I42
1984

PUBLIC HEARING

before

ASSEMBLY HIGHER EDUCATION AND REGULATED PROFESSIONS COMMITTEE

on

ASSEMBLY BILLS 1762 THROUGH 1765 AND ASSEMBLY BILL 1767

(Establishing various Advanced Technology Centers throughout New Jersey and creating a New Jersey Commission on Science and Technology in the Department of Commerce and Economic Development)

Held:
May 31, 1984
Municipal Building
Evesham Township, New Jersey

MEMBERS OF COMMITTEE PRESENT:

Assemblyman John A. Rocco, Acting Chairman

ALSO PRESENT:

Kathleen Fazzari, Research Associate
Office of Legislative Services
Aide, Assembly Higher Education and
Regulated Professions Committee

New Jersey State Library

* * * * * * * * * * *

TABLE OF CONTENTS

	Page
Barbara Lawrence Staff Consultant to the Governor's Commission on Science and Technology	1
Phyllis Denbo New Jersey Institute of Technology	7
Dr. Thomas Alexander Pond Chief Academic Officer and Executive Vice President of Rutgers - The State University of New Jersey	12
APPENDIX	
Testimony submitted by: New Jersey Institute of Technology	1x
Testimony submitted by: Dr. Thomas Alexander Pond of Rutgers - The State University of New Jersey	18x

* * * * * * * * * * *

mjz: 1-16

ASSEMBLY, No. 1762

STATE OF NEW JERSEY

INTRODUCED MARCH 15, 1984

By Assemblymen DORIA, RANIERI, LaROCCA, CUPROWSKI, KAVANAUGH, CHARLES, VAINIERI, GILL, GALLO, LOVEYS, MUZIANI, ZIMMER, WEIDEL, MEYER, PALAIA, Assemblywoman COOPER, Assemblymen HENDRICKSON, ROD, KOSCO, FELICE, ROONEY, PENN and Assemblywoman PERUN

AN ACT establishing an Advanced Technology Center in Hazardous and Toxic Substance Management and supplementing Title 18A of the New Jersey Statutes.

BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey:*

1. The Legislature finds and declares that the management of hazardous and toxic substances is one of the most pressing problems confronting the citizens of our State. Progress in this area is expected to produce significant health benefits and an increase in economic growth for our citizenry. The Legislature further finds that the establishment of an Advanced Technology Center in hazardous and toxic substance management is desirable.

2. For the purposes of this act:

a. "Advanced technology center" means a program of substantial and concentrated financial support that is provided to outstanding programs or departments at New Jersey's public and private institutions of higher education to promote their development into national level bases for innovative technology research.

b. "Business incubation facilities" means low cost, short-term occupancy, rental spaces wherein assistance is granted to a targeted network of new companies employing selected technologies con-

gruent with the strengths of the State's public and private institutions of higher education.

c. "Commission" means the Governor's Commission on Science and Technology or the permanent New Jersey Commission on Science and Technology as enacted into law pursuant to P. L. , c. (C.) (now pending before the Legislature as Assembly Bill No. 1767 of 1984) which was established as the successor to the Governor's Commission on Science and Technology as created by Executive Order No. 12 of 1982.

d. "Innovation partnership grants" means matching grants to academic researchers performing applied research in emerging technologies at any of the State's public and private institutions of higher education which are of strategic importance to the New Jersey economy under regulations adopted by the commission pursuant to the "Administrative Procedure Act," P. L. 1968, c. 410 (C. 52:14B-1 et seq.).

e. "Private institutions of higher education" means independent colleges, universities or institutes incorporated and located in New Jersey, which by virtue of law or character or license, are nonprofit educational institutions authorized to grant academic degrees and which provide a level of education which is equivalent to the education provided by the State's public institutions of higher education as attested by the receipt of and continuation of licensure by the New Jersey State Board of Higher Education.

f. "Public institutions of higher education" means Rutgers, The State University, the State colleges, the New Jersey Institute of Technology, the University of Medicine and Dentistry of New Jersey, the county colleges and any other public university or college now or hereafter established or authorized by law.

g. "Technology extension services" means programs that not only accelerate the application and transfer of technological innovations by the State's public and private institutions of higher education to existing industry, but also adapt these innovations to the requirements of individual business operations.

3. The Advanced Technology Center in Hazardous and Toxic Substance Management, hereafter referred to as the center, shall be established by the State in the City of Newark, County of Essex with the cooperation of a research and public policy consortium led by the New Jersey Institute of Technology and including Stevens Institute of Technology, the University of Medicine and Dentistry of New Jersey and Rutgers, The State University. Various other public and private institutions of higher education and their

faculties may be considered for participation in the work of the center in the future by the commission.

4. As soon as practicable the participating institutions, in consultation with, and under regulations adopted by the commission, shall appoint a director of the center.

5. The participating institutions shall:

a. Administer and operate the center;

b. Appoint, remove and transfer personnel;

c. Establish programs in the center to promote the management of hazardous and toxic substances; and

d. Do all other acts and things necessary and proper for the purposes of the center.

6. Annual budget requests for the center shall be submitted to and approved by the commission.

7. The center where appropriate, and in consultation with the commission, shall:

a. Research new techniques for dealing with hazardous and toxic substances;

b. Serve as a repository for existing knowledge concerning hazardous and toxic substance management;

c. Make recommendations to the commission concerning innovation partnership grants;

d. Serve as a forum for the exchange of ideas among industry, government, academia and the public;

e. Disseminate authoritative and objective information and guidance on the many issues arising concerning hazardous and toxic substance management;

f. Promote technology extension services to businesses engaged in hazardous and toxic substance management;

g. Make low-cost business incubation facilities available to new industry working in the field of hazardous and toxic substance management.

8. This act shall take effect on the 60th day following enactment.

STATEMENT

This bill creates an Advanced Technology Center in Hazardous and Toxic Substance Management to be located in Newark, New Jersey. It is hoped that creation of this center will produce significant health benefits for the citizens of New Jersey and aid in increasing economic growth. This bill implements Recommendation 2 of the report of the Governor's Commission on Science and Technology.

ASSEMBLY, No. 1763

STATE OF NEW JERSEY

INTRODUCED MARCH 15, 1984

By Assemblymen GILL, FRANKS, DORIA, CHARLES, VAINIERI, CUPROWSKI, KAVANAUGH, RANIERI, GALLO, LOVEYS, MUZIANI, ZIMMER, WEIDEL, MEYER, Assemblywoman COOPER, Assemblymen PALAIA, HENDRICKSON, ROD, KOSCO, SCHUBER, FELICE, ROONEY, PENN and Assemblywoman PERUN

AN ACT establishing the Advanced Technology Center in Food Technology and supplementing Title 18A of the New Jersey Statutes.

BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey:*

1. The Legislature finds and declares that food technology, encompassing the study of the chemical, biological, and engineering aspects of food and food processing, packaging, and storing, is an important part of this State's economic base. Located in the heart of the nation's major population center, New Jersey has a good transportation system, and varied and extensive agricultural and aquatic resources. By expanding its role as a major food processing and distribution center, New Jersey can increase employment and benefits from the business opportunities thereby created in related areas such as ingredient supplies, chemical and packaging instrumentation, transportation, warehousing and waste disposal. The Legislature finds that the establishment of an advanced technology center in food technology would assist in promoting food technology and economic growth relating thereto.

2. For the purposes of this act:

a. "Advanced technology center" means a program of substantial and concentrated financial support that is provided to outstanding programs or departments at New Jersey's public and private institutions of higher education to promote their development into national level bases for innovative technology research.

b. "Business incubation facilities" means low cost, short-term occupancy, rental spaces wherein assistance is granted to a targeted network of new companies employing selected technologies congruent with the strengths of the State's public and private institutions of higher education.

c. "Commission" means the Governor's Commission on Science and Technology or the permanent New Jersey Commission on Science and Technology as enacted into law pursuant to P. L. , c. (C.) (now pending before the Legislature as Assembly Bill No. 1767 of 1984) which was established as the successor to the Governor's Commission on Science and Technology as created by Executive Order No. 12 of 1982.

d. "Innovation partnership grants" means matching grants to academic researchers performing applied research in emerging technologies at any of the State's public and private institutions of higher education which are of strategic importance to the New Jersey economy under regulations adopted by the commission pursuant to the "Administrative Procedure Act," P. L. 1968, c. 410 (C. 52:14B-1 et seq.).

e. "Private institutions of higher education" means independent colleges, universities or institutes incorporated and located in New Jersey, which by virtue of law or character or license, are nonprofit educational institutions authorized to grant academic degrees and which provide a level of education which is equivalent to the education provided by the State's public institutions of higher education as attested by the receipt of and continuation of licensure by the New Jersey State Board of Higher Education.

f. "Public institutions of higher education" means Rutgers, The State University, the State colleges, the New Jersey Institute of Technology, the University of Medicine and Dentistry of New Jersey, the county colleges and any other public university or college now or hereafter established or authorized by law.

g. "Technology extension services" means programs that not only accelerate the application and transfer of technological innovations by the State's public and private universities to existing industry,

but also adapt these innovations to the requirements of individual business operations.

3. There is established the Advanced Technology Center in Food Technology located at Cook College of Rutgers, The State University, hereafter referred to as the center. Other public and private institutions of higher education and their faculties may be considered for participation in the center in the future by the commission.

4. As soon as may be practicable, the participating institution or institutions, in consultation with and under regulations adopted by the commission, shall appoint a director of the center.

5. The participating institution or institutions shall:

a. Administer and operate the center;

b. Appoint, remove and transfer personnel;

c. Establish programs in the center to promote food technology research and food technology industries; and

d. Do all other acts and things necessary and proper for the purposes of the center.

6. Annual budget requests for the center shall be submitted to and approved by the commission.

7. The center, where appropriate, and in consultation with the commission shall:

a. Research new food products and develop more efficient and economical food processing and related techniques;

b. Coordinate personnel and other resources from the departments of food science, biochemistry, microbiology, chemistry, nutrition, plant physiology, horticulture, mechanical engineering, chemical engineering and materials sciences at Rutgers, The State University in programs relating to the promotion of food technology research and industries;

c. Promote research, especially in the areas of agriculture and food science;

d. Promote technology extension services to business engaged in food science and related fields;

e. Make low-cost business incubation facilities available to new industry working in the field of food science and related fields; and

f. Make recommendations to the commission concerning innovation partnership grants.

8. This act shall take effect on the 60th day following enactment.

STATEMENT

This bill establishes the Advanced Technology Center in Food Technology at Cook College of Rutgers, The State University. The purposes of establishing this center is to provide for the stimulation of the State's economy in the area of food technology, thereby increasing employment opportunities and creating new business development in the State. This bill implements Recommendation 4 of the report of the Governor's Commission on Science and Technology.

ASSEMBLY, No. 1764

STATE OF NEW JERSEY

INTRODUCED MARCH 15, 1984

By Assemblymen GILL, FRANKS, DORIA, CHARLES, VAINIERI, CUPROWSKI, KAVANAUGH, RANIERI, GALLO, LOVEYS, MUZIANI, ZIMMER, WEIDEL, MEYER, PALAIA, Assemblywoman COOPER, Assemblymen HENDRICKSON, ROD, KOSCO, SCHUBER, FELICE, ROONEY, PENN and Assemblywoman PERUN

AN ACT establishing the Advanced Technology Center in Biotechnology and supplementing Title 18A of the New Jersey Statutes.

BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey:*

1. The Legislature finds and declares that the field of biotechnology, which applies scientific and engineering principles to the processing of materials by biological agents to produce goods and services, is an important and dynamic addition to the world economy. Progress in biotechnology has included gene splicing, monoclonal antibody technology, protein engineering, and large scale plant and animal cell culture. New Jersey is by all measures a major center for the health care, pharmaceutical, chemical, and food processing industries, all of which now benefit from and will increasingly depend upon advances in biotechnology. In recognition of the economic importance of biotechnology to New Jersey industries, the Legislature further finds and declares that the establishment of an advanced technology center in biotechnology would strengthen the State and serve as a stimulus for technology-based industrial growth.

2. For the purposes of this act:

a. "Advanced technology center" means a program of substan-

tial and concentrated financial support that is provided to outstanding programs or departments at New Jersey's public and private institutions of higher education to promote their development into national level bases for innovative technology research.

b. "Business incubation facilities" means low cost, short-term occupancy, rental spaces wherein assistance, is granted to a targeted network of new companies employing selected technologies congruent with the strengths of the State's public and private institutions of higher education.

c. "Commission" means the Governor's Commission on Science and Technology or the permanent New Jersey Commission on Science and Technology as enacted into law pursuant to P. L. . . . , c. . . . (C. . . . .) (now pending before the Legislature as Assembly Bill No. 1767 of 1984) which was established as the successor to the Governor's Commission on Science and Technology as created by Executive Order No. 12 of 1982.

d. "Innovation partnership grants" means matching grants to academic researchers performing applied research in emerging technologies at any of the State's public and private institutions of higher education which are of strategic importance to the New Jersey economy under regulations adopted by the commission pursuant to the "Administrative Procedure Act," P. L. 1968, c. 410 (C. 52:14B–1 et seq.).

e. "Private institutions of higher education" means independent colleges, universities or institutes incorporated and located in New Jersey, which by virtue of law or character or license, are nonprofit educational institutions authorized to grant academic degrees and which provide a level of education which is equivalent to the education provided by the State's public institutions of higher education as attested by the receipt of and continuation of licensure by the New Jersey Board of Higher Education.

f. "Public institutions of higher education" means Rutgers, The State University, the State colleges, the New Jersey Institute of Technology, the University of Medicine and Dentistry of New Jersey, the county colleges and any other public university or college now or hereafter established or authorized by law.

g. "Technology extension services" means programs that not only accelerate the application and transfer of technological innovations by the State's public and private institutions of higher education to existing industry, but also adapt these innovations to the requirements of individual business operations.

3. There is established the Advanced Technology Center in Biotechnology (hereinafter referred to as the center) under the joint

governance of Rutgers, The State University and the University of Medicine and Dentistry of New Jersey and with the participation of other public and private institutions of higher education and faculties who may be considered for participation in the work of the center in the future by the commission. The center shall be composed of various units at locations designated by the participating institutions, with the approval of the commission.

4. As soon as may be practicable the participating institutions, in consultation with and under regulations adopted by the commission, shall appoint a director of the center.

5. The participating institutions shall:

a. Administer and operate the center;

b. Appoint, remove and transfer personnel;

c. Establish programs in the center to promote biotechnology research and biotechnology industries; and

d. Do all other acts and things necessary and proper for the purposes of the center.

6. Annual budget requests for the center will be submitted to and approved by the commission.

7. The center where appropriate, and in consultation with the commission, shall:

a. Make recommendations to the commission concerning innovation partnership grants;

b. Support and promote existing programs in biotechnology research and industries and all sectors of private industry shall have ready access to the personnel and programs of the center.

c. Make low-cost business incubation facilities available to new industry working in the field of biotechnology; and

d. Promote technological extension services to businesses engaged in biotechnology related applications.

8. This act shall take effect on the 60th day following enactment.

STATEMENT

This bill establishes the Advanced Technology Center in Biotechnology on the adjoining campuses and under the joint governance of Rutgers, The State University, and the University of Medicine and Dentistry of New Jersey. The purpose of establishing this center is to promote the development of biotechnology research, and to stimulate additional job opportunities and new business in this State. This bill implements Recommendation 1 of the report of the Governor's Commission on Science and Technology.

ASSEMBLY, No. 1765

STATE OF NEW JERSEY

INTRODUCED MARCH 15, 1984

By Assemblymen DORIA, CHARLES, CUPROWSKI, VAINIERI, RANIERI, LAROCCA, Assemblywoman GARVIN, Assemblyman BOCCHINI, Assemblywoman MUHLER, Assemblymen ROCCO, GILL, LOVEYS, GALLO, KOSCO, SCHUBER, FELICE, ROONEY, KAVANAUGH, PENN and Assemblywoman PERUN

AN ACT establishing the Advanced Technology Center in Ceramics and supplementing Title 18A of the New Jersey Statutes.

BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey:*

1. The Legislature finds and declares that high technology ceramics is a field in which New Jersey has significant academic and industrial strengths. Progress in this area is expected to produce significant economic growth and increases in productivity in the United States. New Jersey has the ability to capture a part of these economic benefits. To this end, the Legislature finds that the establishment of an advanced technology center in ceramics will generate additional research and technological innovations to promote economic growth.

2. For the purposes of this act:

a. "Advanced technology center" means a program of substantial and concentrated financial support that is provided to outstanding programs or departments at New Jersey's public and private institutions of higher education to promote their development into national level bases for innovative technology research.

b. "Business incubation facility" means low cost, short-term occupancy, rental spaces wherein assistance is granted to a targeted network of new companies employing selected technologies

New Jersey State Library

congruent with the strengths of the State's public and private institutions of higher education.

c. "Commission" means the Governor's Commission on Science and Technology or the permanent New Jersey Commission on Science and Technology as enacted into law pursuant to P. L. , c. (C.) (now pending before the Legislature as Assembly Bill No. 1767 of 1984) which was established as the successor to the Governor's Commission on Science and Technology as created by Executive Order No. 12 of 1982.

d. "Innovation partnership grants" means matching grants to academic researchers performing applied research in emerging technologies at any of the State's public and private institutions of higher education which are of strategic importance to the New Jersey economy under regulations adopted by the commission pursuant to the "Administrative Procedure Act", P. L. 1968, c. 410 (C. 52:14B-1 et seq.).

e. "Private institutions of higher education" means independent colleges, universities or institutes incorporated and located in New Jersey, which by virtue of law or character or license, are nonprofit educational institutions authorized to grant academic degrees and which provide a level of education which is equivalent to the education provided by the State's public institutions of higher education as attested by the receipt of and continuation of licensure by the New Jersey Board of Higher Education.

f. "Public institutions of higher education" means Rutgers, The State University, the State colleges, the New Jersey Institute of Technology, the University of Medicine and Dentistry of New Jersey, the county colleges and any other public university or college now or hereafter established or authorized by law.

g. "Technology extension services" means programs that not only accelerate the application and transfer of technological innovations by the State's public and private institutions of higher education to existing industry, but also adapt these innovations to the requirements of individual business operations.

3. There is established the Advanced Technology Center in Ceramics at Rutgers, The State University, hereafter known as the center. Various public and private institutions of higher education and their faculties may be considered for participation in the work of the center in the future by the commission or institution.

4. As soon as may be practicable, the participating institution or institutions in consultation with and under regulations adopted by the commission, shall appoint a director of the center.

5. The participating institution or institutions shall:

a. Administer and operate the center;

b. Appoint, remove and transfer personnel;

c. Establish programs in the center to promote ceramics research and ceramics industries; and

d. Do all other acts and things necessary and proper for the purposes of the center.

6. Annual budget requests for the center shall be submitted to and approved by the commission.

7. The center, where appropriate and in consultation with the commission shall:

a. Make recommendations to the commission concerning the awarding of innovation partnership grants;

b. Make low-cost business incubation facilities available to new industry working in ceramics and related fields;

c. Provide technological extension services to businesses engaged in the applications of ceramics and related fields; and

d. Promote additional research and technological innovation to generate economic growth in ceramics and related fields.

8. This act shall take effect on the 60th day following enactment.

STATEMENT

This bill establishes the Advanced Technology Center in Ceramics at Rutgers, The State University. The purpose of establishing this center is to develop such areas as high technology ceramics and related fields. By promoting research and development in these areas, the economy in the State will be stimulated, thereby creating greater job opportunities and new businesses. This bill implements Recommendation 3 of the report of the Governor's Commission on Science and Technology.

ASSEMBLY, No. 1767

STATE OF NEW JERSEY

INTRODUCED MARCH 15, 1984

By Assemblymen GILL, FRANKS, DORIA, CHARLES, VAINIERI, MARKERT, CUPROWSKI, KAVANAUGH, RANIERI, GALLO, LOVEYS, MUZIANI, ZIMMER, MEYER, WEIDEL, PALAIA, ALBOHN, HENDRICKSON, ROD, KOSCO, FELICE, ROONEY, PENN and Assemblywoman PERUN

AN ACT creating a New Jersey Commission on Science and Technology in the Department of Commerce and Economic Development and supplementing Title 52 of the Revised Statutes.

BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey:*

1. The Legislature finds that the report of the Governor's Commission on Science and Technology contains recommendations which merit consideration and evaluation by persons with expertise in the various areas of science and technology; and the Legislature further finds that it is necessary and desirable to establish a qualified body to exercise oversight for the responsibility of implementing and evaluating the outcomes of the commission's recommendations; and to formulate long-range plans and programs for science and technology in New Jersey.

2. For the purposes of this act:

a. "Advanced technology centers" means programs of substantial and concentrated financial support that are provided to outstanding programs or departments at New Jersey's public and private institutions of higher education to promote their development into national level bases for innovative technology research.

b. "Business incubation facilities" means low cost, short-term occupancy, rental spaces wherein technical assistance is granted to a targeted network of new companies employing selected tech-

nologies congruent with the strengths of the State's public and private institutions of higher education.

c. "Innovation partnership grants" means matching grants to academic researchers performing applied research in emerging technologies at any of the State's public and private institutions of higher education which are of strategic importance to the New Jersey economy under regulations adopted by the commission pursuant to the "Administrative Procedure Act," P. L. 1968, c. 410 (C. 52:14B–1 et seq.).

d. "Technology extension services" means programs that not only accelerate the application and transfer of technological innovations by the State's public and private institutions of higher education to existing industry, but also adapt these innovations to the requirements of individual business operations.

3. The New Jersey Commission on Science and Technology (hereinafter referred to as the "commission") is created and established in the Executive Branch of the State Government. For the purposes of complying with the provisions of Article V, Section IV, paragraph 1 of the New Jersey Constitution, the commission is allocated within the Department of Commerce and Economic Development, but notwithstanding this allocation, the commission shall be independent of any supervision or control by the department or by any board or officer thereof.

4. The commission shall consist of the following members: eight public representatives to be appointed by the Governor, with the advice and consent of the Senate; two members of the Senate who shall not be of the same political party to be appointed by the President of the Senate; two members of the General Assembly who shall not be of the same political party to be appointed by the Speaker of the General Assembly; the Chancellor of Higher Education, ex officio, or his duly authorized representative; the Commissioner of Commerce and Economic Development, ex officio, or his duly authorized representative, and a member of the Governor's Office designated by the Governor, ex officio, or his duly authorized representative. All 15 members shall have a right to vote on the various matters considered by the commission.

5. a. The terms of the members of the commission appointed by the Governor with the advice and consent of the Senate and of those members appointed by the President of the Senate and by the Speaker of the General Assembly shall be for five years or until their successors are appointed except that of the appointments made to the first commission under this act, four shall serve for three years or until their successors are appointed, four shall serve

for four years or until their successors are appointed, and four shall serve for five years or until their successors are appointed. Any vacancy shall be filled in the same manner as the original appointment but only for the balance of the unexpired term. The commission members shall serve without compensation but shall be reimbursed for necessary expenses incurred in the performance of their duties.

b. Each appointed member may be removed from office by the Governor, for cause, after a public hearing, and may be suspended by the Governor pending the completion of the hearing. Each member before entering upon his duties shall take and subscribe an oath to perform the duties of this office faithfully, impartially and justly to the best of his ability. A record of these oaths shall be filed in the office of the Secretary of the State.

6. The Governor shall designate the chairman of the commission from among the public members appointed by him.

7. The commission shall appoint an executive director who shall serve at its pleasure and who shall receive such compensation as provided by law.

8. The executive director shall be responsible for the selection of properly qualified staff members. Staff members shall have strong backgrounds in science and technology as well as in economic development.

9. The commission shall:

a. Be responsible for the development and oversight of policies and programs in science and technology for New Jersey;

b. Ensure that the programs in science and technology are adequately funded to achieve their stated goals;

c. Stimulate academic-industrial collaboration through such mechanisms as Advanced Technology Centers, Innovation Partnership Grants, Business Incubation Facilities, and Technology Extension Services;

d. Plan and assist in the establishment of new Advanced Technology Centers, Business Incubation Facilities and Technology Extension Services and adopt rules and regulations regarding the operations of these activities;

e. Coordinate activities of the Advanced Technology Centers, Business Incubation Facilities and Technology Extension Services in conjunction with designated public and private institutions of higher education;

f. Recommend funding levels, determine eligible fields and supervise the process of making awards for Innovation Partnership Grants;

g. Continue to identify and to support research opportunities at New Jersey academic institutions and other institutions that can advance economic development and employment;

h. Encourage and coordinate activities to help entrepreneurs and inventors;

i. Stimulate technology transfer between higher education institutions and industry, including transfers of information available from various federal agencies;

j. Appoint a peer review committee, where warranted, for each of the fields or technologies, drawn from the academic, scientific and industrial communities to review all situations involving either competitive applications for agency support or judgments on complex scientific or technological matters with the stipulation that neither reviewers nor their affiliated institutions shall be eligible as applicants;

k. Monitor changes in national and international economic conditions which might justify a reorientation of the State's technology program;

l. Identify future fields of science and technology that offer potential for application in New Jersey and help to find funding sources;

m. Adopt rules and regulations pursuant to the "Administrative Procedure Act," P. L. 1968, c. 410 (C. 52:14B–1 et seq.) to effectuate the provisions of this act, consistent with the rules and regulations of the Department of Higher Education;

n. Adopt, amend and repeal bylaws for the regulation of its affairs, and the conduct of its business;

o. Adopt and have a seal and alter the same as pleasure;

p. Have authority to sue and be sued;

q. Have authority to conduct meetings and public hearings in connection with the purposes of this act;

r. Have authority to enter into contracts, public and private, with a person upon such terms and conditions as the commission determines to be reasonable and for the effectuation of the purposes of this act;

s. Employ consultants and specialists in science and technology and any other employees as may be required in the judgment of the commission to effectuate the purposes of this act, and to fix and pay their compensation from funds available therefor, all without regard to the provisions of Title 11 of the Revised Statutes;

t. Receive and disburse funds from non-state sources including but not limited to federal funds; and

u. Have authority to do any and all things necessary or conve-

nient to carry out its purposes and exercise the powers granted in this act.

10. The commission shall annually report to the Governor and the Legislature on or before February 15 of each year. Each report shall set forth a complete operating and financial statement covering the operations of the commission and all advanced technology centers within its jurisdiction. The financial records of the commission shall be audited annually by the State Auditor.

11. The appropriation for the Governor's Commission on Science and Technology in the Department of Higher Education is transferred to the New Jersey Commission on Science and Technology in the Department of Commerce and Economic Development.

12. This act shall take effect immediately.

STATEMENT

This bill creates a New Jersey Commission on Science and Technology in the Department of Commerce and Economic Development. This bill implements Recommendation 38 of the report of the Governor's Commission on Science and Technology. This new agency will have the responsibility for formulating long-range plans and programs for science and technology in New Jersey.

ASSEMBLYMAN JOHN A. ROCCO (Acting Chairman): Good morning, and welcome. I am now going to open this public hearing relative to some of the high tech bills which are presently in the Assembly. Everyone is welcome to contribute input. If anyone has written testimony, please make certain we receive a copy of it before you leave.

Without really going into the merits of the bills, since that is what you are here for, why don't we just begin with Barbara Lawrence?

BARBARA LAWRENCE: Thank you and good morning. I am very pleased to be here today. My name is Barbara Lawrence, and I am here on behalf of Edward Cohen, who is Executive Director of the Governor's Commission on Science and Technology. I want to thank you for this opportunity to speak in favor of the legislation you are considering this morning. The Governor's Commission on Science and Technology spent one and a half years preparing the plan that formed the basis for this legislation. The plan is set forth in the Commission's Report to the Governor. Let me summarize for you how we came to recommend the establishment of four advanced technology centers and a continuing science and technology body.

Although New Jersey has a good base of high technology industries, there are indications that this base may have eroded. Two recent studies of New Jersey's economy have pointed to a disturbing trend. A report by the Office of Economic Policy shows that New Jersey's growth in high technology process and product industries is below the national average. At the same time, the New Jersey Department of Commerce and Economic Development reported that the State's share of high technology employment is declining compared to other states. The importance of this drop is underscored by other findings that, nationally, high technology industries are growing twice as fast as traditional industries. The message is clear: New Jersey must act to retain and attract technology-based industries.

To achieve this end, the Governor's Commission on Science and Technology emphasized ways to encourage cooperative relationships between New Jersey's academic institutions and industries in

technological fields. Such collaboration has been shown to contribute to economic development through the creation of new jobs and businesses, thus increasing the State's tax base.

To gain a maximum return on the investment of improving our universities' scientific and technological base, two fundamental principles must be followed. First, the funds must be carefully targeted to fields where the potential for payback is the greatest. Second, the funds must be matched by private industrial funds. Such support mechanisms have been devised to ensure that the funds are distributed to gain maximum advantage for New Jersey.

The Commission began by identifying the fields which offer New Jersey the greatest payback. In identifying the fields, seven factors were taken into account. They are as follows:

1) The range of industries served by the technology;

2) Whether the types of industries served by the technology are those in which New Jersey has relative strength;

3) The compatibility of the types of industry served by the technology with the predicted industrial composition of the State of New Jersey during the next decade;

4) The present level of research conducted by industry and by the universities in the State;

5) The maturity of the technology;

6) The "market potential" of the technology; and,

7) The degree of industrial concentration of the industries that are most likely to exploit the technology in New Jersey.

Based on these seven criteria, and after review by outside peer review panels, the Commission identified four fields in which the creation of advanced technology centers would bring substantial benefits to the State. They are: ceramics, food technology, hazardous and toxic substance management, and biotechnology. I will describe each of these fields briefly.

Ceramics: Ceramics is New Jersey's strongest university research area. The Center for Ceramics Research at Rutgers represents a model for other technology fields. It was started two years ago with seed funding from the National Science Foundation and quickly signed up

12 industrial affiliates -- ten corporations and two national laboratories. Each affiliate pays an annual membership fee of $30,000 which, in addition to sponsoring research, permits the company to shape the Center's research agenda and gain the benefit of its research. Most of all, industry researchers and academic faculty work together, trading knowledge and enriching each other's ideas. The purpose of creating a State-sponsored Advanced Technology Center in Ceramics is to enable the expansion of this promising base.

Food Technology: In recognition of New Jersey's role as a major food processing and distribution center, the Commission recommended an interdisciplinary Advanced Technology Center in Food Technology at Cook College of Rutgers University. Cook College already has many strengths in food technology. The food industry is an important part of the State's economic base although, unfortunately, it has lost ground over the past 10 years. However, the State has a high concentration of food manufacturers, a location in a center of population, a relatively good transportation system, and extensive and varied agricultural and aquatic resources. With these advantages, there is an opportunity for New Jersey to enhance its role as a major food processing and distribution center for the Northeast. Such an extension of that role could not only increase employment in food manufacturing and packaging, but also promises to create spin-off businesses and job opportunities in ancillary areas such as ingredient supplies, chemical and packaging supplies, processing and sensory equipment and instrumentation, transportation, warehousing, and waste disposal. It is expected that all areas of the State will benefit from food technology investments.

Hazardous and Toxic Substance Management: As a field of endeavor, hazardous waste management is relatively new. It is estimated that 40 million metric tons of hazardous wastes are produced by United States industries each year. These industrial wastes require that new technologies be developed to handle the disposal successfully. With these new technologies will come new jobs. Last year, Fortune magazine cited waste management as one of the most rapidly growing areas of major job-producing categories in the United States.

In New Jersey, the development of new solutions to industrial waste problems could help to change the image of the State from one in which its residents live in a relatively toxic environment to one which has taken aggressive steps to solve the problems associated with large and small producers of toxic waste. The development of new technologies could also attract equipment manufacturers and producers of scientific and industrial instruments to exploit these new technologies. The chemical processing industry could maintain its operations without risking a severe impact on the region's environment if their toxic waste could either be handled safely or detoxified. The resource and raw material recovery industry could be substantially encouraged in New Jersey. The waste treatment industry could seek to clean up the existing waste sites and manage future waste production. Biotechnical industries could find a market for new microorganisms, which testing has shown to be effective in detoxifying waste streams. At the same time, the siting of new industries could be made easier by the development of technologies which would reduce the risk associated with industrial processing, by the provision of expertise in environmental and health effects to the State government and municipalities, and by the removal of public apprehension of existing technologies.

We expect all these benefits to occur, both for New Jersey and the nation, when the Cooperative Research Center for Hazardous Waste Management formally begins its operations this summer. This Center will be located in Newark and will be operated by a consortium of our leading higher education institutions, under the leadership of the New Jersey Institute of Technology. As with ceramics, seed funding will come from the National Science Foundation. Industry response to the hazardous waste center idea over recent months has been astounding.

Biotechnology: Finally, I come to the field of biotechnology. This is perhaps the biggest and most important investment for New Jersey, in every sense of that term. As Venture magazine said in its February, 1984 issue, "The biotech revolution is here." The question now is, how will these technologies transform industries and change our lives? We believe the answers are abundantly clear and we must be prepared for them.

New Jersey is by all measures a major center for the health care, pharmaceutical, chemical, and food processing industries, all of which now benefit from and will increasingly depend upon advances in biotechnology. Unfortunately, the State's share of national employment in biotechnology-related industries has declined. For example, New Jersey's share of United States employment in pharmaceuticals dropped from 21% in 1975 to 18% in 1980, and the State's employment shares in medical and surgical instrumentation and food manufacturing have also declined.

In recognition of the economic importance of biotechnology to New Jersey's industries, a special panel was convened by the Governor to review New Jersey's academic and industrial strengths and needs in this field. The panel concluded that the establishment of an Advanced Technology Center in Biotechnology could rapidly strengthen the universities' capabilities and serve as a stimulus for technology-based industrial growth.

The Commission envisions that the Center will consist of a core facility, established under the joint academic governance of Rutgers University and the University of Medicine and Dentistry of New Jersey, and located on their adjoining campuses in Piscataway. Satellite facilities of this Center will include a Fermentation and Separation Unit at the Waksman Institute of Rutgers, and a Clinical Research Unit in Biotechnology at the Middlesex General/University Hospital. In addition, laboratory modifications for existing research units at Rutgers and UMDNJ are needed.

Finally, let me conclude by talking a little bit about the need for an oversight agency. To oversee the establishment of these centers, to see that the remainder of the Commission's 38 recommendations are implemented, and to ensure that the programs are sustained and modified over time, a permanent oversight body is needed. Many other states have established similar bodies in the past few years in recognition of the importance of a coordinated science and technology program. Assembly Bill 1767 is carefully crafted to allow for flexibility within the State structure, yet with accountability to the Governor and the Legislature. While the permanent Commission will

be responsible for establishing the broad framework of policies and programs, the actual day-to-day operation of the advanced technology centers is left to the academic institutions where this expertise already resides.

The Commission recognizes that these four centers will require a considerable commitment of public and private funds. However, we believe that the long-term cost of not moving ahead will be far greater than the cost of implementing recommendations. These hidden costs will be reflected in a weaker and less viable New Jersey economy. Its burden will fall on all of New Jersey's citizens, but especially on those least able to help themselves. We have an opportunity now to see that New Jersey's future is considerably brighter.

Thank you. Do you have any questions?

ASSEMBLYMAN ROCCO: Barbara, the question I have is basically regional but throughout the whole tech package we have. South Jersey legislators are very concerned about the fact that most of the recommendations from the Department have dealt with the program being instituted almost exclusively in North Jersey. There is a bipartisan effort, of course, on the part of the South Jersey legislators to make certain that South Jersey is not shut out of the picture entirely. That is one of the reasons for having this hearing here in South Jersey, to remind members of the Department and the people in Trenton that there is existing property south of Trenton.

As a consequence, we feel that as part of this total package, there has to be some type of involvement on the part of institutions in southern New Jersey. I can assure you that that effort will not decrease. Walter Rand, Dennis Riley, my counterpart who is Chairman of the Democratic South Jersey Coalition -- I chair the Republican South Jersey Coalition -- and I, along with other legislators obviously, are going to continue to press in this area. I think it would really be to the advantage of the Department to aid us in this process. There may be things we are overlooking or are not taking into consideration. But, I don't think we in the State of New Jersey can put together the type of high tech package we want and need to the exclusion of southern New Jersey.

MS. LAWRENCE: I agree with you, Assemblyman. I'm sure you are very aware of the provisions which have been made in the $90 million bond issue. It has recently moved through your Committee and is now heading for passage by the full Assembly.

There are provisions in that bond now for substantial investments in South Jersey. We have a representative of NJIT here this morning who will be able to talk about the CAD-CAM Center which will be established in South Jersey. There will be substantial funds coming into the community colleges and State colleges in South Jersey.

Unfortunately, the way this package is broken up, when we look at it here this morning we just see the advanced technology centers which are based in the research institutions. The permanent Commission on Science and Technology has incorporated in it an awareness of the need to continue to establish future fields for investment. We are looking at a number of those in the South Jersey area. We know that fishing is an important regional technology. It is something where we are continuing our work now. There is also money in the bond issue to support that effort. We are very aware that South Jersey is here.

ASSEMBLYMAN ROCCO: I just wanted to give you a little reminder, Barbara. Okay, thank you very much for your information.

MS. LAWRENCE: Thank you.

ASSEMBLYMAN ROCCO: Our next witness will be Phyllis Denbo. Phyllis, just for the purposes of the hearing, you are turning in written testimony, is that correct?

PHYLLIS DENBO: Yes.

ASSEMBLYMAN ROCCO: Will you verbally summarize what you feel are the basic conceptual aspects of the testimony, as opposed to reading the entire statement? Your statement will go into the record as written.

MS. DENBO: Okay. What I would like to do is focus on the highlights and perhaps read briefly through some of it, but skip over all the details. Clearly you do not need me to review it.

ASSEMBLYMAN ROCCO: Sure, that's fine. I just wanted to state that your testimony will go into the record, so it would be kind of repetitious.

New Jersey State Library

MS. DENBO: Okay. I am Phyllis Denbo. I am Assistant to Dr. Saul Fenster who is President of NJIT, and I am here on his behalf.

Basically, what I would like to address are two of the bills, the one creating the advance technology centers and hazardous and toxic waste, and the one creating the successor agency to the Commission. The report of the Commission on Science and Technology and the bills in support of the Commission's recommendations represent a watershed for New Jersey. The proposed program will provide much needed support for education, research, and development in high technology fields, it will foster important academic/industrial cooperation, and it will present a message to the nation and the world that New Jersey has set upon a bold course of economic development.

We at NJIT are especially pleased to have been designated as the leader of a research and public policy consortium in the critical area of toxic and hazardous substance management. The consortium members, in addition to NJIT, are: Stevens Institute of Technology, Rutgers University, and the University of Medicine and Dentistry of New Jersey. It is anticipated that the center to be established under the proposed bill will be housed in a facility to be constructed on the NJIT campus. However, it should be pointed out most emphatically that while the center will be physically located in northern New Jersey, its very important work will clearly benefit the entire State.

This project could not be more timely. A recent poll found that New Jersey citizens, right now, "are more concerned about the threat of toxic waste in their environment than they are about such bread-and-butter issues as unemployment and inflation."

The past 15 years have brought growing national concern about the state of the environment. What we are proposing to build, however, is not a hazardous and toxic waste disposal plant. Rather, the proposed center will conduct research both to determine how to clean up existing toxic waste sites and to identify and manage future hazardous substance problems. Standards designed to minimize environmental dangers will be among the criteria used to select research projects for the center.

Our work in this area is longstanding. The present center basically comes out of three separate initiatives. One is a research center, the Institute for Hazardous and Toxic Waste Management, which was established by our Board of Trustees in 1981. It was designed to bring under one executive director the Environmental Engineering graduate programs and the research activities of the Environmental Instrumentation and Systems Laboratory, the Air Monitoring Laboratory, the Water Monitoring Laboratory, and the Center for Environmental Law and Technology.

The most recent result of this effort in the academic area has been the establishment of a cooperative academic program between our school and UMDNJ that offers a toxicology option to the engineers and scientists enrolled in the graduate Environmental Engineering program. In addition, we have a National Science Foundation Sponsored Cooperative Research Center. This has provided us with seed money to begin to identify research areas and bring members of the consortium together. It is one of 12 such centers nationwide. In fact, New Jersey is the only State in the nation that has two such centers, the other being the very important Ceramics Center at Rutgers. The centers are designed to foster long-term academic/industrial cooperation with multi-company financial support for industrially relevant research.

The third initiative is the Advanced Technology Center that was originally recommended in the Commission's Report which was published earlier this year. It is conceived as a nationally-regarded base for innovative technology research. In recognition of the importance of this work, earlier this year, Governor Kean announced a grant of just over a half a million dollars to acquire research equipment for several proposed projects.

Out of these separate but complementary initiatives has come a Research Center, which is unique in that it represents the combined efforts of the Federal government, the State government, private industry, and four major universities.

The budget for the Cooperative Center is anticipated to come, in part, from annual industrial membership fees. Industrial members will be asked to make a three-year commitment at $30,000 annually for

membership in the Center. This is required by NSF, which also requires that a minimum of eight industrial members come in. We have eight such members. They include major New Jersey companies, such as Stone and Webster, Rohm & Haas, Exxon, and Jersey Central Power and Light. There are also well over a dozen additional companies which are expressing very strong interest in joining.

The Center may be viewed as an economical extension of the in-house research of the member companies. Industrial members will be kept informed of the progress of the research through their industry monitors, quarterly reports, and semiannual presentations. New ideas for their own in-house research may also be stimulated by the work of the people in the Center.

I will describe just very briefly how the Center will operate. There is an Industrial Advisory Board which deals with matters of operation, policy, and research. There is also an Academic Advisory Board which is already meeting. This Board includes the members of the consortium. They are beginning to plan the further work of the Center, establish protocol, consider staffing needs, and so on. In the long-term, the primary responsibilities of this body will be to review all selected research projects to ensure that they are in accord with the policies of the participating academic institutions. The Board will review operating and research budgets to ensure that they represent fair and appropriate allocation of institutional resources, and will review Center policies to ensure consistency with University policy.

Ideas for research projects may come from anyone associated with the Center. In fact, a number of research proposals were presented to industry at an NSF-sponsored conference in February, and a determination regarding their implementation will be made in the very near future.

The physical plant which will serve as the focal point for these important activities has been conceived with the many functions of the Center in mind. It will have not only research capabilities, but it will also have public meeting rooms because we see a very strong public policy role the Center must play for the State of New Jersey.

Now, let me move on to the other piece of legislation that we would like to discuss today. I will address my final remarks to A-1767, which creates the New Jersey Commission on Science and Technology in the Department of Commerce and Economic Development. This body will continue the important work of Governor Kean's blue-ribbon panel and will oversee the implementation of the many recommendations proposed by the original Commission. Its long-term goals will, of course, be those of its predecessor -- to foster economic development in New Jersey by formulating plans and programs for science and technology in the State. These goals will be achieved, in large measure, in cooperation with the State's major research universities. The strong ties with industry which these institutions have and will continue to develop are vital to New Jersey's future. I know that the Legislature and the Commission will want to encourage the work of these institutions. Therefore, it is important that the proposed agency complement and reinforce their strengths. Its role must be one of coordination and support, not of bureaucratic control.

We believe it is important that the academic institutions be represented on the permanent Commission. This is a recommended change in the legislation as presently written. However, this is consistent with the recommendations of the Governor's Commission, specifically Recommendation 38, that would bring a special understanding of the unique needs of New Jersey's research institutions to the deliberations of the Commission.

We are also very concerned that the proposed agency not become one more rapidly growing bureaucracy. Its functions should in no way duplicate those of the Department of Higher Education or of our institutions. The Chancellor must be viewed as having a unique role in higher education in New Jersey, and the institutions must be afforded independence in their research support and development activities. For this last reason, we particularly urge that the proposed agency not be accorded the power to receive and disburse funds from non-State sources, a power which ultimately could place the agency in competition with the State's research institutions. Our goal must be excellence. This will be best achieved when we all cooperate toward the same important ends.

Let me close by urging quick passage of the entire package of science and technology bills. Their implementation is crucial to New Jersey's economic future.

Thank you. Are there any questions?

ASSEMBLYMAN ROCCO: Thank you very much, Phyllis. Do you feel there is a potential for competition in the present structure?

MS. DENBO: Just to the extent that the Commission's successor agency has the power to seek and disburse non-State funds. They could be competing for the same kinds of grants, and would also have a certain flexibility in terms of the use of money that probably would better accrue to the institutions themselves.

ASSEMBLYMAN ROCCO: That is a good point. Thank you, Phyllis. Our next witness will be Dr. Thomas Alexander Pond.

DR. THOMAS ALEXANDER POND: Good morning, Assemblyman Rocco. I can be very brief indeed because my colleagues have touched on virtually every point. Let me just highlight my agreement with what has been said this morning.

I am Thomas Alexander Pond. I am Professor of Physics and Chief Academic Officer and Executive Vice President of Rutgers - The State University of New Jersey. I am delighted to have this opportunity to talk to you this morning.

I must take this occasion to join in a commendation for the work of the Governor's Commission. My purpose in being here this morning is, of course, to extend that commendation to the work that has gone into drafting the five bills you have before you, as well as the bonding legislation you considered earlier.

I think it should be a matter of State pride that we have produced what I think is the nation's most sophisticated set of State initiatives aimed at economic development through stimulation of academic and industrial interaction in high technology. It is a marvelous job, and I would like to commend Barbara Lawrence and her colleagues, as well as the members of the Commission for the excellent judgment that was used in designing the breadth of the recommendations. The centers we are principally concerned with this morning, of course, are only one of a number of very well-balanced

initiatives which extend not only from the University laboratory through industrial research, but also to the problem of innovation and incubation. It is a marvelous job.

If I may repeat what Barbara Lawrence said for just a moment, there were two enormously important steps in the work that has reached you. First of all, I think it should be emphasized that the Commission identified its objectives, its targets of opportunity, at the first step. It then proceeded through the ancient and well-established device of peer review to find the strengths in the State's systems of higher education that might support additional investments. That makes me proud to be a New Jerseyite because there are very few states that take what is really a very rational and linear set of problems and address them in an appropriate order.

I can tell you that the State's procedures today, and certainly this legislation if it is adopted, will very greatly impress the targets we are after, which are world-class science technology leaders who can come here and join the State's effort, and lead it, augmenting our present strengths.

It has been emphasized by both of the earlier speakers that Assembly Bills 1762 through 1765 will adequately assure the essential step necessary so that the operation of these collaborative centers will be the administrative responsibility of the university groups that mount them. That is an extremely important consideration in the effective performance of research and in the effective performance of collaborative research which, of course, is an especially complex subset of research activities. Again, it is very important for attracting world-class figures to leadership positions in these centers -- here or elsewhere. Therefore, we strongly urge the passage of these bills.

With respect to the successor agency, A-1767 embodies an extremely important recommendation of the Commission, namely, that there be, obviously, an institutionalization of their work for the purpose of long-range planning, oversight of operation, and evaluation. Let me join the previous speakers in saying it is extremely important that that not become a management agency. One

cannot do research at that sort of remove, and we will not be able to stably attract good people to such an environment unless the centers are, in fact, managed by the institutions which are responsible for them.

The NSF, as previously mentioned this morning, has set an excellent example for how to achieve university/industry collaboration. That is a model we have had some experience with in New Jersey at NJIT and at Rutgers. It works very well. It is remarkably effective and that, I think, is our assurance that we already know in principle and in fact how to manage an academic/industrial collaborative research effort.

I would like to second the two specific suggestions made by Phyllis Denbo in connection with the legislation. Number one is the suggestion that Section 9 t. which confers on the successor agency the authority to seek and expend funds of a Federal and industrial sort-- We, too, are concerned that this will place the agency in competition with the operating centers. That would be most unfortunate. I, too, suggest that the bill's language defining the membership of the New Jersey Commission include two university presidents. What we are after here is a partnership between industrial leadership and academic leadership. It seems essential to me that both perspectives be present on the Commission.

I think I have some remarks to make on these issues, but perhaps you would prefer to attack them in the form of questions, Assemblyman Rocco.

ASSEMBLYMAN ROCCO: Yes, specifically the recommendation in regard to representation, where you say that two university presidents should be members of the Commission.

DR. POND: Yes?

ASSEMBLYMAN ROCCO: Barbara, is that in line with your thinking?

MS. LAWRENCE: That was not in my thinking. We already have the Chancellor and some members of the Board of Higher Education on the successor agency's board, who would amply represent higher education-- (Ms. Lawrence speaking away from microphone, so transcriber unable to hear remainder of sentence.)

DR. POND: With all due respect to those distinguished educators, Mr. Chairman, our concern is that there be executive experience connected with research universities. In connection with the centers, that is the critical element. I believe our language is explicit on that.

ASSEMBLYMAN ROCCO: We may have a biased view here. Since I am a professor at Rider College and a former Rutgers graduate where I received my doctorate, I will bring a biased view in all probability, but I certainly think there is need of representation from the academic areas. I am not sure that a president doesn't represent a more administrative type of person. You know, I almost feel that that should be left open for either a professor or a knowledgeable person in the institution.

DR. POND: What we are after, we agree, is manifest experience in the management of complex and essentially mixed research affairs and, certainly, that sort of experience extends beyond university presidents. We would be willing to agree, for example, that Dr. Arnold Penzeous could rather well represent Bell Labs rather than its president.

I wonder if I could extend my remarks on that just a bit. I know there might be concern, I have heard it mentioned that there is some fashion of conflict of interest in having university presidents -- be it a president or a research officer -- on the Commission. If -- as we are sure the Commission will choose to do -- it continues in the classical model of pure evaluation of proposals and then periodic evaluations of results, that conflict of interest will not occur either from an industrial member nor an academic member. This is the mechanism that a generation of experience with Federal research support has shown allows you to bring substantive expertise into boards of governors without prejudicing issues that come before the board which may affect that individual through his institution. I must say, I think to get the kind of industrial leadership participation which I certainly hope to see on the New Jersey Commission, they need assurance that their problems will be considered by the working bodies of the Commission, as well as by the unversity presidents.

I suggest that if we consistently follow those now well-developed practices for review of proposals and evaluation of results, there will be no problem of conflict of interest on either side.

ASSEMBLYMAN ROCCO: Okay, thank you. There being no other testimony, we will now close this hearing. Thank you everyone.

(HEARING CONCLUDED)

APPENDIX

New Jersey State Library

TESTIMONY

ASSEMBLY COMMITTEE ON HIGHER EDUCATION AND REGULATED PROFESSIONS

May 31, 1984

New Jersey Institute of Technology

Testimony

Assembly Committee on Higher Education and Regulated Professions

The Report of the Governor's Commission on Science and Technology and the bills in support of the Commission's recommendations represent a watershed for New Jersey. The proposed program will provide much-needed support for education, research and development in high technology fields. It will foster important academic/industrial cooperation. And it will present a message to the nation and the world that New Jersey has set upon a bold course of economic development.

We at NJIT are especially pleased to have been designated as the leader of a research and public policy consortium in the critical area of toxic and hazardous substance management. The consortium members are: Stevens Institute of Technology, the University of Medicine and Dentistry of New Jersey, Rutgers University, and NJIT. It is anticipated that the Center established under Assembly Bill 1761 will be housed in a facility to be constructed on the NJIT campus. It should be pointed out, however, that while the Center will be physically located in northern New Jersey, its very important work will benefit the entire State.

The project could not be more timely. According to the results of a recent Star-Ledger/Eagleton poll, New Jersey's citizens are "more concerned about the threat of toxic wastes in their environment than they are about such bread-and-butter issues as unemployment and inflation."

The past fifteen years, in fact, have brought growing national concern about the state of the environment, how it has been abused, how it can be protected, and how current environmental problems can be dealt with safely and economically. In response, the federal government has sought to set standards and to achieve them through stringent requirements for the control and disposal of solid, liquid and gaseous hazardous and toxic substances. Hazardous industrial wastes, as defined by the Resource Conservation and Recovery Act (RCRA) of 1976 (Public Law 94-580), consist of ignitable, corrosive, reactive or toxic materials. These hazardous wastes account for 10 to 15 percent of all industrial wastes, or about 150 million metric tons per year. It is recognized, therefore, that better and more environmentally sound treatment and disposal options must be available for these hazardous industrial wastes.

What we are proposing to build is <u>not</u> a hazardous and toxic waste disposal plant. Rather, the proposed center will conduct research both to determine how to clean up existing toxic waste sites and to identify and manage future hazardous substance problems. The facility will be of no greater threat to the environment than is a normal university laboratory system. What is more, standards designed to minimize environmental dangers will be among the criteria used to select research projects for the center.

NJIT's work in this area is predicated upon three separate initiatives:

1. The Institute for Hazardous and Toxic Waste Management (IHTWM) was established officially by the Board of Trustees of New Jersey Institute of Technology on September 11, 1981. It was formed to bring under one executive director the Environmental Engineering graduate programs and the research activities of the Environmental Instrumentation and Systems Laboratory, the Air Monitoring Laboratory, the Water Monitoring Laboratory and the Center for Environmental Law and Technology, in order to:

   a) Direct the academic activities of the graduate Environmental Engineering programs.

   b) Coordinate the research activities to address problems related to hazardous and toxic waste.

   c) Establish an information and public service center to disseminate to the public and private sectors the results of the academic and research activity of the IHTWM.

   The most recent result of this effort in the academic area has been the establishment of a cooperative academic program between New Jersey Institute of Technology and the University of Medicine and Dentistry of New Jersey that offers a toxicology option to the engineers and scientists enrolled in the graduate Environmental Engineering program.

2. The National Science Foundation - sponsored Cooperative Research Center was begun under a planning grant in 1983. It is one of 12 such centers nationwide, funded by NSF to bring academic and industrial professionals together to work in a university setting on scientific issues of pressing national concern. The centers are designed to foster long-term academic/industrial cooperation with multi-company financial support for industrially relevant research. Other centers are located at such major universities as MIT, Rensselaer Polytechnic Institute, and Georgia Institute of Technology. New Jersey is, in fact, the only state with two such centers, the other one being Rutgers University's Ceramics Research Center. Moreover, the center at NJIT is one of only two in the nation working in the area of toxic and hazardous substance management.

3. An Advanced Technology Center in Toxic and Hazardous Substance Management has been proposed by the Governor's Commission on Science and Technology. It is conceived as a nationally regarded base for innovative technology research. In recognition of the importance of this work, earlier this year , Governor Kean announced a grant of $558,000 to acquire research equipment for several proposed projects.

Out of these three separate but complementary initiatives has come a research center, which is unique in that it respresents the combined efforts of the federal government, the state government, private industry, and ~~five~~ 4 major universities. A description of the organization and management structure of the center, examples of possible research projects, and a prospectus on the proposed new facility are provided as follows. Every effort has been made to ensure that the center will respond to industry's needs and operate efficiently within the framework of the cooperating universities.

The budget for the Cooperative Center is anticipated to come, in part, from annual industrial membership fees. Industrial members will be asked to make a three year commitment at $30,000 annually for membership in the Center. The NSF requires a minimum of eight industrial members for Center support. I am pleased to report that we have met this requirement with firm commitments from such major companies as Exxon, Rohm & Haas, and PSE&G. Many additional companies have indicated a strong interest in joining the Center.

The Center may be viewed as an economical extension of the in-house research of the member companies. Industrial members will be kept informed of the progress of the research through their industry monitors, quarterly reports and semiannual presentations. They will also have pre-publication access through their informal interaction with the faculty members.

and graduate students to research results for developing processes and techniques. New ideas for their own in-house research also may be stimulated through these informal discussions. In addition, the center will help members keep abreast of major trends in research which would not be easily available otherwise.

An industrial advisory board will advise the center on matters of operations, policy, and research. Industrial monitors representing each of the participating companies will provide the most frequent interaction with the universities. They will monitor the research progress of specific projects within the Center and communicate the results to their companies.

The center director will be the chief administrator of the facility. In addition, there will be division directors, each responsible for a major area of research. These individuals will generally be faculty or senior research personnel from the participating academic institutions. Their areas of expertise will correspond broadly to anticipated major research interests of the center, including, but not necessarily limited to, incineration, biological and chemical treatment, physical treatment, and health effects assessment. Finally, every project conducted within each division will have a manager drawn from the faculty or senior research staff of the cooperating universities. Each project will also involve additional institutional personnel,

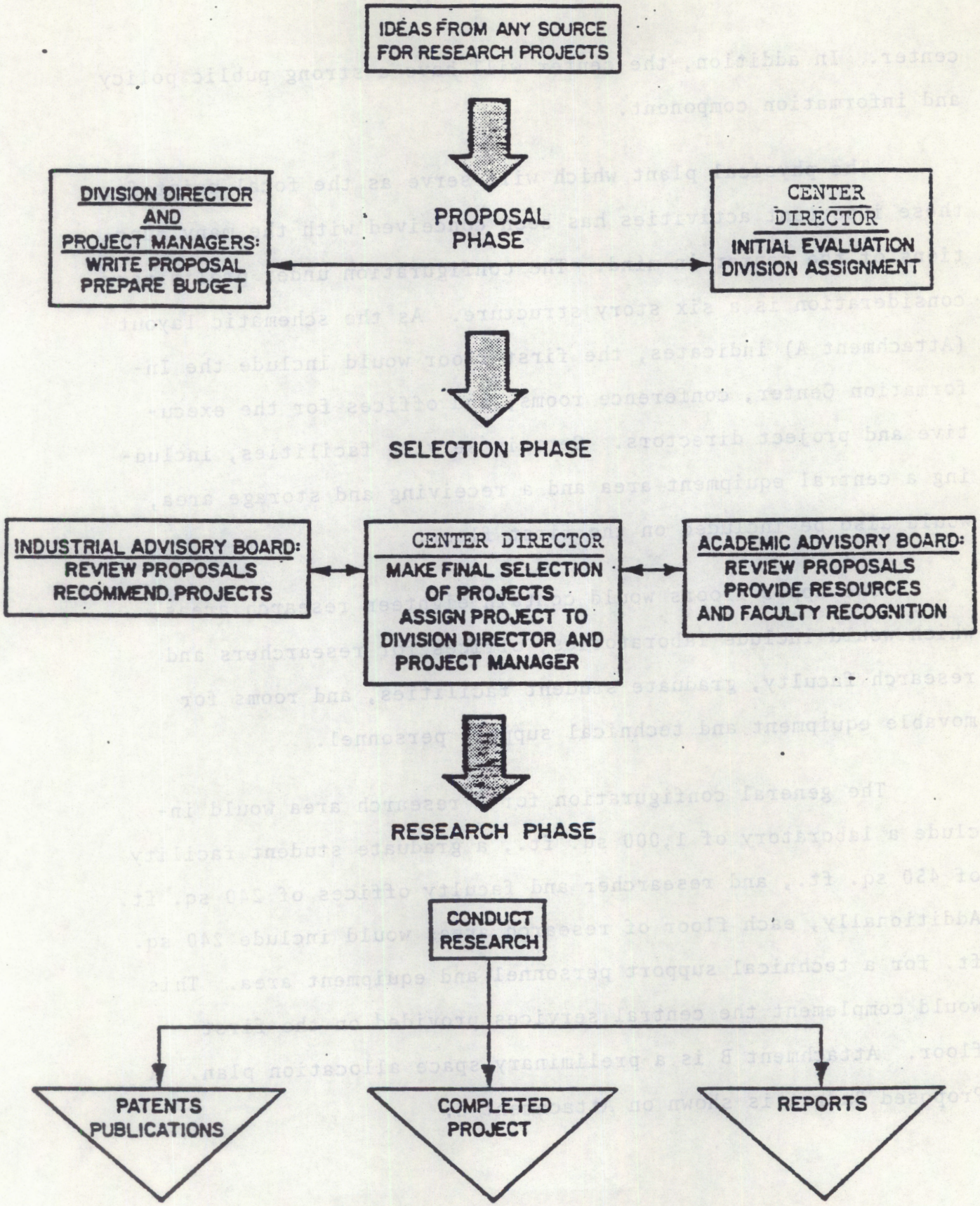
including faculty and graduate students with appropriate expertise and/or interests.

The center will also have an academic advisory board comprised of the chief academic officer of each member institution, or his designee. The primary responsibilities of this body will be to review all selected research projects to insure that they are in accord with the policies of the participating academic institutions; review operating and research budgets to insure that they represent fair and appropriate allocation of institutional resources; and review center policies to insure consistency with university policy.

Ideas for research projects may come from anyone associated with the center. In fact, a number of research proposals were presented to industry at an NSF-sponsored conference in February, and a determination regarding their implementation will be made in the near future. Examples of possible study topics include air pollution control using molten salt scrubbers, effects of heavy metal - organic complexes on anaerobic digestion, absorption and in situ fixation of hazardous water, and development of medical protocol to evaluate toxic exposures.

The project flow chart on the following page depicts the procedure for fulfilling the research responsibilities of the

PROJECT FLOW CHART



center. In addition, the center will have a strong public policy and information component.

The physical plant which will serve as the focal point for these important activities has been conceived with the many functions of the center in mind. The configuration under preliminary consideration is a six story structure. As the schematic layout (Attachment A) indicates, the first floor would include the Information Center, conference rooms, and offices for the executive and project directors. Certain service facilities, including a central equipment area and a receiving and storage area, would also be included on the first floor.

The upper floors would contain eighteen research areas, which would include laboratories, offices for researchers and research faculty, graduate student facilities, and rooms for movable equipment and technical support personnel.

The general configuration for a research area would include a laboratory of 1,000 sq. ft., a graduate student facility of 450 sq. ft., and researcher and faculty offices of 240 sq. ft. Additionally, each floor of research areas would include 240 sq. ft. for a technical support personnel and equipment area. This would complement the central services provided on the first floor. Attachment B is a preliminary space allocation plan. A Proposed Budget is shown on Attachment C.

After a careful and detailed analysis of the NJIT campus and adjacent land, two potential sites have been identified. One of these is on the southern boundary of the campus in closest proximity to the University of Medicine and Dentistry of New Jersey; the second is on the north campus. Consideration has been given to the adjacent land and building uses, relationships to existing laboratories and services, and the total area required. Owing in part to the public service and public information components of the project, special consideration will be given to the provision of meeting and parking facilities. Development of either site would make a significant contribution to the urban renewal of Newark's Central Ward.

To the extent possible, NJIT will contribute such land as it presently owns to develop the selected site. It is our understanding that monies from the proposed bond will cover remaining site acquisition and construction costs for this very important New Jersey-based project.

Let me move on to another topic now and address my final remarks today to a second bill under consideration. A-1768 creates the New Jersey Commission on Science and Technology in the Department of Commerce and Economic Development. This body will continue the important work of Governor Kean's blue-ribbon panel; it will oversee implementation of the many recommendations proposed by the original Commission. Its long-term goals will, of course, be those of its predecessor -- to foster economic develop-

ment in New Jersey by formulating plans and programs for science and technology in the State. These goals will be achieved, in large measure, in cooperation with the state's major research universities. The strong ties with industry which these institutions have and will continue to develop are vital to New Jersey's future. I know that the legislature and the Commission would want to encourage the work of these institutions. It is, therefore, important that the proposed agency complement and reinforce their strengths; its role must be one of coordination and support, not of bureaucratic control. We believe it is important that the academic institutions be represented on the permanent Commission. This is consistent with the recommendations of the original body and would bring a special understanding of the unique needs of New Jersey's research institutions to the deliberations of the Commission.

We are also very concerned that the proposed agency not become one more rapidly growing bureaucracy. Its functions should in no way duplicate those of the Department of Higher Education or of our institutions. The Chancellor must be viewed as having a unique role in higher education in New Jersey, and the institutions must be afforded independence in their research support and development activities. For this last reason, we urge particularly that the proposed agency not be accorded the power to receive and disburse funds from non-state sources, a power which

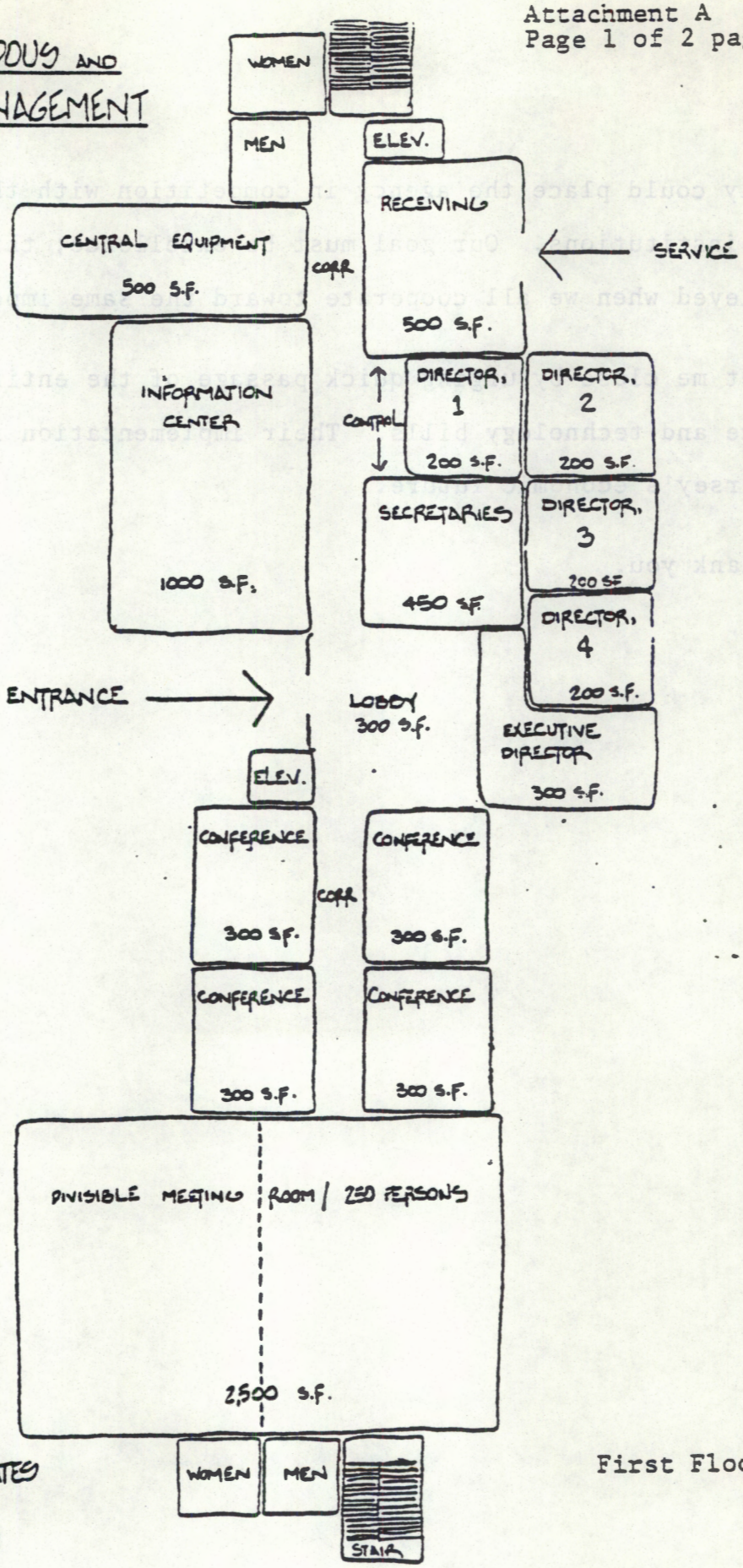
ultimately could place the agency in competition with the state's research institutions. Our goal must be excellence; this will be best achieved when we all cooperate toward the same important ends.

Let me close by urging quick passage of the entire package of science and technology bills. Their implementation is crucial to New Jersey's economic future.

Thank you.

CENTER FOR HAZARDOUS AND TOXIC WASTE MANAGEMENT

NEWARK, NJ

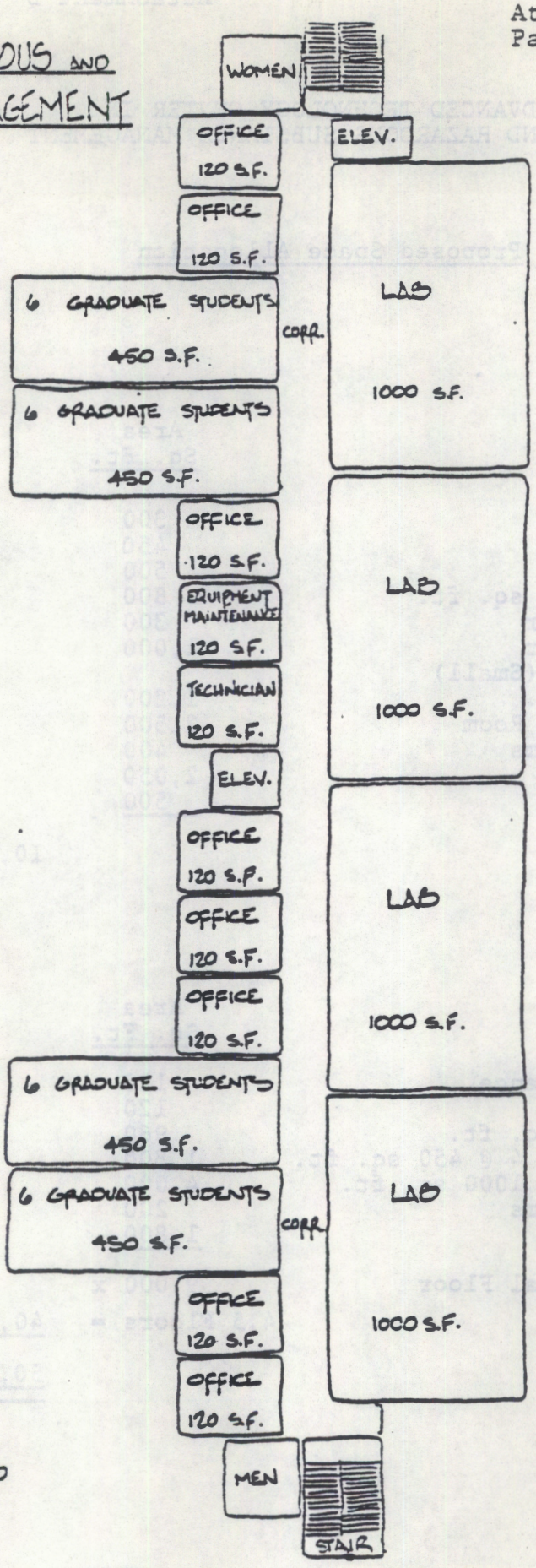


DAVID GIBSON & ASSOCIATES
914 RICHMOND TERRACE
STATEN ISLAND, NY 10301

First Floor

CENTER FOR HAZARDOUS AND TOXIC WASTE MANAGEMENT

NEWARK, NJ



DAVID GIBSON & ASSOCIATES
914 RICHMOND TERRACE
STATEN ISLAND, NY 10301

Typical Floors 2-5
(6th Floor is half this)

ADVANCED TECHNOLOGY CENTER IN TOXIC AND HAZARDOUS SUBSTANCE MANAGEMENT

Proposed Space Allocation

First Floor

Room Purpose	Area Sq. Ft.	
Lobby	300	
Secretaries	450	
Receiving	500	
Director 4 @ 200 sq. ft.	800	
Executive Director	300	
Information Center	1,000	
Conference Rooms (Small) 4 @ 300 sq. ft.	1,200	
Divisible Meeting Room	2,500	
Mens & Womens Rooms	400	
Circulation	2,050	
Central Equipment	500	
Total		10,000

Typical Upper Floor

Room Purpose	Area Sq. Ft.	
Equipment Maintenance	120	
Technician	120	
Offices 8 @ 120 sq. ft.	960	
Graduate Students 4 @ 450 sq. ft.	1,800	
Laboratories 4 @ 1000 sq. ft.	4,000	
Mens & Womens Rooms	200	
Circulation	1,800	
Total Typical Floor	9,000 x	
	4.5 Floors =	40,500
Building Total		50,500

ADVANCED TECHNOLOGY CENTER IN TOXIC AND HAZARDOUS SUBSTANCE MANAGEMENT

Proposed Budget

I. Land, Parking, and Site Work

Land for Center "footprint" and peripherals - 30,000 sq. ft. Acquisition Cost: $9/sq. ft.	$ 270,000
Parking Area: 240 cars x 425 sq. ft. = 102,000 sq.ft. Acquisition Cost: $9/sq. ft.	918,000
Site Work: Total area - 132,000 sq. ft. Site Work Cost: $3/sq. ft.	396,000
Total Land, Parking and Site Work	$1,584,000

II. Construction

Laboratory Areas: 18,000 sq.ft. x $150/sq.ft.	$2,700,000	
Other Areas: 32,500 sq.ft. x 100 sq.ft.	3,250,000	
Total		$5,950,000
Design Contingency (10%)		595,000
Fees - Architectural, Engineering and Other Consultants (15%)		982,000
Total Construction		$7,527,000
Total Project		$9,111,000
Less NJIT Land Contribution		-270,000
Net Budget		$8,841,000

Testimony by Dr. T. Alexander Pond
Executive Vice President of
Rutgers, The State University of New Jersey

before the Committee on Higher Education
and Regulated Professions of the General
Assembly of New Jersey
May 31, 1984

Assemblyman Rocco and members of the Committee, I appreciate the opportunity to appear before you to comment on the legislation you are considering to implement some of the most important recommendations of the Governor's Commission on Science and Technology. These bills, which will establish four Advanced Technology Centers and will establish a permanent New Jersey Commission on Science and Technology, are key companion pieces to the Science and Technology Bond Act which your Committee released last week. Taken together, these bills hold out the prospect of moving the State of New Jersey into the forefront of the high technology era. While some other states have a more highly developed industrial base in high technology fields, and while many states have established commissions and other groups to consider how to develop such industries in their regions, I know of no state that has taken the comprehensive and far-reaching steps which are represented in the legislation you have released and which you are considering.

Let me comment first on A-1762 through 1765, the bills which would establish Advanced Technology Centers in four areas: hazardous and toxic substance management, food technology, biotechnology, and ceramics. These research centers, based at our state's research universities, are the centerpiece of New Jersey's plan to support and develop industries that are dependent on scientific and technological advances in these areas. The centers are designed in the legislation to provide critical linkages between state-of-the-art research and the applications of that research to industrial development through several important devices, including innovation partnership grants, technology extension services, and low-cost business incubation facilities. These bills commit the Advanced Technology Centers to the closest possible working relationships with industry and they assure the citizens of New Jersey that their investment in research will yield direct benefits to the state's economy. The legislation also wisely places the administration of the centers in the academic institutions, which alone are able to recruit the world-class scientists who are so necessary to the success of this entire enterprise. In our view, A-1762 through 1765 are fully consistent with the recommendations of the Science and Technology Commission and we urge their passage.

We also support the passage of A-1767, the bill to establish a permanent New Jersey Commission on Science and Technology, but we do want to express some small reservations and suggest two amendments to the bill. As I indicated earlier, we believe New Jersey has been extraordinarily well served by the work of the Governor's Commission on Science and Technology, and there is no question in our minds that that work should be extended in a successor agency. Indeed, one of the most important recommendations of the Governor's Commission was the establishment of an oversight group which would be responsible for implementing and evaluating the other recommendations of the Governor's Commission and for formulating long-range plans and programs for science and technology in the state.

Our concerns about the bill have to do with the question of the Commission's involvement in the day-to-day operations of the advanced technology centers. As I noted earlier, one of the virtues of the bills establishing the centers is that they clearly place the operating control in the institutions in which the centers are located. It is important that the powers granted to the permanent Commission on Science and Technology not be so broad as to undermine this important management principle. While there

is great need for a permanent Commission, we should be sure to avoid the creation of another large bureaucracy in state government which is involved in the administration of the centers. We believe the Commission would be well advised to follow the model of administration of technology centers set by the National Science Foundation, which has already funded important technology centers in New Jersey at Rutgers and the New Jersey Institute of Technology.

We have only two changes that we would suggest be made in A-1767:

(1) We urge that Section 9.T., which gives the Commission the power to "receive and disburse funds from non-State sources including but not limited to federal funds; be eliminated. The universities which are responsible for operating the Advanced Technology Centers will need to raise considerable sums from non-state sources, including both private corporation and the federal government, if the centers are to be successful. It would be a great mistake to put the centers in the position of potential competition with the state's own Commission on Science and Technology for these funds. Such

competition can only serve to confuse and potentially jeopardize funding sources whose participation is critical to the success of this venture.

(2) We would also urge that the membership of the Commission described in Section 4. be expanded to include representation from the presidents of the state's research universities. Such representation is consistent with the recommendations of the Governor's Commission on Science and Technology which said that the membership of the successor agency should be "composed of senior representatives of business, labor, academia, and state government." I think all the members of the Governor's Commission would agree that the perspective and expertise which the academic members of the Commission contributed to its work were invaluable. We believe it would be a grave error for the permanent Commission to try to meet its charge without the benefit of input from the academic institutions which are central to the success of the effort.

Thus, we urge that the membership described in Section 4 be expanded to include the presidents of two research universities in New Jersey.

Mr. Chairman, I want to thank you again for the opportunity to comment on this legislation. I also want to thank your Committee, which was ably represented on the Governor's Commission by your chairman, for your prompt action in implementing the recommendations of the Governor's Commission. There can be little doubt that New Jersey faces stiff competition from the rest of the country in its desire to prepare itself for the economy of the future. But New Jersey has moved swiftly and soundly in developing a program that is far more likely to produce results than anything we have seen in other states. The bills which you are considering, to establish a permanent Commission on Science and Technology and four Advanced Technology Centers, are critical steps toward the goal of a sound economic future for our state. I hope your Committee will be able to act on them at the earliest opportunity.

Thank you.