satisfactory ways of providing rail service to 25,000 or so daily commuters who presently travel to and from New York on the New Haven Railroad. There is little doubt that a real crisis has existed with respect to the continuance of this service and that its demise would have important effect on the economy of the whole Metropolitan New York area.

By contrast, the focus of the proposed demonstration projects under the Commerce Department high-speed ground transportation program is to provide a test of whether the continuance and the expansion of the intercity noncommuter rail passenger service is economically viable and whether intercity rail

passenger service can be relied upon as an important transportation resource for the future.

A demonstration between Boston and Providence was chosen as a good test of the economic feasibility of short intercity service utilizing a new gas turbine propulsion system in a densely populated region where rail transportation has encountered severe financial difficulties in recent years. The roadbed between Boston and Providence permits the testing of substantially higher speed service at lower cost than can be found anywhere on the New Haven Railroad. The Federal Government will pay nothing to the New Haven Railroad beyond the amounts required to obtain the test. Users of the service will pay fares intended to cover the cost of the provision of such service. Moreover, once the feasibility of such service has been determined, one way or the other, the demonstration will be discontinued.

The run between Boston and Providence is approximately 45 miles, a distance which is at the outer limits of commuting distance; the bulk of the passenger travel between the terminal points Boston and Providence is not home to work and return. It constitutes movement between two discrete metropolitan areas having important economic, commercial and cultural relationships. In that respect, it differs from commuter service which is generally between a satellite area and a central metropolitan area.

The boundary line between interstate transportation, in which the Federal Government has primary interest, and local transportation, which is more largely the responsibility of the States, counties, and municipalities, is not a clear one. The Commerce Department's program focuses on the former while HHFA's focuses on the latter. However, transportation systems which are national in scope, and systems which are largely local, must intermix if the system as a whole is to be efficient. A working basis for dividing responsibility where the systems intermix and are not clearly either intermetropolitan or intrametropolitan, is that where movement is predominantly between home and work in the metropolitan area it is intrametropolitan and thus comes under the HHFA program, and where the movement is predominantly non-commuter and intermetropolitan it is the responsibility of the Department of Commerce.

Sincerely,

ALAN S. BOYD.

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C., June 2, 1965.

Dr. **RAYMOND T. BOWMAN**,
Assistant Director for Statistical Standards,
Bureau of the Budget,
Washington, D.C.

DEAR DR. BOWMAN: Our subcommittee recently has initiated hearings on H.R. 5863 and related bills, which would authorize the Department of Commerce to engage in certain research and development in high-speed ground transportation and also provide in section 2 of the bill authority for the Secretary to collect transportation data, statistics, and other information which he determines will contribute to the improvement of the national transportation system.

During the course of the hearings it developed that the \$20 million proposed to be authorized for the conduct of these activities during the next fiscal year includes \$2 million for this statistical feature, of which \$500,000 is to be used to coordinate statistics in the transportation field now being collected by a number of Government agencies.

In view of my interest in the field of the census and statistics in general, I raised the question of the Secretary during the course of our hearings concerning this coordination by him of statistics and its relationship with your duties under the Federal Reports Act but felt that my question had not been fully understood. It is my understanding that since that time Dr. Stevenson of our staff has taken up with you the problem here involved and that he has been informed that after consultations between your office and persons in the Office of Transportation Research in the Department, it is clear that there is no intent on the part of the Secretary to engage in coordination of these statistics in derogation of your own responsibilities in this field.

It is my suggestion accordingly during the next few weeks while we are continuing our hearings on the bill your staff may wish to work out with those involved in the Department amended language to this section which would carry

out exactly what the Department's responsibilities in this area are to be and enable it to do the type of work in the transportation statistical field which I understand your office for some time has desired that it should do.

Sincerely yours,

HARLEY O. STAGGERS, M.C.,
Chairman, Subcommittee on Transportation and Aeronautics.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D.C., July 15, 1965.

HON. HARLEY O. STAGGERS,
Chairman, Subcommittee on Transportation and Aeronautics, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. STAGGERS: Thank you for inviting me, in consultation with representatives of the Department of Commerce, to comment on the possibility that there will be duplication of responsibility for coordinating Federal transportation statistics if section 2 of H.R. 5863 remains in its present form. You suggested that amended language for section 2 might be advisable to remove any ambiguity as to where the coordination responsibility lies. I consulted Mr. Alan S. Boyd, Under Secretary of Commerce for Transportation, on this reply, which reflects the understanding of both the Bureau and the Department.

The Bureau of the Budget reviewed section 2 of the draft legislation which became H.R. 5863 before it was submitted to the Congress. We had no objection to it because we consider it to be a general authorization "to collect transportation data, statistics, and other information," and that specific plans developed under this general authorization would be subject to the Bureau's review in accordance with the requirements of section 103 of the Budget and Accounting Procedures Act of 1950, as well as the Federal Reports Act of 1942. This is also the understanding of the Department of Commerce.

The question of potential duplication of responsibility between the Bureau of the Budget and the Department of Commerce for coordination of the statistical activities of various agencies arose because of the reference to "coordination" of transportation statistics in Secretary Connor's May 25 testimony on H.R. 5863 and in the explanatory statement, prepared by the Transportation Research Staff of the Office of the Under Secretary for Transportation, which was introduced into the record of the hearings. The Department of Commerce does not intend that H.R. 5863 would give it authorization to establish a statistical coordinating responsibility duplicating that of the Bureau of the Budget. In fact, the phrase "collate data collected by diverse Federal agencies" would have been more appropriate than "coordinate data collection * * *" to describe what was meant. Secretary Connor's answer to a question by you at the hearing illustrates this point.

("* * *") As I have indicated, this would be a simple coordinating agency which would not duplicate the work that is now being done by other Government agencies for their purposes, but there are gaps in the whole outline of work which we think [need] to be filled and that our main intent would be to fill those gaps as well as pull together the statistics from the other agencies that are useful for this national transportation planning work."

This is an activity, alluded to in the last paragraph of your letter, which we consider to be uniquely the function of the Office of the Under Secretary of Commerce for Transportation. We do not believe that it conflicts with the statistical coordination responsibilities of the Bureau of the Budget. Indeed, development of a statement of the needs for transportation statistics by the agency primarily responsible for Federal transportation policy is an important prerequisite to Budget Bureau planning of a more meaningful Federal transportation statistics program.

I suggest that incorporation of our exchange of correspondence into the hearings on H.R. 5863 would obviate the necessity of amending section 2 to clarify what the Department's responsibilities in coordinating Federal transportation statistics are. Making this exchange of correspondence part of the legislative history should accomplish the objective which you, the Bureau and the Department seek.

Sincerely yours,

RAYMOND T. BOWMAN,
Assistant Director for Statistical Standards.

BOSTON, MASS., May 20, 1965.

HON. HARLEY O. STAGGERS,
*Chairman, Subcommittee on Transportation and Aeronautics,
 Committee on Interstate and Foreign Commerce,
 House of Representatives, Washington, D.C.:*

On March 4 this year I appeared before the Senate Committee on Commerce to outline the problems and needs of the people of Massachusetts with respect to rail transportation. On that occasion I indicated that we in Massachusetts enthusiastically welcome and need the assistance of the Federal Government in the preservation and rejuvenation of the railroads which are so vital to the economy of our State and of the entire New England region consistent with this approach, we welcome Federal legislation to undertake research and development of high-speed ground transportation. H.R. 5863 would authorize such research and development. We therefore hope that it will receive the favorable consideration of your committee.

JOHN A. VOLPE,
Governor of Massachusetts.

EASTERN RAILROAD PRESIDENTS CONFERENCE,
 New York, N.Y., June 23, 1965.

HON. HARLEY O. STAGGERS,
*Chairman, House Subcommittee on Transportation and Aeronautics,
 Washington, D.C.*

DEAR MR. STAGGERS: The Eastern Railroad Presidents Conference today adopted the following policy with respect to the northeast corridor project:

"Throughout the Nation, Government has spent billions to develop, construct, operate and promote the airway, waterway, and highway systems. They have become the most modern of their kind in the world.

"Such Government policy has uniquely ignored the railroads. The modern railroad system which exists is the result of what has been possible within the limited resources of an enterprise operating against such economic disadvantages.

"If railroads are to play a vital role in meeting the Nation's future transport needs, they need to be accorded the same developmental and promotional benefits given by Government to other modes of transportation. This is in the public interest.

"The northeast corridor project proposed by the Department of Commerce recognizes this need. In principle, it is a step in the direction of more equitable treatment among transport modes, so greatly needed to strengthen the Nation's transport system."

It is respectfully requested that the foregoing policy statement be made a part of the record of current hearings by the House Subcommittee on Transportation and Aeronautics on the northeast corridor project.

Sincerely yours,

A. E. PERLMAN.

AMERICAN MACHINE & FOUNDRY Co.,
 New York, N.Y., July 7, 1965.

HON. HARLEY O. STAGGERS,
*Chairman, Subcommittee on Transportation and Aerospace, Interstate and
 Foreign Commerce Committee, U.S. House of Representatives, Wash-
 ington, D.C.*

DEAR MR. CHAIRMAN: We are interested in the proposed research and development program on high-speed ground transportation, announced by the President earlier this year and subsequently introduced in the House of Representatives by Congressman Oren Harris (H.R. 5863).

Some \$20 million of private capital has been invested by AMF and its associates for research development and testing of an advanced, all-weather mono-rail system. However, private industry alone cannot sustain the burden of such a high-cost program because of the apparent high risk and the long-range nature of the problem.

It is, therefore, most encouraging that your committee is taking action on a bill that would authorize Federal support of research and development for this and other farsighted forms of modern and future ground transportation.

We wholeheartedly support the proposed legislation and wish to offer to your committee such assistance as we might be able to provide. You may be interested in a brief résumé of our activities in the transportation field to date.

Several years ago, American Machine & Foundry Co. recognized the need for development of advanced ground transportation systems. In 1963 we conducted an evaluation of the various transit modes then in existence or in advanced stages of development. On the basis of this study, we came to the conclusion that the SAFEGE suspended monorail system offered the greatest promise for the future, both technically and economically. We then acquired a license from SAFEGE Transport, Inc., for exclusive rights to the system in the United States.

Experience gained from the investment of time and money in our monorail system has brought us to the realization that research and development costs for ground transportation need to be considered in this same category as those for aircraft, space, highway and other programs which were beyond the means of private enterprise in their early stages and which now serve the interests of the entire Nation.

It is on this premise that we urge favorable action by your committee on the pending bill, H.R. 5863. And it is from this foundation of experience that we offer our assistance to your committee.

Faithfully,

CARTER BURGESS, *Chairman.*

NORTHWESTERN UNIVERSITY,
THE TECHNOLOGICAL INSTITUTE,
DEPARTMENT OF CIVIL ENGINEERING,
Evanston, Ill., July 7, 1965.

HON. HARLEY O. STAGGERS,
Chairman, Subcommittee on Transportation and Aeronautics, Committee on Interstate Commerce, U.S. House of Representatives, Washington, D.C.

DEAR CONGRESSMAN STAGGERS: I have just finished reading H.R. 5863, which is a bill to authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation, and for other purposes, and Secretary Connor's supporting statements, and I want to encourage your support of that bill and related financing.

We are heavily involved in transportation research and development here at Northwestern and a number of us have had occasion to study the work of the Department of Commerce in the high-speed ground transportation research and development areas. There is no question but what the Commerce Department work meets a national need and that it is of high caliber. There is real need to meet requirements for intercity transportation in our emerging megalopolis areas, and the Department of Commerce would appear to be the only agency with the resources and authority to do the basic studies providing ways to meet these transportation problems.

Section II of H.R. 5863, which refers to transportation data, statistics, and other information, is an especially important part of the work. Our lack of basic data upon which to plan transportation and for use in meeting current transportation needs is appalling. If the Department of Commerce can work more effectively in this area, there should be many efficiencies in private and public local, metropolitan, State, and regional and national transportation activities. We badly need basic work to determine what kinds of statistics should be developed, how current they should be, and how they should be managed.

Yours very truly,

W. L. GARRISON, *Professor.*

AMALGAMATED TRANSIT UNION,
Washington, D.C., July 6, 1965.

Re House bill 5863.

HON. HARLEY O. STAGGERS,
*Chairman, Subcommittee on Transportation and Aeronautics,
House Interstate and Foreign Commerce Committee,
U.S. House of Representatives, Washington, D.C.*

DEAR CONGRESSMAN STAGGERS: This international union of which I have the honor to be president, is the dominant union in the local transit and over-the-road bus operations in the United States. Thus, the union represents all of the operating employees of the Greyhound Corp. and a substantial number employed

in the Trailways system. The latter two companies are significant carriers of passengers not only throughout the country, but also in the so-called northeast corridor. Nationally we represent over 18,000 employees in these two systems. H.R. 5863 is, therefore, of interest to this international union and its members.

It is obvious to this union that serious consideration must be given to some solution of the increasing problem of effective, efficient, and comfortable transportation of passengers on the ground at high speeds. H.R. 5863 proposes to use Federal funds to initiate research and development of high-speed ground transportation. We can and do agree with this objective.

We reserve our acceptance of the proposed legislation, however, unless it is corrected to relieve the affected transportation employees from bearing the full burden of the cost of the resulting technological improvements and development. While this international union agrees with the objective toward which H.R. 5863 is directed, it recognizes that many of the employees it represents will be adversely affected by the demonstration projects contemplated in sections 1 and 3 of the bill.

In the recently enacted Urban Mass Transportation Act of 1964 (Public Law 88-365) there was included section 10(c) which provided protection to employees who would be adversely affected by the carrying out of the purposes of the bill. In section 5(2)(f) of the Interstate Commerce Act the Congress provided protection for employees affected by the carrying out of its provisions. The same is true with respect to section 1(18) of the Interstate Commerce Act. Indeed, as far back as 1933 the Congress, when enacting legislation which would adversely affect the employees of railroads, provided for the protection of their interests.

H.R. 5863 falls within the same category as the Urban Mass Transportation Act of 1964 and the Interstate Commerce Act in that the gains to be made will be made, to some extent at least, at the expense of the employees who have devoted their lives to the transportation industry.

For these reasons, this international union proposes an amendment to H.R. 5863 based upon section 10(c) of the Urban Mass Transportation Act of 1964. This amendment would continue the congressional policy of amelioration of the adverse effects which employees suffer as the result of a congressional act.

If thus amended, this international union would have no objection to the enactment of H.R. 5863. The amendment we propose is attached.

May we express our appreciation for being permitted to present our views to the committee in this fashion.

Very truly yours,

JOHN M. ELLIOTT,
International President.

PROPOSED AMENDMENT TO H.R. 5863 SUBMITTED BY THE AMALGAMATED
TRANSIT UNION

Section 5 of H.R. 5863 shall be redesignated as section 6 and a new section 5 inserted as follows:

"SEC. 5. In carrying out the purposes of this Act, the Secretary shall comply with the provisions of sections 3(c) and 10(c) of the Urban Mass Transportation Act of 1964."

THE NEW ENGLAND COUNCIL
FOR ECONOMIC RESEARCH AND DEVELOPMENT.
Boston, Mass., June 30, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
U.S. House of Representatives, Washington, D.C.

DEAR CONGRESSMAN HARRIS: On behalf of the New England Council, I would like to take this opportunity to submit for your consideration our views on H.R. 5863 and companion bills which would authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation.

The council is a private, nonprofit organization and is composed of 2,200 members drawn from business, labor, education, and government within New England. It is devoted to the development of a sound and dynamic region through utilization of all human, natural, and material resources. It seeks to identify the region's broad public interest and to promote appropriate programs of action to implement its findings. The council is, therefore, vitally interested in H.R. 5863 and companion bills.

Any proposal that seeks to improve passenger transportation to, from, and within the region, is a matter of keen interest to the New England public. With this in mind, the New England Council believes that H.R. 5863 deserves most emphatic and wholehearted support. The problems in providing adequate passenger service by all common carriers require immediate solutions. They cannot, in our opinion, be resolved without Federal assumption of responsibility, without the expenditure of large sums of money, rail service equipment lend themselves readily to experimentation at speeds of 100 to 120 miles an hour. The generally excellent condition of the roadbed between New York and Washington and the availability of the northeast corridor from Boston to Washington. The prerequisites for high-speed demonstration projects vary within the northeast corridor from Boston to Washington. The prerequisites for high-speed demonstration projects vary within the northeast corridor from Boston to Washington.

The prerequisites for high-speed demonstration projects vary within the northeast corridor from Boston to Washington. The prerequisites for high-speed demonstration projects vary within the northeast corridor from Boston to Washington. The prerequisites for high-speed demonstration projects vary within the northeast corridor from Boston to Washington. The prerequisites for high-speed demonstration projects vary within the northeast corridor from Boston to Washington. The prerequisites for high-speed demonstration projects vary within the northeast corridor from Boston to Washington.

New England provides promising opportunities for experimentation in the following areas:

- (1) Rail service along the shoreline—Boston-Providence-New York.
- (2) Rail service for such high-density areas as Springfield and Hartford as part of the overall project of a more viable passenger transportation system.
- (3) Bus service in New England, with special reference to providing the smaller communities with transportation to the major rail terminals or airports. This problem is particularly severe in northern New England, where rail passenger transportation is virtually nonexistent. The design of demonstration projects, moreover, should incorporate the development of integrated bus and train schedules.
- (4) Availability of modern, adequate, and well-located terminals. The present unsystematic location of terminals for different purposes is certainly an element in New England's overall passenger transport problem, and should, therefore, be examined in this light. Great danger exists that valuable rail terminal properties in New England cities may be diverted to other uses, while at the same time acute inadequacies develop for bus terminals.

It is our understanding that in the first year under this bill it is intended to allocate about half of the \$20 million for research and development work applicable to the next decade. Though it is, of course, important to work toward the more distant future, it is far more urgent to solve the problems which exist today and those of the immediate future. Moreover, there is an ever-present threat of abandonment of a substantial portion of rail passenger service in New England. We therefore urge that serious consideration be given to examining the major portions of the funds available in the early years of this program for demonstration projects with immediate application.

In our view, air transportation can meet the needs for longer distance, very-high-speed passenger transportation now and in the foreseeable future. Today airlines render excellent service on most trips of this distance: for example, between Boston and Philadelphia, and Boston and Washington. There is every reason to believe that this air service will be further improved in the near future as jetprop and jet airplanes become increasingly available for these runs. It may be presumed that more modern planes with a greater frequency of service will soon be supplemented by improved all-weather facilities at New England airports, strengthening still further the competitive position of commercial air travel on the longer corridor hauls, and expanding rapidly the ability to move more passengers at great speeds with improved dependability. Indeed, the improvement of facilities for instrument landings, at both large and smaller airports in New England, should be awarded a high priority in transport planning.

Finally, we strongly endorse the utilization of funds under H.R. 5863 for origin and destination studies. We hope that the results of such studies will be given wide publicity with maximum dispatch.

In summary, we would like to stress that the conditions requiring improvements in rail service within the northeast corridor, and particularly in New England, foreshadow the problems of other parts of the country as they reach the same degree of population density and industrial concentration. The central issue before the committee appears to us to be whether to emphasize immediate or more distant needs. While we recognize the desirability of long-range research and development work, it is our view that the solution of today's rail passenger problems must be assigned top priority.

Respectfully yours,

GARDNER A. CAVERLY,
Executive Vice President.

COMMERCE AND INDUSTRY ASSOCIATION OF NEW YORK, INC.,
New York, N.Y., May 18, 1965.

HON. OREN HARRIS,
*Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.*

DEAR MR. CHAIRMAN: The board of directors of Commerce and Industry Association, the largest service chamber of commerce in the East, has adopted a policy recommended by its commuter transportation committee in support of the proposal that research and development in high-speed ground transportation be undertaken by the Federal Government.

We therefore urge favorable consideration by your committee of legislation which authorizes the Secretary of Commerce to undertake such a program. We feel that it is important to communicate to you the sense of the New York business community, which we represent, that it is in the public interest to move to meet the critical intercity transportation problems which now exist and will greatly multiply by 1980. We believe research in high-speed ground transportation may save many billions of dollars in doubling or tripling our air and highway expenditures, which in any event do not solve the problem of access to the city centers. Such legislation is an important step in that direction.

We concur with the thoughts expressed in the President's letter to the Speaker of the House of Representatives, dated March 4, 1965, in which he underscored the need for legislation of this kind.

We would greatly appreciate having this expression of our opinion considered by the committee and made a part of the record of hearings on this legislation.

Very truly yours,

GARRARD W. GLENN,
Chairman, Commuter Transportation Committee.

AIR TRANSPORT ASSOCIATION,
Washington, D.C., July 8, 1965.

Re H.R. 5863.

HON. HARLEY O. STAGGERS,
Chairman, Transportation and Aeronautics Subcommittee, Committee on Interstate and Foreign Commerce, U.S. House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: These comments on behalf of the scheduled airlines are submitted in connection with H.R. 5863, the legislation pending before the committee which would authorize the Secretary of Commerce to undertake research and development in high-speed ground transportation. Although the bill is drawn in such broad general terms as to leave the objective and the procedure poorly defined, the testimony of Secretary Connor has served to clarify somewhat the Department's intentions in carrying it out. Since the general purpose of the legislation appears desirable, the airlines do not oppose it.

Our principal concern is not with the proposal to lend Government assistance to research and development in high-speed ground transportation, but rather that the preoccupation with such a program may cause those in charge of its administration to fail to give adequate consideration to other potential transportation solutions to the national transportation problem. The danger of falling into such a restricted outlook becomes apparent in the recent decision to

embark on an extensive rail improvement program at the same time it was held undesirable as a matter of national interest to continue the support of passenger helicopter operations.

In testimony earlier this year in the Senate, touching on the unwise withdrawal of the Federal Government from further support of the helicopter experiment, we expressed our concern over urban growth and congestion and the Nation's requirements for transportation facilities to cope with that growth. We said in part:

"If this problem of transportation in urban areas is not to become a major brake on the productivity of our cities, imaginative solutions must be found. Many solutions are being considered and many will be needed.

"We have built expensive highways. We will have to build more. But land for highways in urban areas is becoming increasingly scarce. And when this land is available, its acquisition is becoming prohibitively expensive. Combined land acquisition and construction costs of highways in some urban areas now run as high as \$50 million a mile.

"We will have to apply a whole new kit of transport tools. This might well include the high speed railbed such as is proposed for the northeast corridor from Boston to Washington, even at a final cost of from \$2 to \$4 billion. We are also talking of multimillion-dollar monorails and new subway systems."

We indicated our belief that the helicopter and other vertical or short takeoff lift aircraft hold considerable promise for making a substantial contribution toward meeting this metropolitan area congestion problem. Yet the decision was made to terminate Government assistance to helicopter operators at the very time when they appear to have subsidy-free operation in sight.

In connection with the research into transportation data and statistics as provided for in the bill, would it not be advisable to clarify somewhat the purposes for which the data are to be used in contributing to the "improvement of the national transportation system"? The airlines cooperate with the Bureau of the Census in its transportation surveys, as well as the CAB in the regular collection of air traffic statistics and will be glad to cooperate with the Secretary of Commerce in any programs involving the collection of data.

In short, while the general objective of the bill is desirable, we urge that it not cause a loss of perspective on other potential transportation solutions.

Cordially,

S. G. TIPTON, *President.*

AMERICAN FEDERATION OF LABOR AND CONGRESS OF
INDUSTRIAL ORGANIZATIONS,

Washington D.C., July 7, 1965.

HON. HARLEY O. STAGGERS,

Chairman, Subcommittee on Transportation and Aeronautics, House Committee on Interstate and Foreign Commerce, U.S. House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: The House Subcommittee on Transportation and Aeronautics has before it H.R. 5863 which would authorize the Secretary of Commerce to undertake research and development in high-speed transportation for the purpose of improving the national transportation system. The AFL-CIO supports this legislation and urges that it be promptly acted upon by your subcommittee.

The problem of fast, efficient, and economical transportation between urban areas grows more serious daily. As a result of the passage of the Transportation Act of 1958, railroads have been permitted to discontinue interstate passenger trains unless the Interstate Commerce Commission determines that the particular trains involved are required by the public convenience and necessity and that their continued operation is not an undue burden on the railroads or on interstate commerce. As a result, passenger railroad service throughout the country, and particularly between the urban areas of the east coast, has been seriously eroded. While there is general agreement that some means must be found to preserve and improve rail passenger service, the current trend is in the opposite direction. The need for studies, therefore, of the type provided for in the bill is urgent.

The AFL-CIO believes that H.R. 5863 should receive favorable consideration by your subcommittee. We would point out, however, that the bill would authorize not only research into the problems of high-speed intercity transportation,

but also the development, testing and demonstration of new facilities, equipment, techniques, and methods, and such other activities as may be necessary to accomplish the purposes of the legislation. In these circumstances, we believe that there should be included in the bill provisions to protect the rights and interests of employees of existing rail transportation systems similar to those included in the recently enacted Urban Mass Transportation Act of 1964. We suggest that the bill be amended by inserting a new section 5 to read as follows: "In carrying out the purpose of this act, the Secretary shall comply with the provisions of sections 3(c) and 10(c) of the Urban Mass Transportation Act of 1964."

This amendment would continue the congressional policy of ameliorating any adverse effects which employees may suffer as a result of action based upon the studies and experiments authorized by the bill.

It is not clear to us whether there will be any appreciable amount of building or construction work under the bill. In these circumstances, we believe that provisions should be included in the bill specifying that any such work must be carried out in compliance with the provisions of the Davis-Bacon Act, as amended.

I would appreciate it if you will include this statement of our views in the record of your hearings on H.R. 5863.

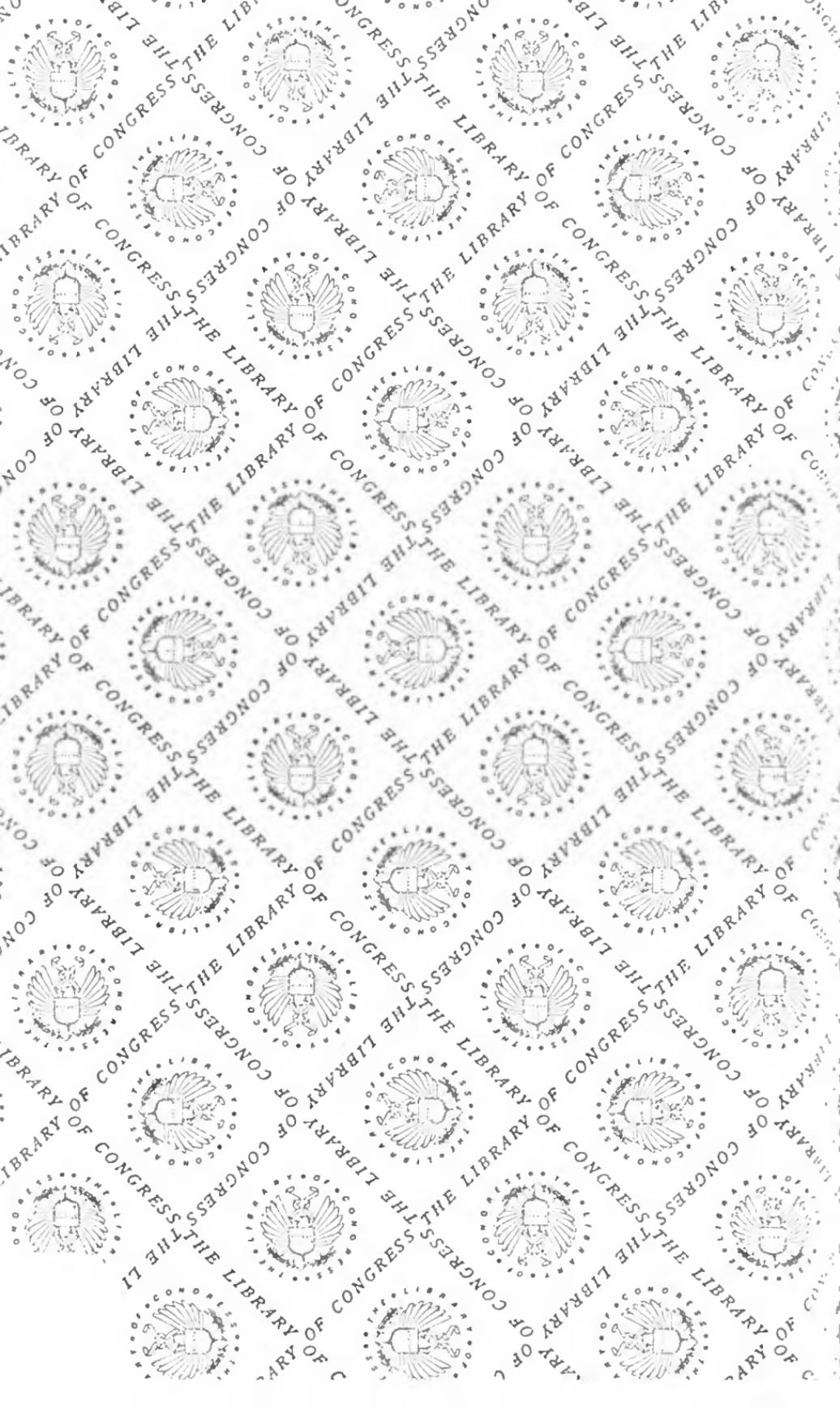
Sincerely yours,

ANDREW J. BIEMILLER,
Director, Department of Legislation.

(Whereupon at 11:45 a.m., the committee went into executive session.)



X 2 4 3





LIBRARY OF CONGRESS



0 018 423 759 3