

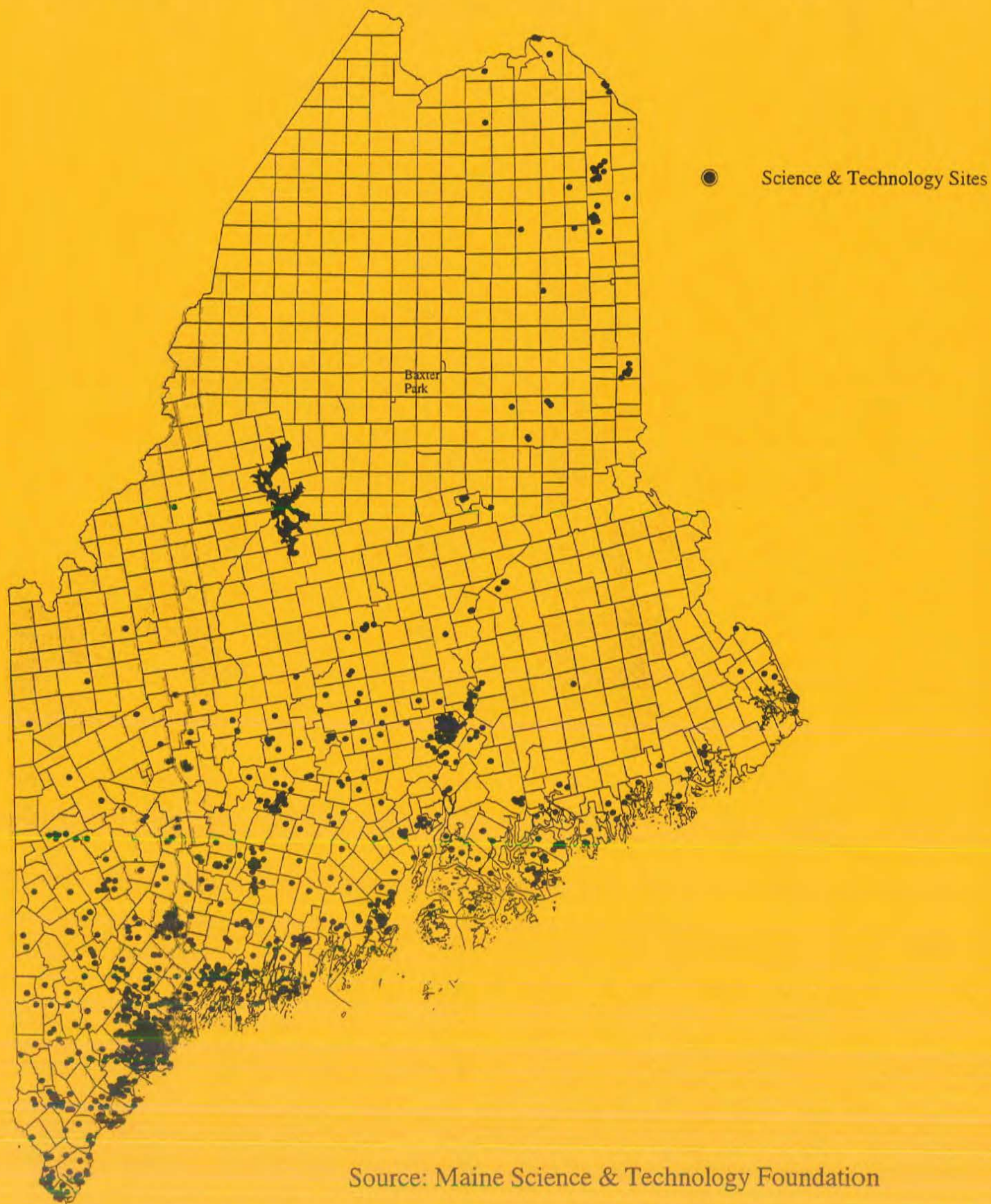
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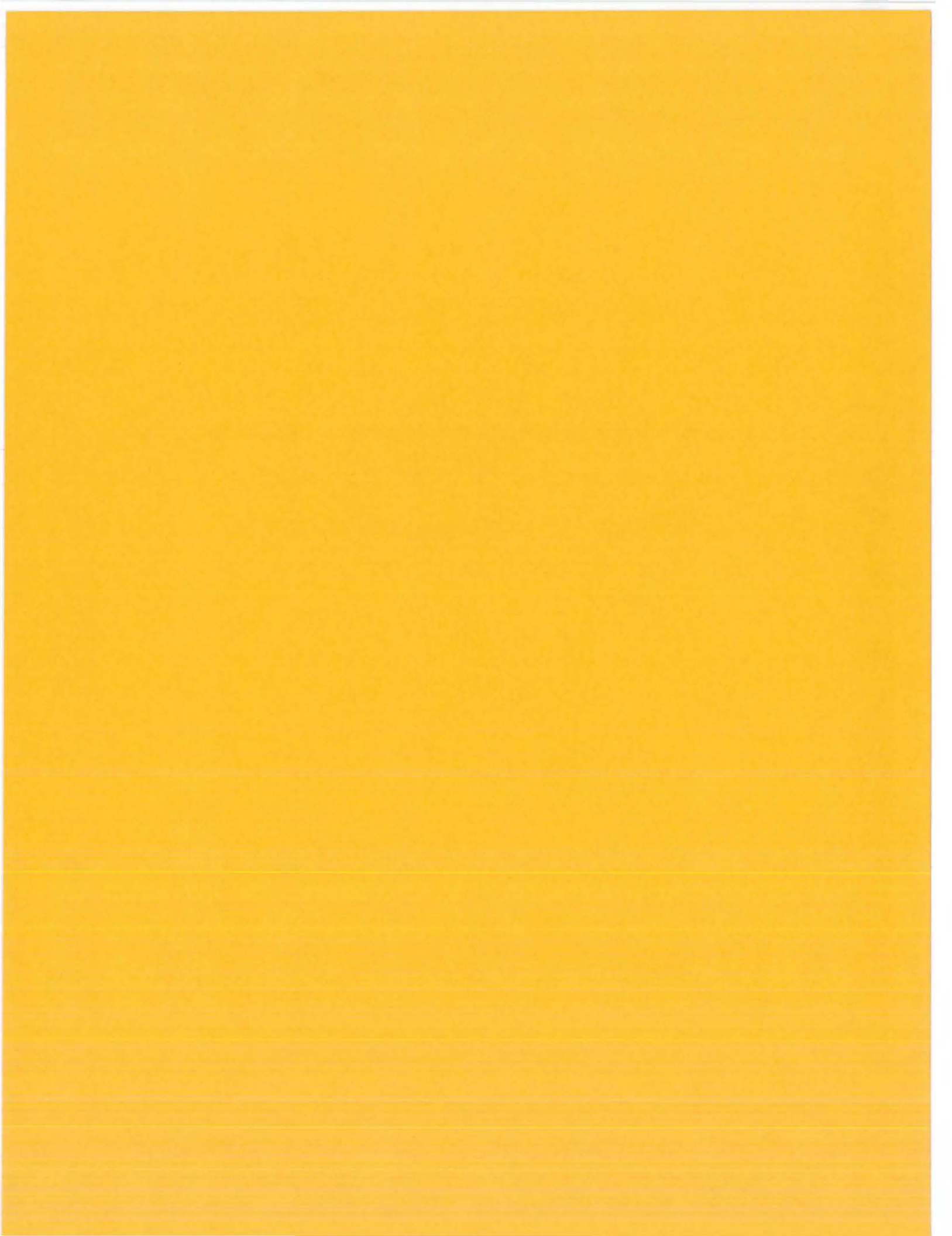


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Report Of  
The Commission to Study the Restructuring of The State's Fiscal Policies  
to Promote the Development of High-Technology Industry in Maine







# ***REPORT***

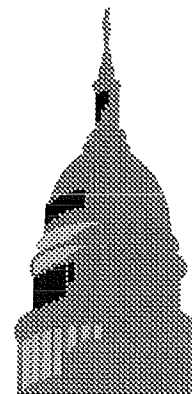
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***Commission to Study the Restructuring of the  
State's Fiscal Policies to Promote the Development of  
High-technology Industry in Maine***

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***STATE OF MAINE***

***January 1998***





**REPORT OF  
THE COMMISSION TO STUDY THE RESTRUCTURING OF THE  
STATE'S FISCAL POLICIES TO PROMOTE THE DEVELOPMENT  
OF HIGH-TECHNOLOGY INDUSTRY IN MAINE**

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## EXECUTIVE SUMMARY

The Commission to Study the Restructuring of the State's Fiscal Policies to Promote the Development of High-technology Industry in Maine, referred to in this report as "the commission," was established by the First Regular Session of the 118th Maine Legislature in the Spring of 1997 to examine and report on fiscal, educational, and cultural policies and issues affecting the State's high-technology industry and make recommendations to encourage the "beneficial expansion" of the high-technology industry in Maine.

The establishment of the commission recognized the importance of the high-technology industry to the future economic development of the state. The commission recognized that investments in science and technology are a positive way to improve the state's economy, provide added value to the state's traditional resource-based industries and expand on the growing capabilities of the state as a location for high-technology firms. High-technology jobs benefit the state by providing high-paying jobs and can provide the nucleus for the growth and expansion of other related industries.

The commission met six times to consider the issues before it. It received comments and materials from state agencies and numerous individuals and organizations interested in the role of high-technology businesses in economic development in Maine. The commission considered the scope of its work by exploring the definitions of what constitutes "high-technology" and "fiscal policies." The commission focused on the five science and technology areas targeted by the Maine Science and Technology Foundation: biotechnology, environmental technology, composite technology, information technology and marine science technology. Most of the information received by the commission centered on the area of information technology. The commission's discussion of fiscal policies centered around taxes and the availability of investment capital for private capital formation, as well as public programs for business assistance.

### **Key factors in the development of high-technology businesses**

The commission identified the following key factors in the development of high-technology businesses.

- Availability of skilled human resources
- Access to capital
- Research and development infrastructure
- Taxation
- Telecommunications infrastructure



## High-technology environment in Maine with regard to the key factors for development

The commission considered the investigation of the current condition of high-technology industry in Maine to be an important part of its charge. The commission recognized the work of the MSTF in developing and taking the lead in implementing Maine's Science and Technology Plan. The Science and Technology Plan includes activities directed at aspects of the key factors in the development of high-technology businesses identified by the commission through calls for the following.

- An educated and technically skilled workforce
- Research and development capacity relevant to Maine's industries
- Expanding commercialization
- Increasing innovations in Maine companies
- A networked Maine
- Improving input of science and technology in policymaking

The commission gathered information about Maine's position with regard to the key factors in the development of high-technology businesses. Although the commission was not able to conduct its own independent evaluation, it did have available to it several evaluations of Maine's position relative to other state's in many areas relevant to the commission's investigation.

**1. Availability of skilled human resources.** Most of the businesses providing information and comments to the commission indicated that the shortage of skilled workers is a significant barrier to growth. While this is a national trend, Maine ranks better than the average in some regards (high school completion rate; student performance in math and science), and it ranks lower than the average in some areas (number of science and engineering graduate students, number of persons having completed 4 years of college). Maine should continue and expand efforts to improve the education and training of skilled workers.

**2. Access to capital.** Some persons appearing before the commission believed that lack of capital was a barrier to the expansion of high-technology businesses in Maine. Others indicated that capital was available, but that many young businesses did not know how to obtain access to it. This issue merits further study.

**3. Research and development infrastructure.** Research and development has been growing faster in Maine than in the United States as a whole, but the level of spending in Maine is still only 20% of the United States average. Maine ranks low compared to other states in most categories of research indicators, especially in the area of R&D spending at universities where Maine ranks 50th. The commission supports recommendations of the Joint Select Committee on Research and Development to expand funding for research and development.

**4. Taxation.** The commission was unable to locate comparisons of state tax systems that related specifically to high-technology businesses. General comparisons indicate that Maine's sales and personal income tax rates are higher than the national average. Property taxes appear to be around the national average. Maine has a number of tax incentive programs of benefit to high-technology businesses. It was clear to the commission that these incentives should be retained and studied to determine their effectiveness and whether there is a need for improvements. Persons testifying before the commission recommended lowering the top bracket on the personal income tax and the expansion of some of the current tax credit programs.

**5. Telecommunications infrastructure.** Maine is still in the process of inventorying its telecommunications infrastructure. Although Maine's status as a rural state presents difficult challenges, the state has made progress in several areas that will be attractive to high-technology business. The state is 100% digitally switched. It is the first state in the nation to connect all of its schools and public libraries to the Internet. Internet usage is high in the State and Portland is currently a test location for rapid coaxial cable Internet access.

## **RECOMMENDATIONS:**

The commission supports the recommendation of the Joint Select Committee on Research and Development that the Legislature establish an ongoing Joint Select Committee on Science and Technology to ensure that there is one legislative body with overall responsibility for policy direction and oversight on science and technology issues. The commission also supports the recommendations of the Maine Science and Technology Plan that an executive level coordinating committee be established for science and technology policy. The commission makes the following additional recommendations in support of the goal of improving Maine's attractiveness for the location and expansion of high-technology businesses.

### **1. AVAILABILITY OF SKILLED HUMAN RESOURCES**

**RECOMMENDATION 1.** The State should raise the level of student's performance in the areas of math, science, and problem solving to ensure that Maine students rank among the top when compared internationally.

**RECOMMENDATION 2.** The education system in Maine should ensure that all students acquire competency in the basic computer skills common in the workplace including word processing, spreadsheets, databases and the Internet. Students should be exposed to the elements of computer programming and should be aware of career opportunities in computer science and other technological fields and the spectrum of educational resources in the field of technology. The commission urges that efforts be

supported to ensure that instruction, and computer software and hardware used in instruction keep current with up-to-date business practice.

**RECOMMENDATION 3.** The State should develop collaborative efforts and facilitate cooperation between schools and high technology businesses, including consultation, mentoring for both students and teachers, and assistance in acquiring both hardware, software, and training.

**RECOMMENDATION 4.** The Chancellor of the University of Maine System should identify, within the University of Maine System, the high-technology disciplines that would be the most productive for the establishment of Ph.D. programs to provide educational and professional opportunities for Maine students and economic opportunities through the establishment of significant academic high technology resources. The Chancellor should especially consider the establishment of Ph.D. programs in computer science and electrical engineering as well as other areas within the MSTF target areas where Ph.D. programs do not currently exist. The Chancellor should present a plan to the 119th Legislature for the establishment of Ph.D. programs in a timely manner.

**RECOMMENDATION 5.** The Finance Authority of Maine should review existing student financial aid programs for supporting students pursuing high-technology courses of study and make recommendations to the 119th Legislature including any legislation necessary to provide additional resources to support such students.

**RECOMMENDATION 6.** Local school systems and businesses should cooperate in efforts to increase public awareness of job and training opportunities in the high-tech industry through the public education system and other public information opportunities.

## **2. ACCESS TO CAPITAL**

**RECOMMENDATION 7.** The Finance Authority of Maine should analyze the availability of capital for business startup and development to determine if sufficient capital is available for all levels of high-tech business needs and to identify what barriers may exist to accessing capital. The state should develop strategies for increasing capital, if necessary, for assisting fledgling businesses in locating and obtaining capital, and for removing barriers to access.

## **3. RESEARCH AND DEVELOPMENT INFRASTRUCTURE**

**RECOMMENDATION 8.** The commission supports the recommendations of the Joint Select Committee on Research and Development to expand funding for R&D programs in Maine.

#### **4. TAXATION**

**RECOMMENDATION 9.** Current tax incentives for high technology businesses should be retained. The Bureau of Revenue Services and the Department of Economic and Community Development should review the use of those incentives and report to the 119th Legislature regarding the effectiveness of the incentives in accomplishing their purposes.

#### **5. OTHER RECOMMENDATIONS**

**RECOMMENDATION 10.** The State should identify, develop and market a high-technology focal point. The Maine Science and Technology Foundation and the Department of Economic and Community Development should develop a complete inventory of existing high-technology resources, attracting and developing new companies, and present a plan to the Legislature for aggressively marketing Maine's potential as the location for high technology businesses.

**RECOMMENDATION 11.** The State should provide and promote programs for the development of entrepreneurial skills including assistance in development of business plans, accessing capital, obtaining legal and other professional assistance, managing business growth, and marketing.

**RECOMMENDATION 12.** The Maine Science and Technology Foundation, the Maine Development Foundation, the Finance Authority of Maine, and the Department of Economic and Community Development cooperate in making recommendations to the 119th Legislature regarding the establishment of a statewide clearing house to be the focal point for information and assistance to persons seeking to develop high-tech businesses in Maine.

The Commission to Study the Restructuring of the State's Fiscal Policies to Promote the Development of High-technology Industry in Maine concluded that the high-technology industry offers an exciting potential for future economic growth for the state. High-technology businesses will be very important to the overall economy in the 21st Century. They offer high paying jobs and generate prolific opportunities for spin-off businesses. Many other states have also recognized the importance of the high-technology industry. Although Maine offers significant advantages for high-technology businesses, much remains to be done if Maine is to improve its ability to compete with other states for expansion in that sector. Decisionmakers should concentrate efforts on the key factors in the development of high-technology industries: availability of skilled human resources, access to capital, research and development infrastructure, taxation, and

telecommunications infrastructure. The commission believes that the opportunities for improvement of the State's economy are worth the effort required to meet the challenges.



**REPORT OF  
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STATE'S FISCAL POLICIES TO PROMOTE THE DEVELOPMENT  
OF HIGH-TECHNOLOGY INDUSTRY IN MAINE**

**I. BACKGROUND**

**A. LEGISLATION**

The Commission to Study the Restructuring of the State's Fiscal Policies to Promote the Development of High-technology Industry in Maine, referred to in this report as "the commission," was established by the First Special Session of the 118th Maine Legislature in the Spring of 1997.<sup>1</sup> The commission was composed of 20 members, representing the Legislature, State Government, the academic community, and businesses involved in high technology or likely to be affected by high-technology development.<sup>2</sup> The legislation directed the commission to conduct:

...

1. An examination and report on the state fiscal policies, laws, regulations and financial incentives for the growth and development of high-technology industry in the State, relative to those of other states;
2. An examination and study of the key fiscal, educational and cultural issues affecting the State's high-technology industry; and
3. An examination and a report outlining specific legislative recommendations for restructuring the State's fiscal, educational and cultural policies and laws and rules to create comparative advantages designed to encourage the beneficial expansion of high-technology industry in the State.

The commission was directed to present its report and recommendations to the Second Regular Session of the 118th Legislature by January 1, 1998. The legislation enacting the commission anticipated that it would begin its study in the Summer of 1997; however, appointments to the commission were not completed until October. After its initial meeting, the commission contracted, through the Legislative Council, for part-time staffing. In December, the commission requested, and the Legislative

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<sup>1</sup> Public Laws 1997, c. 557, Part C. A copy of Part C is located in Appendix A.

<sup>2</sup> A list of members is located in Appendix B

Council approved the introduction of legislation extending the reporting deadline to January 31, 1998

## **B. THE IMPORTANCE OF HIGH TECHNOLOGY TO MAINE'S ECONOMIC FUTURE**

If Maine is to undertake a significant effort to improve and enhance the state's position with regard to high-technology business development, it is important to identify why it is desirable to move in that direction. As identified by MSTF, the reasons for investing the State's resources in science and technology are compelling. They include the following.

### **REASONS FOR INVESTING IN SCIENCE AND TECHNOLOGY**

- Investments in science and technology lead to a vibrant, balanced economy and significant improvements in the state's economy
- Maine must explore new ways to add value to its traditional natural resource assets to maintain and enhance the state's position in industries that have traditionally been important to the state
- Economic development and the best paying jobs depend upon technology resources which depend upon educational institutions, innovation and risk-taking<sup>3</sup>

## **C. PROCEDURE**

The commission held its first meeting in October 1997. Mark LeDuc and Jeffrey Nathanson were selected as cochairs of the commission. The commission held 6 meetings in the state office complex in Augusta. One additional meeting was held by conference call because of difficulties resulting from an ice storm. A meeting was held in Augusta on January 6, 1998 to solicit comments from interested persons. The commission received presentations and materials from state agencies and numerous persons interested in economic development and high technology businesses in Maine.

At one meeting the committee split into subcommittees -- one to address fiscal issues and one to address educational issues. The subcommittees discussed their policy area and reported back to the full commission. The remainder of the commission's work was conducted by the commission as a whole.

The commission held a meeting in Augusta to solicit public comment on January 6, 1998. Notices of the public meeting were widely distributed within Maine's high-technology community. Despite the beginning of what became "the ice storm of the century," the meeting was attended by a good number of people who provided

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<sup>3</sup> Maine Science and Technology Foundation. *Answering the Call for An Entrepreneurial State: Maine's Science and Technology Action Plan.*

useful information to the commission on the condition of the high-technology industry in Maine and made recommendations regarding changes that could be made in state law and policy to improve the state's attractiveness to high-technology businesses. Most comments were directed at computer-related types of businesses.

The commission realized early in its discussions that given the limited time available for its work, it would need to focus its activities on efforts that make the most efficient use of its time. While time and funds were limited for in-depth surveys or the accumulation and analysis of sophisticated statistical data, the commission was fortunate in having among its members, agencies and individuals with significant experience in the issues before the commission who could bring to the commission's work a wealth of knowledge about information that had previously been accumulated.

The commission's recommendations represent the consensus of its members. While the members came from many different backgrounds and had many different priorities, all agreed with the goal of designing a future for Maine as a high - technology state. The commission believes that the recommendations contained in this report will help Maine achieve that goal.

#### **D. OTHER SIMILAR GROUPS**

Given the important potential of high-technology to the future of economic growth in the State of Maine, it is not surprising that other groups were exploring issues similar to those under consideration by the high-technology commission. In addition to the ongoing activities of the Department of Economic and Community Development (DECD), the Maine Science and Technology Foundation (MSTF), The Maine Economic Growth Council (MEGC), the Maine Development Foundation (MDF), the State Planning Office (SPO) and many other agencies and institutions working with them, the commission was paralleled in its work by the Joint Select Committee on Research and Development (the R&D committee) appointed by the Legislature to review current policies and programs in support of applied research and development in the target technology areas identified by the Maine Science and Technology Foundation. The Business Innovations Committee, working under the auspices of MSTF, is in the process of developing the process of implementation planning with regard to the State's science and technology policy..

The R&D Committee is expected to recommend the establishment of a Joint Select Committee on Science and Technology to oversee legislative policymaking in the area of science and technology and the following initiatives related to research and development:

- \$20 million bond package for research and development at the University of Maine System and marine research facilities. This recommendation provides:
  - \$13.5 million for capital improvements and equipment purchases to support R&D activities at the University of Maine System

\$ 3.0 million for a marine technology fund

\$ 2.0 million for a marine aquarium

\$ 1.5 million research challenge grants

- \$10 million appropriation to the University of Maine System for the first year of a five year strategy to create a fund for applied scientific research and related commercial development in five target areas
- Extension of the seed capital tax credit for investment in small manufacturers that provide a product or service to persons primarily out-of-state or that brings capital into the State.

## **II. WORK OF THE COMMISSION**

### **A. DEFINITIONAL ISSUES**

The commission recognized that its work was centered upon the interpretation of the legislation that established it. The meaning of two terms was especially critical.

#### **1. "High-technology"**

The commission was charged with examining the development of the "high-technology" industry in Maine. The commission recognized that there is no one definition of "high-technology" in government, academic, and business arenas. The dictionary defines "high-technology" as

any technology requiring the most sophisticated scientific equipment and advanced engineering techniques, as microelectronics, data processing, genetic engineering, or telecommunications<sup>4</sup>

In its only attempt to define "high-technology" the Legislature described it as

...

- (1) The design, creation and production of computer software, computer equipment, supporting communications components and other accessories that are directly associated with computer software and computer equipment; and
- (2) The provision of Internet or electronic communications access services or support access to electronic media and data and associated communications support, or advanced telecommunications capability as that term is defined in the federal Telecommunications Act of 1996, Section 706 (c)(1).<sup>5</sup>

<sup>4</sup> Random House College Dictionary Revised Edition, 1988

<sup>5</sup> 36 MRSA §5219-M (1997)

This statutory definition was adopted for purposes of defining what activities were eligible for the high-technology investment credit enacted by the Legislature in 1997. The commission considered the tax credit definition to be far too narrow to encompass the wide range of high-technology businesses that are active in Maine or that the state might hope to develop or attract.

The Maine Science and Technology Foundation, following extensive consideration and planning has adopted five target areas for the concentration of MSTF's activities. Those target areas are:

- Biotechnology
- Environmental technology
- Composite technology
- Information technology
- Marine science technology

A report prepared for MSTF has used SIC codes to establish a list of categories of business that are "technology-intensive industries." This list forms the basis of MSTF's research, analysis, and programs. While the commission did not have time to analyze the MSTF categories in any depth, it came to the conclusion that the categories are the best basis for discussion and analysis of the high-technology industry in Maine.<sup>6</sup>

The commission also recognizes that there are numerous businesses whose primary activities are not in sectors defined as "high-technology" whose success is nevertheless dependent upon the availability of reliable high-technology resources. Businesses such as L.L. Bean (retail and mail order sales), UNUM (insurance), and MBNA (financial services) have large presences in the Maine economy and depend heavily upon information technology services. Numerous other business increasingly depend upon high-speed data transmission service. The development of the high-technology industry benefits far more businesses than those in the MSTF listing of computer codes.

The great majority of the comments and materials received by the commission came from the information technology industry. These businesses have organized interest groups and advocates and provided valuable insights into the challenges facing the development of high-technology in Maine.

**2. Fiscal policies.** The commission is directed by its legislation to examine and report on "...state fiscal policies, laws regulations and financial incentives for the growth and development of high-technology industry in the

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<sup>6</sup> It is the understanding of the commission that the MSTF target areas were also accepted as the basis of the R&D Committee study.



State.” A general definition describes “fiscal policies” as the policy pursued by government in connection with legislation or administrative practices relating to taxation, the public debt, appropriations and expenditure, government funds, and similar matters; particularly the intended effect of such legislation and administrative practices upon private business.

Examples of fiscal policy include policies related to taxation, bonding, other revenues, financing and government expenditures. The commission discussion of fiscal issues centered on taxation policies and the availability of capital for high-technology businesses at various stages of development, including incentives for private capital formation, as well as public programs (bonds or appropriations) for business assistance.

## **B. KEY FACTORS IN THE DEVELOPMENT OF HIGH TECHNOLOGY INDUSTRIES**

The commission attempted to identify the key factors that are important to the development of high-technology businesses. The identification of these factors is necessary to evaluate Maine’s attractiveness as the location for high-technology businesses and for the development of state policies intended to enhance the state’s position relative to other state’s in retaining and attracting high-technology businesses. The commission consulted studies of high-technology industries in other states (Massachusetts, North Carolina, Ohio, Washington) and carefully considered the comments and materials presented to the commission by interested persons and institutions. The following key factors were identified by the commission.

**1. Availability of skilled human resources.** Skilled employees are important to any business; however, the acquisition of skilled employees is especially challenging for high-technology businesses. High-technology businesses require skills that are not traditionally taught in the public education system. Although the K-12 education system is increasingly adapting to the explosion of information technology tools, the availability of appropriate hardware, software, and instructional capacity frequently lags behind current technology.

A recent national report produced by the Information Technology Association of America (ITAA) for the National Information Technology Workforce Convocation has identified the shortage of information technology workers as one of the most important factors confronting not only high-technology businesses but all businesses.<sup>7</sup> The ITAA report places a conservative estimate for the number of unfilled information technology positions at U. S. firms at 190,000 and indicates that 68% of information technology companies cite a lack of skilled or trained workers as a barrier to

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<sup>7</sup> *Help Wanted: The IT Workforce Gap at the Dawn of a New Century.* Arlington, Va. 1997. (A copy of the report may be downloaded through the Internet at [www.ita.org/itworksu](http://www.ita.org/itworksu))

their companies' future ability to grow. At the same time, the number of students graduating with bachelor degrees in computer science decreased 43 % from 1986 to 1994. While the report does not identify solutions to address the shortage, it indicates that education is a key and that in the absence of improvements in education and training, the U. S. can expect to see companies seeking employees overseas. The Convocation, sponsored by ITAA, the U. S. Departments of Education and Commerce and the University of California at Berkeley, convened six task forces to address basic math and science competencies, image of the IT professions, quality and productivity issues, recruiting underrepresented groups, responsiveness of industry and higher education and skill upgrading of the current workforce. These task forces are seeking strategies to address the problem of the shortage of information technology workers.

**2. Access to capital.** Access to capital and financing is an important factor for the establishment or growth of a business. Financing a high-technology business can be an especially difficult challenge because of the short time frames required, the unfamiliarity of the traditional capital community with the patterns of financing needed for high-technology businesses, and the frequent lack of experience with business skills on the part of individuals on the forefront of technological breakthroughs.

The capital needs of a developing business varies depending upon the stage of development that the business is at. Typically for technology businesses, initial needs are not large, but those needs are frequently beyond the resources of the friends and family of the business owner. Traditional sources of capital may be either hesitant to invest in a new small business with a high level of risk or are looking for investment opportunities involving larger amounts of money. The technology life cycle, as it relates to capital needs, is well reflected in a chart prepared by MSTF included in Appendix C.

Obtaining capital at critical stages in the development of a high technology business requires that a business owner prepare and market a realistic business plan. While programs for the development of entrepreneurship skills and business assistance exist, many technology developers are unprepared for the business aspects of expansion beyond the initial development of a product or service.

**3. Research and development infrastructure.** The establishment of a viable research and development infrastructure is important for the expansion of the high-technology industry. A study conducted for MSTF in 1997 indicates that "R&D is critical to the performance of technology-intensive industries and long-term economic growth." R&D provides the foundation for new products and processes. Investments in R&D

are estimated to produce at least 50% of productivity increases in the United States.<sup>8</sup>

Larger businesses may make substantial expenditures on R&D on their own behalf. Expenditures can be encouraged by tax incentives. Smaller businesses or those not wanting to maintain their own R&D efforts will need to depend upon the availability of R&D efforts conducted through private independent facilities or public institutions, such as universities and research labs. A recent study of U.S. manufacturing firms indicated that 11% of new products and 9% of new processes resulted directly from university research within the past 15 years.<sup>9</sup> Persons presenting information to the commission indicated that an important aspect of a viable R&D included the availability of a Ph.D. program to provide a high level of quality research, internship opportunities, and the spin-off of related businesses.

**4. Taxation.** Taxation can be an important factor to a business when it is deciding where to locate and when it is making decisions about how to allocate funds. While academic studies continue to debate the effectiveness of tax incentives in attracting or maintaining businesses, there can be no doubt that taxation policy is one of the factors considered by a business in determining where it will be located. Most studies indicate that business decision-makers look primarily at the overall taxation policy of a state, preferring a state that provides for predictability and tax equity without substantial variations from typical state policies. Technology-related businesses recognize that state fiscal systems require revenues to pay for expenditures for education, infrastructure, and technology-friendly programs. Businesses are typically willing to pay their own way as long as they are treated fairly.

**5. Telecommunications infrastructure.** High-technology businesses cannot survive without access to high-quality telecommunications and other technological support services. The availability of fiber optics, teleconferencing, and advanced data transmission capability are as important to the 21st century as good roads and rail lines have been to the 20th century.

### **C. MAINE'S HIGH-TECHNOLOGY PLANNING EFFORTS**

In 1988 the Maine Legislature created the Maine Science and Technology Commission (MSTC) to enhance industrial innovation and research excellence. The MSTC was replaced in 1993 by the Maine Science and Technology Foundation, a statutorily-created nonprofit corporation under Section 501(c)(3) of the Internal Revenue Code. MSTF is directed to encourage, promote, stimulate, and support:

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<sup>8</sup> Nexus Associates. *Maine's Science and Technology Environment*. September 16, 1997.

<sup>9</sup> Nexus. P. 28

**MSTF PURPOSE**

- Research and development of relevance to the State
- Technology transfer activities that increase the competitiveness of businesses and public institutions of higher education in the State
- Effective and efficient application of technologies in the public and private sectors
- Scientific and technological education and training
- The development of new commercial products and the fabrication of those products in the State
- Cooperative efforts among government, the private sector and universities and colleges with regard to these issues<sup>10</sup>

In addition to administering a number of university-business innovation, research, and investment programs, MSTF has developed and taken the lead in implementation of Maine's Science and Technology Action Plan. This plan establishes as goals:

**MAINE'S SCIENCE AND TECHNOLOGY  
ACTION PLAN GOALS**

- An educated and technically skilled workforce
- Research and development capacity relevant to Maine's industries
- Expanding commercialization
- Increasing innovations in Maine companies
- A networked Maine
- Improving input of science and technology in policymaking

The Business Innovation Committee, established by MSTF, is working on implementation of the action plan. Progress on implementing the action plan is measured according to measures of growth developed by the Maine Economic Growth Council.

**D. THE HIGH-TECHNOLOGY ENVIRONMENT IN MAINE WITH  
REGARD TO THE KEY FACTORS FOR DEVELOPMENT**

The commission did not have the time or resources to evaluate independently how Maine compares with other states with regard to the key factors for development. Fortunately, numerous other measures of performance exist that shed light on Maine's position compared to other potential locations for high-technology businesses.

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<sup>10</sup> 36 MRSA §13122-B.

- *Maine's Science and Technology Environment*, a report prepared in 1997 by Nexus Associates, Inc. for the Maine Science and Technology Foundation, was intended to provide a foundation for the implementation of the Maine science and technology plan. That report recognized both accomplishments and the need for improvements if the status of technology based businesses in Maine is to be improved.
- The **Maine Economic Growth Council (MEGC)**, administered by the Maine Development Foundation, issued a report in 1997 evaluating Maine's performance in a number of factors identified as relating to economic performance goals identified by MEGC.<sup>11</sup>
- Another valuable resource was the *1997 Development Report Card for the States* prepared by the Corporation for Enterprise Development (CFED) to provide economic benchmarks for state and corporate decisionmakers. This report ranks all states in the areas of economic performance, business vitality, and development capacity and rates state's tax and fiscal system. According to the CFED report Maine ranks 12th in economic performance, 45th in business vitality, and 45th in development capacity. The state ranks in the top 15 states in its tax and fiscal system. Although the report card covers general business conditions, several of its measures relate specifically to technology factors.

In addition to these statistical studies MSTF and SPO have cooperated in a survey of businesses conducting R&D in Maine to determine their business characteristics as well as their perceptions of the challenges presented by Maine's technology climate. Of 350+ businesses identified in MSTF's five target areas, 90 were identified as performing R&D. By late 1997, 34 companies had been individually surveyed using both closed-end and open-end questions. Additional surveys will be completed, but the recent inclusion of additional company results has not produced in significant variations in the survey's findings. According to the survey, the leading impediments to company growth were the need to improve the educational level of the workforce (42%), the need to improve business development (30%) and the need to increase the availability of capital (28%). A summary of the findings of the survey are included in Appendix D.

**1. Availability of skilled human resources.** More than 80,000 workers in Maine are employed in technology intensive industries identified by MSTF.<sup>12</sup> Between 1987 and 1996, Maine lost workers in paper, electronics, food processing, construction, textiles and apparel industries and gained jobs in ship building, machinery, drugs and research labs.

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<sup>11</sup> Maine Development Foundation. *Performance Measures and Benchmarks to Achieve Maine's Long Term Economic Goals: Third Report of the Maine Economic Growth Council*. January 1997.

<sup>12</sup> Nexus. P. 8. For purposes of the NEXUS study, high technology industries were defined as those that are in the top 25 % in two of the following three categories (for the U.S. as a whole): R&D expenditures per worker, capital investment per worker; and scientists and engineers as a percentage of total workforce.



In light of the national ITAA study highlighting the shortage of workers in information technology fields, it is not surprising that Maine companies presenting information to the commission also indicated that a shortage of skilled workers was their most significant problem.

Employment patterns provide some indication of the extent to which the state is attracting high tech industries. Professor David Wihry of the University of Maine, a member of the commission, analyzed high-technology industries based upon the SIC codes identified by MSTF (with some adjustment). His analysis compared the numbers of workers in industries in Maine with the numbers in the United States as a whole. It presents data for 1990 and 1995 permitting comparisons over time. The data is presented in Appendix E.

The commission recognizes that the following programs and activities are positive steps on the path toward a technologically literate work force.

- The recent availability of funds for Internet access from the Maine Public Utilities Commission's Schools and Libraries Program and from the Federal Communications Commission's E-Rate program will help to provide exposure of students to technology resources.
- Businesses are able to receive training for employees through partnerships with the Maine Department of Labor and the Maine Technical College System

Relevant state rankings from the CFED report card include:

- number of Ph.D. scientists and engineers (27),
- number of science and engineering graduate students (49)
- high school graduation rate (28)
- high school completion rate (18)
- completion of 4 years of college (40)

**2. Access to capital.** Some persons appearing before the commission believed that the lack of capital was a barrier to the expansion of high-technology in the State. Others indicated that significant capital was available, but that many beginning businesses did not know how to obtain access to it. In addition to investment and lending programs available to businesses in general through FAME, the commission identified the following sources of capital available to science and technology businesses.

**Maine Technology Investment Fund**, administered by MSTF provides matching funds to invest directly in market-oriented

technology extension, commercialization and development opportunities

**Small Enterprise Growth Fund**, administered by FAME is a patient source of investment capital for companies that are preparing to commercialize an innovative product or service.

In addition, MSTF is in the process of developing a **Maine Technology Capacity Fund** to assist businesses in the initial research and start-up phases.

Relevant state rankings from the CFED report card include:

- Traded sector strength (44)
- New companies (13)
- New Business job growth (43)
- Commercial bank deposits per capita(46)
- Loans to deposits (15)
- Loans to equity (26)
- Commercial and industrial loans (32)
- Commercial and industrial loans to total loans (14)
- Venture capital investments (38)
- Small Business Investment Company financing (13)

**3. Research and development infrastructure.** R&D has been growing faster in Maine than in the US; however, the level of spending in Maine on R&D is still less than 20% of the national average.<sup>13</sup> Maine relies more on its university system than other states, but the university spends less, as a percentage of GSP, than universities in other states (N 23-4) Maine State Government spends relatively less for university R&D than other states. R&D by not-for profit institutions in Maine in 1997 amounted to about \$49 million out of a total of about \$66 million. Maine institutions tend not to take maximum advantage of the economic potential of patenting technological developments in order to earn additional funds to support increased R&D.

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<sup>13</sup> Nexus, p. 20-22.

Relevant state rankings from the CFED report card include:

- R&D spending at universities (50)
- Federal R&D spending (42)
- Small Business Innovation Research grants (26)
- number of patents issued (43)

**4. Taxes.** Comparisons of rates of taxation for major sources of revenue are easy to find.<sup>14</sup> However, simple comparisons of tax rates and incentive programs do not provide a very useful indication of the impact of a state's tax system on a particular industry.

The commission was unable to locate comparisons of state tax systems that related specifically to high-technology businesses. General comparisons indicate that Maine's sales and personal income tax rates are higher than the national average. Property taxes appear to be around the national average. Maine has a number of tax incentive programs of benefit to high-technology businesses. Persons testifying before the commission recommended lowering the top bracket on the personal income tax and the expansion of some of the current tax credit programs.

The CFED report card rankings rate state's in the areas considered more relevant to business than tax rates. In this category, CFED identifies the top and bottom 15 states but does not assign a grade because, in its view, "...a state's tax system is not a driving factor in its economic climate." The CFED rankings of tax and fiscal systems rates states in fiscal stability and balanced revenues, tax fairness, and fiscal equalization. According to the CFED report card Maine ranks 10th for its overall tax and fiscal systems.

Relevant state rankings from the CFED report card include:

- Stability and balance (34)
- Tax fairness (3)
- Fiscal equalization (36)

**5. Technology infrastructure.** Without a first class telecommunications system, Maine cannot expect to attract a substantial high-technology community. Maine's has both advantages and disadvantages with regard to telecommunications infrastructure. It's rural nature makes some high-technology investment uneconomic; however, much can and has been

<sup>14</sup> Representative state-by-state comparisons of tax rates and tax incentive programs are located in Appendix F. The commission did not conduct an independent analysis of Maine's tax policy vis-à-vis other states or the impact of that tax policy on Maine's business climate. The references in this report to CFED's tax and fiscal findings does not necessarily reflect a consensus of the commission that CFED's findings on Maine's tax and fiscal system are supportable.

accomplished. Maine has more than 50,000 of fiber optic cabling. The state is 100% digitally switched. Maine is the first state in the nation to connect all of its public schools and libraries to the Internet. The state is currently pursuing the availability of federal Universal Service assistance to keep provide funds to support telecommunications development that is expensive because of the rural nature of the state.

The availability and use of technology infrastructure is an important indication of the ability of the state to expand high-technology businesses. One indication of the usage of technology infrastructure is business use of the Internet. According to the MEGC's measures of growth, the percentage of Maine businesses using the Internet for business purposes rose from 13% to 37% from 1995 to 1997. Time Warner Cable Co.'s "Road Runner" service offers Internet access over coaxial cable that carries traffic at speeds greatly in excess of standard phone lines. Portland was chosen as a location to test this service because of its high percentage of residents with a personal computer.

The commission supports MSTF's "call for a networked Maine." In order for the state to thrive in a high-technology environment there must be affordable broad-based access to a state-of-the-art information infrastructure including Internet access with a high level of business participation and easy public accessibility.

### **III. GOALS FOR MAINE WITH REGARD TO SCIENCE AND TECHNOLOGY BUSINESS**

If any plan it is to succeed in improving the position of Maine with regard high-technology development, it is necessary to establish measurable goals for policymakers to aim at and by which to judge the success of the state's efforts. Substantial effort has been put into this process by MSTF. The Business Innovations Committee has been established by MSTF to guide the development of the Maine Science and Technology Action Plan. The Business Innovation Committee is composed of over 20 leaders from private industry, state government, and academia. The Business Innovations Committee has identified the following desired outcomes:

#### **BUSINESS INNOVATIONS COMMITTEE OUTCOMES FROM INVESTMENTS IN STATE SCIENCE AND TECHNOLOGY PLAN**

- From 1996 to 2006, the combined annual employment growth rate in the [MSTF] target industries will continue to grow faster than the national rate
- From 1996 to 2006, the combined average annual wage in the target industries will increase from the current 71.4% to 80% of the national average

- From 1996 to 2006, the combined value-added growth of the target industries will increase by 50%
- From 1996 to 2006, R&D expenditure as a percentage of Gross State Product will increase from the current 0.5% to 1.5%

The Maine Economic Growth Council has established an even broader series of 57 benchmarks as goals for Maine policymakers. The chart in Appendix G provides a summary of MEGC's 1997 evaluation of how Maine is performing with regard to those benchmarks. The MEGC benchmarks are also a part of the MSTF's planning process.

#### **IV. RECOMMENDATIONS**

The commission recognizes that any effort to improve the state's relative position with regard to high-technology industry requires a substantial long-term commitment. Upgrading the technological skills of Maine workers requires changes in the education system that cannot happen overnight. Establishing and nurturing programs to assist the development of entrepreneurialism and to provide the capital structure that will most effectively strengthen high-technology business development must be a continually ongoing effort. Moving the state forward as a high-technology base will take coordinated and dedicated planning and implementation. The state cannot ignore the fact that many other states have also seen the positive implications for high-technology growth. If Maine is to improve its position relative to other states, it must not only improve its own historical performance, it must make improvements at a faster rate than other states that are pursuing the same goals.

The commissions recommendations are grouped below according to the key factors in the development of high-technology industry identified earlier in this report. Most of the commission's recommendations recognize that the process of improving the state's position with regard to high-technology is a long-term effort. Several indicate a direction in which future study and investigation is required in order to make specific recommendations. The commission recognized that the establishment of Maine as a leader in the science and technology field will be an ongoing process. The commission agrees with the R&D committee in the following recommendation regarding Legislative oversight of policymaking in this area:

- A. PROCESS RECOMMENDATION:** The commission supports the recommendation of the Joint Select Committee on Research and Development that the Legislature appoint a Joint Select Committee on Science and Technology to ensure that there is one legislative body with overall responsibility for policy direction and oversight of science and technology issues. The commission also supports the recommendations of the Maine Science and Technology Plan that an executive level coordinating committee be established for science and technology policy.



Currently legislation relating to high-technology issues may be considered in any one of several different committees of the Legislature with the result that legislators are not able easily to see the broad issues presented and coordinate legislative responses efficiently. One committee with overall responsibility and oversight would provide for more consistent and effective direction of this important initiative. The recommendations of the high-technology commission include the study and report to the Legislature of several issues that are important to the expansion of high-technology businesses in Maine. The commission believes that the creation of one legislative committee with responsibility for reviewing those reports and moving forward any needed legislation in this area is an important step in recognizing the importance of science and technology issues to the state's economic future.

The commission also believes that an executive branch coordinating committee should be established to coordinate the development and implementation of science and technology policy within the executive branch of State Government. This recommendation is a part of the Maine Science and Technology Plan and is an important step in highlighting the importance of science and technology in State policymaking.

## **B. RECOMMENDATIONS ORGANIZED BY KEY FACTORS**

### **1. Availability of skilled human resources**

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**RECOMMENDATION 1. The State should raise the level of student's performance in the areas of math, science, and problem solving to ensure that Maine students rank among the top when compared internationally.**

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It was clear to the commission from the comments and materials reviewed that the availability of a well educated workforce is crucial to the development of an advance high-technology industry. The foundation of a well-educated workforce is an effective high-quality public education system. The state's goal should be achieve the highest possible achievement from its students in all academic areas, but especially in the areas of math, science, and problem solving. The "Learning Results" process over the last few years has been a positive step toward the identification of the public's expectations of results from the public schools. The Department of Education and all other levels of government involved the development and implementation of the Maine State Learning Results should strive to ensure that standards and expectations remain high. Maine can never compete for a significant high-technology presence if its educational system lags behind those of other states and, indeed, those of other parts of the world.

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**RECOMMENDATION 2.** The education system in Maine should ensure that all students acquire competency in the basic computer skills common in the workplace including word processing, spreadsheets, databases and the Internet. Students should be exposed to the elements of computer programming and should be aware of career opportunities in computer science and other technological fields and the spectrum of educational resources in the field of technology. The commission urges that efforts be supported to ensure that instruction, and computer software and hardware used in instruction keep current with up-to-date business practice.

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While the Maine State Learning Results establish a goal of students who are able to use the tools of technology to solve problems, the Learning Results primarily envision technology as the means to an end rather than an end in itself. The acquisition of computer and other science and technology skills should not be viewed just as a tool, but as a field of knowledge itself. Students' ability to make the transition from school to work and advanced education demands that they have a basic level of knowledge of computers and technological equipment. Almost all workplaces use computers for some purpose, whether it is document processing, electronic mail, data management, inventory control, cash machines, or keeping track of work assignments. All students should have a basic familiarity with such applications as word processing, spreadsheets, use of databases and the Internet.

If schools are to keep pace with current business practice, it is important that they have the resources to acquire new hardware and replace it as it becomes outdated. The commission supports efforts by the State and local school systems to provide the financial resources necessary to make this commitment.

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**RECOMMENDATION 3.** The State should develop collaborative efforts and facilitate cooperation between schools and high technology businesses, including consultation, mentoring for both students and teachers, and assistance in acquiring both hardware, software, and training.

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Developments in the fields of high technology are occurring at breakneck speed. Schools will have problems keeping both their equipment and the ability to use it up-to-date. Technology equipment can be expensive. Software has a short viable life and teachers have little time to be acquiring and maintaining high-technology skills. All of these problems are daunting; however, the commission was impressed that many high technology businesses are interested in becoming more involved in the improvement of high technology facilities and skills in the public school system. The Department of

Education and private business groups should collaborate to develop relationships between businesses and schools. High-technology businesses can assist schools in determining the best equipment and software to meet their needs and may be willing to provide consultation and mentoring to teachers and students in the acquisition of high-technology skills.

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**RECOMMENDATION 4. The Chancellor of the University of Maine System should identify, within the University of Maine System, the high-technology disciplines that would be the most productive for the establishment of Ph.D. programs to provide educational and professional opportunities for Maine students and economic opportunities through the establishment of significant academic high technology resources. The Chancellor should especially consider the establishment of Ph.D. programs in computer science and electrical engineering as well as other areas within the MSTF target areas where Ph.D. programs do not currently exist. The Chancellor should present a plan to the 119th Legislature for the establishment of Ph.D. programs in a timely manner.**

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High quality Ph.D. programs are crucial to the development of Maine as a high-technology state. Ph.D. programs are necessary to attract research and development firms, to provide the nucleus of a viable high-technology incubation effort, and to result in desired high-technology spin-off businesses. The University of Maine System currently offers Ph.D. programs in several disciplines that fall within the five MSTF target areas; however no Ph.D. program is offered in computer science or electrical engineering.

Many of the comments received by the commission recommended the establishment of computer science and electrical engineering Ph.D. programs within the University of Maine System. Currently, Bachelors and Masters level programs are available in the University of Maine System. Programs are centered in the Orono and Portland campuses. The development of a Ph.D. program in computer fields should take advantage of the strengths of both locations.

The commission recognizes that computer science and electrical engineering are not the only high-technology disciplines that could benefit from the establishment of a Ph.D. program; however it believes that additional study needs to be completed to determine where the most effective efforts can be made. Information should be available to the Legislature that will convince it of the economic viability of establishing high-technology Ph.D. programs. The Chancellor should present a plan to the 119th Legislature including any necessary legislation for funding the plan.

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**RECOMMENDATION 5. The Finance Authority of Maine should review existing student financial aid programs for supporting students pursuing high-technology courses of study and make recommendations to the 119th Legislature including any legislation necessary to provide additional resources to support such students.**

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Many comments received by the commission indicated that that businesses are having difficulty obtaining sufficient employees with high-technology education and training. Meanwhile, in the last 10 years, enrollments and graduates of computer B.S. programs have gone down. The Finance Authority of Maine administers financial aid programs for Maine students. Financial aid programs have been devised to attract Maine residents into medical programs and teaching. Programs may provide scholarships or beneficial loan repayment terms including the forgiveness of a portion of the loan if the student works in Maine following graduation.

FAME should examine its current financial aid programs make a recommendation, including any necessary legislation, to the Legislature by January 1, 1999 concerning the best way to encourage and support Maine students pursuing high-technology courses of study. The identification of programs specifically for high-technology students would not only provide financial support to students but would also demonstrate the importance that the State places on the development of high-technology human resources and contribute to raising the numbers of students entering those fields.

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**RECOMMENDATION 6. Local school systems and businesses should cooperate in efforts to increase public awareness of job and training opportunities in the high-tech industry through the public education system and other public information opportunities.**

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High-technology jobs in Maine are going unfilled or are being filled by persons from outside Maine because there are not enough qualified candidates in state. High-technology is the way of the future and high-technology jobs offer above average income and employment benefits. Students who are who seek a career in high technology fields have a much better than average chance of high quality employment opportunities without leaving the State of Maine. Career awareness is one of the goals of the Maine State Learning Results. Local school systems and public information efforts should work diligently to increase the knowledge of high-technology careers in all fields through career awareness activities. School systems should work cooperatively with local businesses to encourage high-technology field trips, establish job fairs, scholarship and internship programs and recruitment of students to high-technology careers.

## **2. Access to capital**

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**RECOMMENDATION 7.** The Finance Authority of Maine should analyze the availability of capital for business startup and development to determine if sufficient capital is available for all levels of high-tech business needs and to identify what barriers may exist to accessing capital. The state should develop strategies for increasing capital, if necessary, for assisting fledgling businesses in locating and obtaining capital, and for removing barriers to access.

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The commission heard conflicting reports about whether the availability to capital was a significant barrier to the further development of high-technology businesses. Some commenters believed that sufficient capital was available, but that problems exist because either providers of capital do not have sufficient knowledge of high-technology business development or high-technology developers do not have sufficient knowledge of business planning and capital development procedures.

## **3. Research and development**

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**RECOMMENDATION 8.** The commission supports the recommendations of the Joint Select Committee on Research and Development to expand funding for R&D programs in Maine.

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The commission expects that the R&D committee will make the following recommendations for funding of research and development activities:

- \$20 million bond package for research and development at the University of Maine System and marine research facilities. This recommendation provides:
  - \$13.5 million for capital improvements and equipment purchases to support R&D activities at the University of Maine System
  - \$ 3.0 million for a marine technology fund
  - \$ 2.0 million for a marine aquarium
  - \$ 1.5 million research challenge grants
- \$10 million appropriation to the University of Maine System for the first year of a five year strategy to create a fund for applied scientific research and related commercial development in five target areas

#### **4. Taxation**

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**RECOMMENDATION 9. Current tax incentives for high technology businesses should be retained. The Bureau of Revenue Services and the Department of Economic and Community Development should review the use of those incentives and report to the 119th Legislature regarding the effectiveness of the incentives in accomplishing their purposes.**

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In recent years, the Legislature has enacted several tax incentive programs to assist the development of high-technology businesses in Maine. Although comments received by the commission indicated that those interested in high-technology businesses believed strongly that those incentives should be retained, statistical information is not available to evaluate whether the incentives are achieving the purposes intended by the Legislature.

The commission recommends that the Bureau of Revenue Services and other agencies administering tax incentive programs should jointly gather and analyze, to the maximum extent possible while preserving any statutory taxpayer confidentiality, data regarding businesses taking advantages of the following programs:

- Maine Employment Tax Increment Financing
- Seed capital investment tax credit
- Research expense tax credit
- Supercredit for substantially increased research and development
- High-technology investment tax credit
- Sales tax exclusion for custom computer software
- Sales tax exemption for nonprofit medical research corporations and biology and ecology labs
- Sales tax exemption for sales of R&D equipment
- Sales tax exemption for organizations conducting research for MSTF

The Department of Economic and Community Development should examine the information provided by the Bureau of Revenue Services and determine whether each tax provision is an effective means of providing incentives for the growth of high-technology businesses in Maine and make recommendations for any necessary changes.

The Bureau of Revenue Services and the Department of Economic and Community Development should submit the results of this examination to the Legislature to permit a review and evaluation of the success of those programs and the possible need for adjustments to accomplishing the purposes of the programs.

**5. Telecommunications Infrastructure.** Although the commission makes no specific recommendations with regard to telecommunications infrastructure, it supports the State's efforts to build telecommunications system that provides the best available, up-to-date services at a cost that is affordable.

## **6. Other**

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**RECOMMENDATION 10.** The State should identify, develop and market a high-technology focal point. The Maine Science and Technology Foundation and the Department of Economic and Community Development should develop complete inventory of existing high-technology resources, attracting and developing new businesses, and present a plan to the Legislature for aggressively marketing Maine's potential as the location for high technology businesses.

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Silicon Valley, Route 128, Research Triangle -- all are well known as the focal points for the development of high-technology businesses. While Maine may not be able to duplicate the extent of those centers, the identification of a focal point for high-technology business is an important factor in the ability of the State to effectively market the State's potential for the location of high-technology businesses. Maine has many qualities that are attractive to high-technology businesses; however, the State will not succeed as a high-technology destination if it does not establish a more visible perception of its advantages.

Traditionally, high technology focal points have centered around the availability of high-quality academic research institutions. Expansion of the capabilities of Maine's higher education system will help to increase the State's viability as a high-technology center; however, policy makers should not assume that a high technology center needs to be focused around a university campus. Maine must be careful not to overlook the capacity of world class private research facilities such as Jackson Laboratories in Bar Harbor, Bigelow Laboratories and others. As telecommunications advances continue, the geographic location may not be quite so important and the capacity of telecommunications links.

Currently, MSTF is in the process of identifying all of the high-technology resources in the state. This work should be completed rapidly so that a plan can be developed and submitted to the Legislature for the identification and marketing of Maine as a high-technology destination.

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**RECOMMENDATION 11. The State should provide and promote programs for the development of entrepreneurial skills including assistance in development of business plans, accessing capital, obtaining legal and other professional assistance, managing business growth, and marketing.**

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While programs, such as the Small Business Development Centers, already exist that provide assistance to businesses getting under way in Maine, comments received by the commission indicate there is still a need in this area. The commission did not have the time or resources to explore this issue in depth and recommends that MSTF and DECD cooperate in evaluating the need for business assistance directed specifically at the needs of high-technology businesses and report to the 119th Legislature regarding the need for additional funding or structural changes needed to accomplish this goal.

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**RECOMMENDATION 12. The Maine Science and Technology Foundation, the Maine Development Foundation, the Finance Authority of Maine, and the Department of Economic and Community Development should cooperate in making recommendations to the 119th Legislature regarding the establishment of statewide clearing house to be the focal point for information and assistance to persons seeking to develop high-tech businesses in Maine.**

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The commission received comments indicating that there was some confusion on the part of developing business regarding programs available to assist them and where to seek information. State and quasi-governmental agencies administering business assistance and economic development programs have varying missions and have been especially strapped in recent years for funds and personnel to coordinate the needs of a business seeking multifaceted assistance. MSTF, MDF, FAME and DECD, the major agencies involved in business assistance affecting high-technology development, should coordinate to identify and recommend funding for a centralized coordinating function for high-technology businesses seeking to enter the Maine business environment. This centralized function might best be administered within existing State agencies or by contracting with an entity such as Maine & Company, a privately-funded corporation that provides information to companies from outside Maine that are interested in relocating or expanding in Maine.

## **V. CONCLUSION**

The Commission to Study the Restructuring of the State's Fiscal Policies to Promote the Development of High-technology Industry in Maine concluded that the high-technology



*High-technology Commission Report*

industry offers an exciting potential for future economic growth for the state. High-technology businesses will be very important to the overall economy in the 21st Century. They offer high paying jobs and generate prolific opportunities for spin-off businesses. Many other states have also recognized the importance of the high-technology industry. Although Maine offers significant advantages for high-technology businesses, much remains to be done if Maine is to improve its ability to compete with other states for expansion in that sector. Decisionmakers should concentrate efforts on the key factors in the development of high-technology industries: availability of skilled human resources, access to capital, research and development infrastructure, taxation, and telecommunications infrastructure. The commission believes that the opportunities for improvement of the State's economy are worth the effort required to meet the challenges.

htdraft5 1/30/98

## **APPENDIX A**



CHAPTER 557

H.P. 1350 - L.D. 1897

An Act Concerning Tax Relief

PART C

Sec. C-1. Commission established. The Commission to Study the Restructuring of the State's Fiscal Policies to Promote the Development of High-technology Industry in Maine, referred to in this Part as the "commission," is established.

Sec. C-2. Issues. The commission shall study the fiscal, cultural and educational issues associated with the encouragement and development of high-technology industry in the State, including specifically issues affecting providers of computer equipment, computer software, electronic components and accessories, communications equipment and communications services. The scope of the commission's study includes, but is not limited to:

1. An examination and report on the state fiscal policies, laws, regulations and financial incentives for the growth and development of high-technology industry in the State, relative to those of other states;
2. An examination and study of the key fiscal, educational and cultural issues affecting the State's high-technology industry; and
3. An examination and a report outlining specific legislative recommendations for restructuring the State's fiscal, educational and cultural policies and laws and rules to create comparative advantages designed to encourage the beneficial expansion of high-technology industry in the State.

Sec. C-3. Membership. The commission consists of 20 members appointed as follows:

1. Two members of the Senate, appointed jointly by the President of the Senate and the Speaker of the House, one of whom must be a member of the majority party and one of whom must be a member of the minority party;
2. Two members of the House of Representatives, appointed jointly by the President of the Senate and the Speaker of the House, one of whom must be a member of the majority party and one of whom must be a member of the minority party;
3. Thirteen members, 5 of whom must be appointed by the President of the Senate, 5 of whom must be appointed by the Speaker of the House and 3 of whom must be appointed by the Governor. Two of the appointments by the President and 2 of the appointments by the Speaker of the House must be made upon the recommendation of the minority floor leader of the respective chamber. These members must include:
  - A. Three representatives with practical experience and knowledge of high-technology development, including one person whose background includes significant experience in computer equipment, electronic components and accessories; one person whose background includes significant experience with communication equipment; and one person whose background includes significant experience with computer software;
  - B. Four representatives from the academic community, including one economist who has practical experience and knowledge of the high-technology industry and its impact on economic development, one

representative with knowledge of electronic communications and computer software, one representative with knowledge of electrical engineering, and one representative of the Maine Technical College System; and

C. Six representatives of industries likely to be affected by high-technology development, including one person who represents the health care industry, one person who represents major manufacturers, one person who represents small businesses, one person who represents the banking and financial services industry, one person who represents the tourism industry and one person who represents a nonprofit organization with an interest in encouraging international trade by Maine concerns; and

4. The Director of the State Planning Office within the Executive Department, the Commissioner of Economic and Community Development and the President of the Maine Science and Technology Foundation, who are ex officio members.

Sec. C-4. Appointments. All appointments must be made no later than 30 days following the effective date of this Part. The appointing authorities shall notify the Executive Director of the Legislative Council upon making their appointments. When the appointment of members is complete, the Chair of the Legislative Council shall call and convene the first meeting of the commission no later than 2 months from the effective date of this Part.

Sec. C-5. Staff assistance. The commission may request staffing assistance from the Legislative Council.

Sec. C-6. Reimbursement. The commission members who are Legislators are entitled to receive the legislative per diem, as defined in the Maine Revised Statutes, Title 3, section 2, for each day's attendance at the meetings of the commission and reimbursement for travel and other necessary expenses upon application to the Legislative Council. The Executive Director of the Legislative Council shall administer the commission's budget.

Sec. C-7. Chair. The commission shall, at its first meeting select a member to serve as chair. At the first meeting or a subsequent meeting, the commission may select a vice-chair from among its members and establish programmatic and structural committees.

Sec. C-8. Meetings. The commission may meet up to 6 times.

Sec. C-9. Staffing. If funding permits, the commission may employ staff as needed and may contract for administrative, professional, legislative drafting and clerical services.

Sec. C-10. Funding. The commission may seek, accept and expend outside sources of funding to carry out the commission's activities. The Legislative Council shall administer any outside funds acquired for the purposes of this Part.

Sec. C-11. Report. The commission shall present its findings and any recommended legislation to the Second Regular Session of the 118th Legislature by January 1, 1998.

Sec. C-12. Allocation. The following funds are allocated from the Tax Relief Fund for Maine Residents to carry out the purposes of this Part.

1997-98

## LEGISLATURE

Commission to Study the Restructuring  
of the State's Fiscal Policies to Promote  
the Development of High-technology  
Industry in Maine

Personal Services	\$1,320
All Other	

7,700

Provides funds for the per diem and expenses of legislative members and miscellaneous costs, including printing, of the Commission to Study the Restructuring of the State's Fiscal Policies to Promote the Development of High-technology Industry in Maine.

LEGISLATURE

TOTAL

\$9,020

Sec. C-13. Allocation. The following funds are allocated from Other Special Revenue funds to carry out the purposes of this Part.

1997-98

LEGISLATURE

Commission to Study the Restructuring  
of the State's Fiscal Policies to Promote  
the Development of High-technology  
Industry in Maine

All Other

\$25,000

Provides an allocation to the commission for contracted staff.

Effective June 12, 1997, unless otherwise  
indicated.



## **APPENDIX B**





## APPENDIX B

### COMMISSION TO STUDY THE RESTRUCTURING OF THE STATE'S FISCAL POLICIES TO PROMOTE THE DEVELOPMENT OF HIGH-TECHNOLOGY INDUSTRY IN MAINE P.L. 1997, c. 557, Part C

#### Appointments made by the Governor

	Statutory category
Thomas Mosely	Person with computer equipment experience
Michael Keller	Person with communications equipment
Daniel E. Waldron	Person with computer software experience

#### Appointments by the President of the Senate

Senator John Jenkins	Representing majority party
Senator Bruce MacKinnon	Representing minority party
Representative Thomas Davidson	Representing majority party
Representative Kenneth F. Lemont	Representing minority party
Professor John C. Field	Representing academic/electrical
Dennis Guerrette	Representing industry/ small business
Joseph Morsehead	Representing industry/manufacturing
Professor David Briggs	Representing academic/electronic communications software
Jeffrey Nathanson, cochair	Representing industry/banking and financial services

#### Appointments by the Speaker of the House

Dr. Durward R. Huffman	Representing Maine Technical Colleges
Professor David Wihry	Representing economists

Mark B. LeDuc, Esq.,cochair

Representing nonprofit organization with  
international trade interest

Michael Aube

Representing large manufacturers

John Reuthe

Person with computer hardware  
experience

**Ex Officio**

Evan Richert

Director, State Planning Office

Thomas McBrierty

Commissioner, Department of Economic  
and Community Development

Claire Collins

Maine Science and Technology  
Foundation

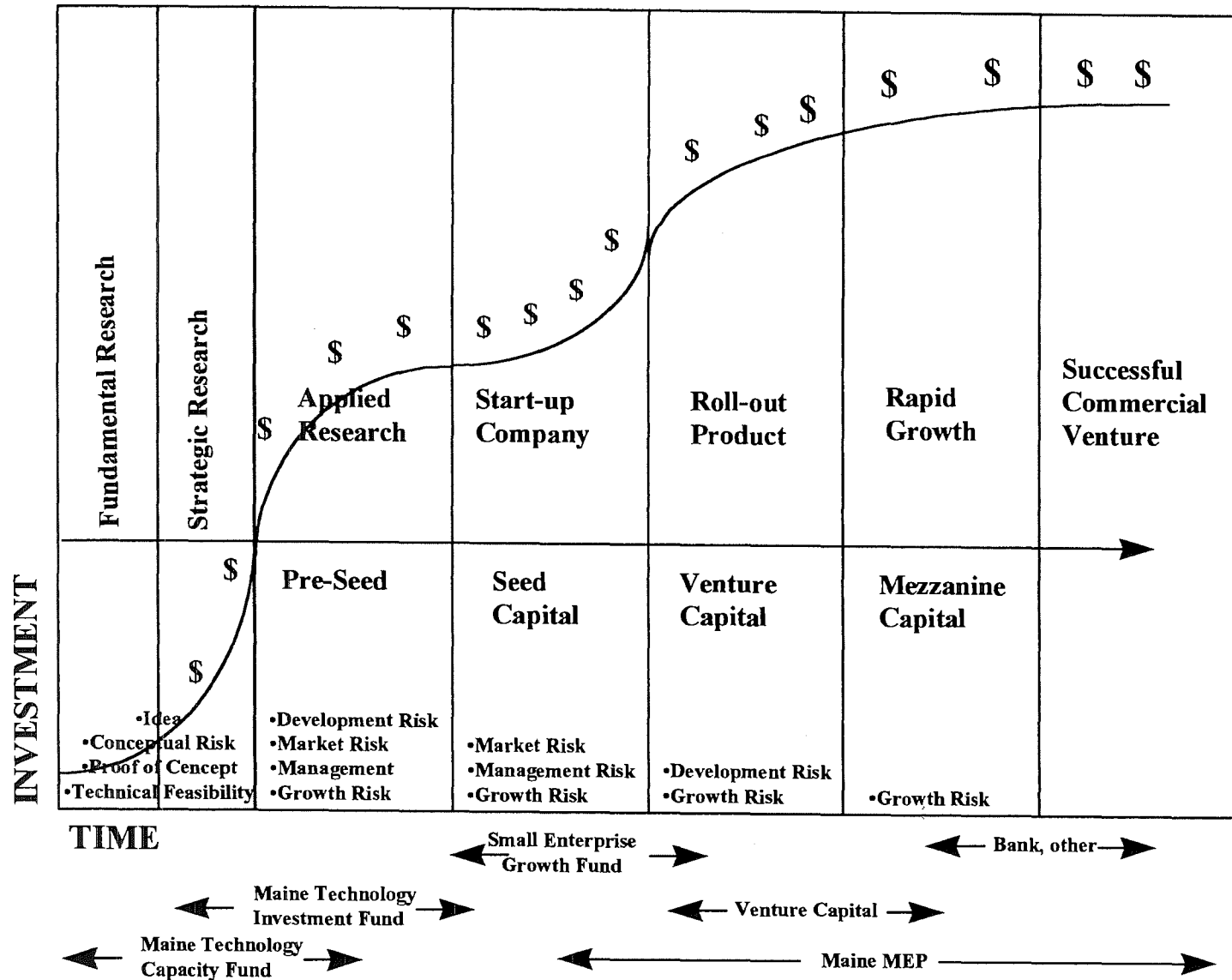
**Staff**

Julie Jones

## **APPENDIX C**



**Maine  
Science &  
Technology  
Foundation**





## **APPENDIX D**





**Initial Research and Development Business Community Characterization<sup>1</sup>**  
*(Trying to understand what Maine's typical R&D business looks like)*

<u>Selected Survey Questions</u>	<u>Responses</u>
1. Total number of companies in the five areas .....	350+
those performing R&D .....	90
those responding to the survey.....	34
[biotechnology (13), composites (3), information technology (9), marine science (5)	
environmental technology (4)]	
2. Average year of company formation .....	1987
Public/Private Ownership.....	14% - 86%
Average sales over past 18 months .....	"significant increase"
Likelihood of company expansion in next 3-5 years	
yes .....	33
no .....	1
3. Average # of research employees .....	5
Average # of development employees .....	5
4. Average length of innovation to market.....	1-2 years
Patents applied for in past five years .....	57
Patents received in past five years .....	24
5. Primary source of capital for R&D activity	
sales .....	75%
venture capital .....	7%
lending institution .....	4%
state or federal .....	10%
other .....	4%

<sup>1</sup> In late 1997 the Maine Science and Technology Foundation surveyed a subset of known businesses operating in the five priority technology areas (e.g., biotechnology, marine science, information technology, environmental technology, and composites). There are 350 companies in these technology areas of which approximately 90 are conducting research and development. This initial characterization is based on 34 surveys from the 90 subset. It is anticipated that by year-end more than 50 companies (two-thirds of the sample) will have been surveyed and analyzed.

6. R&D support programs -- average view of federal and state programs designed to help R&D companies	(scale of 1 being best & 3 worst)
knowledge of such programs .....	2
usefulness in meeting business community needs .....	2
use of these programs .....	2
7. Most common response (mode) about frequency of interaction with academia	
UMS .....	Less than once a month
Technical Colleges .....	Never
Other Maine Colleges .....	Never
8. Leading impediments to company growth	
improve educational level of the workforce .....	42%
address business development .....	30%
increase availability of capital .....	28%
9. Availability of capital to grow	
yes .....	21
no .....	13
10. Single most important recommendation	
improve educational level of the workforce .....	35%
increase availability of capital .....	32%
address business development .....	25%
miscellaneous .....	8%

## **APPENDIX E**



## APPENDIX E

### **“ANNUAL AVERAGE COVERED EMPLOYMENT” AND LOCATION QUOTIENTS (LC) FOR “TECHNOLOGY INTENSIVE” INDUSTRIES**

**Prof. David Wihry**

Employment patterns provide some indication of the extent to which the state is attracting high-tech industries. This analysis shows Bureau of Labor Statistics (BLS) employment figures for Maine and the U. S. As a whole in firms participating in the unemployment insurance system. These data are displayed by Standard Industrial Classification (SIC) categories identified initially as technology intensive by Nexus Associates in their report to MSTF. The usefulness of the data is limited by the confidentiality policies of the BLS which preclude publishing employment figures by 4-digit SIC category for each state when there are fewer than three reporting units in the category or when a single firm in the category accounts for 80% or more of the industry's employment. The designation NA appears in the table when an industry employs people in the state, but does not pass the BLS disclosure screens. Since the BLS data are obtained from covered firms, individual proprietors and self-employed persons are under-represented.

In addition to showing levels of employment, the table also displays “location quotients” where data are available. The location quotient shows the extent to which the state specializes in each industry compared to the U. S. As a whole. The location quotient is calculated by dividing the ratio of employment in the industry in the state to total state employment by the ratio of employment in the industry nationally to total national employment. If the location quotient exceeds one, the state is relatively attractive to firms in the industry; there are some characteristics of the state -- such as transportation and communications infrastructure, human resource availability, fiscal climate, or cultural and environmental amenities -- that appeal to firms in that industry. The high location quotients for “canned and cured fish and seafoods” and “paper mills,” and the zero location quotient for “petroleum refining,” illustrate the idea.

For information technology industries referred to in P.L. 1997, chapter 557, Section C-2, relating to the High-Technology Commission (indicated by (a) in the table), the picture, clouded by the unavailability of data, is mixed. For example, the share of state employment accounted for by “semiconductors and related devices” is high compared to the U. S. As a whole, suggesting that the state is relatively attractive to firms in that industry and, perhaps, to firms in the larger “electronics components” category. By contrast, the state's employment is significantly less concentrated in the “computer and data processing” category than that of the U. S. As a whole. Data for other industrial categories mentioned in Chapter 557, Section C-2 are too sparse to warrant comment.

going beyond the computer, electronics, and telecommunications industries, the picture is also clouded. Not surprisingly, Maine employment is relatively more concentrated than employment nationally in area in which the state has a particular natural resource endowment, such as seafood packaging and "pulp mills," or "boat building and repairing." Some service areas also display location quotients greater than unity. Among these are "public relations services" (within the broader category "management and public relations"), "surveying services" (within the category, "engineering and architectural"), and "noncommercial research organizations" (within the "research and testing labs" category). This limited information offers some hope that Maine may be able to capitalize on its environmental and recreational amenities to attract firms in service industries for which proximity to markets is becoming less of an issue due to advances in telecommunications. The hope is reinforced by the observation that the location quotients in each of the subcategories under "research and testing labs" rose -- in some cases substantially -- between 1990 and 1995. The pattern of change is less encouraging, however, in the "management and public relations subcategories.

A more detailed examination of patterns of employment specialization and changes in patterns of employment specialization may be in order. Trends in the industry mix of employment can give policymakers clues as to which industries are likely to be interested in locating in Maine. The potential for growth in Maine is one of the factors state policymakers would need to consider in formulating an economic development strategy and in targeting the state's marketing efforts.

# Annual Average Covered Employment\* and Location Quotients (LQ) for "Technology-Intensive" Industries\*\*

Name of Category	SIC code	1980			1995		
		ME	US	LQ	ME	US	LQ
Total Private Employment		435,267	90,904,799		439,583	96,885,962	
<b>Grain mill products</b>	2040						
Flour and other grain mill products	2041	0	21,177	0.00	0	19,635	0.00
Cereal breakfast foods	2043	NA	19,859	NA	NA	19,653	NA
Rice milling	2044	0	5,592	0.00	0	5,122	0.00
Prepared flour mixes and doughs	2045	0	9,601	0.00	29	13,528	0.47
Wet corn milling	2046	NA	9,385	NA	NA	9,966	NA
Dog and cat food	2047	0	15,761	0.00	0	17,933	0.00
Prepared foods, nec	2048	87	44,650	0.41	73	42,270	0.38
<b>Sugar and confectionary products</b>	2060						
Raw cane sugar	2061	0	6,868	0.00	0	5,498	0.00
Cane sugar refining	2062	0	5,362	0.00	0	4,693	0.00
Beet sugar	2063	0	9,231	0.00	0	9,246	0.00
Candy and other confectionary products	2064	29	49,208	0.12	NA	53,250	NA
Chocolate and cocoa products	2066	0	14,703	0.00	0	13,229	0.00
Chewing gum	2067	0	6,282	0.00	0	5,271	0.00
Salted and roasted nuts and seeds	2068	0	7,781	0.00	0	8,682	0.00
<b>Beverages</b>	2080						
Malt beverages	2082	NA	39,576	NA	NA	36,730	NA
Malt	2083	0	1,463	0.00	0	1,387	0.00
Wines, brandy, and brandy spirits	2084	NA	17,315	NA	NA	18,814	NA
Distilled and blended liquors	2085	NA	9,262	NA	NA	8,152	NA
Bottled and canned soft drinks	2086	412	104,829	0.82	NA	91,685	NA
Flavoring extracts and syrups, nec	2087	NA	16,064	NA	NA	19,003	NA
<b>Other 20</b>							
Meat packing plants	2011	NA	135,591	NA	30	143,508	0.05
Sausages and other prepared meats	2013	283	68,094	0.67	NA	91,497	NA
Poultry slaughtering and processing	2015	NA	199,569	NA	NA	235,527	NA
Creamery butter	2021	NA	2,030	NA	NA	1,893	NA
Cheese, natural and processed	2022	NA	41,587	NA	NA	39,676	NA
Dry, condensed, and evaporated products	2023	0	16,014	0.00	0	16,445	0.00
Ice cream and frozen desserts	2024	78	21,797	0.75	29	23,315	0.27
Fluid milk	2026	583	74,383	1.64	381	65,221	1.29
Canned specialties	2032	NA	23,112	NA	NA	20,266	NA
Canned fruits and vegetables	2033	NA	87,494	NA	NA	74,181	NA
Dehydrated fruits, vegetables, and soups	2034	NA	20,385	NA	NA	17,669	NA
Pickles, sauces, and salad dressings	2035	NA	21,273	NA	36	23,372	0.34
Frozen fruits and vegetables	2037	1,792	50,344	7.43	1,459	48,686	6.61
Frozen specialties, nec	2038	NA	43,067	NA	NA	52,300	NA
<b>Bread, cake, and related products</b>	2051	1,054	156,671	1.41	712	148,506	1.06
Cookies and crackers	2052	NA	48,325	NA	NA	52,643	NA
Frozen bakery products, except bread	2053	NA	9,138	NA	NA	10,369	NA



Cottonseed oil mills	2074	0	3,478	0.00	0	2,818	0.00
Soybean oil mills	2075	0	8,587	0.00	0	9,322	0.00
Vegetable oil mills, nec	2076	0	1,119	0.00	0	1,238	0.00
Animal and marine fats and oils	2077	0	8,175	0.00	NA	8,155	NA
Edible fats and oils, nec	2078	0	9,965	0.00	0	9,528	0.00
Canned and cured fish and seafoods	2081	948	10,448	18.91	845	8,122	22.93
Fresh or frozen prepared fish	2082	643	45,748	2.94	725	44,901	3.56
Roasted coffee	2085	0	11,778	0.00	0	9,599	0.00
Potato chips and similar snacks	2086	NA	35,292	NA	NA	35,364	NA
Manufactured ice	2087	NA	6,572	NA	0	7,051	0.00
Macaroni and spaghetti	2098	0	8,423	0.00	NA	8,364	NA
Food preparations, nec	2099	32	83,389	0.11	53	66,952	0.17
<b>Paper and allied products</b>	<b>2600</b>						
Pulp mills	2611	0	14,056	0.00	0	12,810	0.00
Paper mills	2621	15,485	178,318	18.14	12,498	163,337	16.87
Paperboard mills	2631	NA	52,172	NA	100	51,221	0.43
Setup paperboard boxes	2652	NA	8,573	NA	NA	7,805	NA
Corrugated and solid fiber boxes	2653	496	121,175	0.85	464	130,783	0.78
Fiber cans, drums, and similar products	2655	NA	18,448	NA	NA	15,044	NA
Sanitary food containers	2656	0	16,085	0.00	0	18,569	0.00
Folding paperboard boxes	2657	NA	50,045	NA	NA	48,755	NA
Paper coated and laminated, packaging	2671	NA	21,157	NA	0	22,468	0.00
Paper coated and laminated, nec	2672	0	45,362	0.00	NA	48,354	NA
Bags: plastics, laminated, and coated	2673	0	34,881	0.00	NA	38,956	NA
Bags: uncoated paper and multiwall	2674	182	20,111	1.99	N/A	18,426	0.00
Die-cut paper and board	2675	0	17,200	0.00	0	19,920	0.00
Sanitary paper products	2676	NA	32,891	NA	NA	30,016	NA
Envelopes	2677	0	27,426	0.00	0	23,502	0.00
Stationery products	2678	55	8,319	1.43	NA	7,723	NA
Converted paper products, nec	2679	NA	35,801	NA	NA	34,332	NA
<b>Industrial inorganic chemicals</b>	<b>2810</b>						
Alkalies and chlorine	2812	NA	12,422	NA	NA	9,957	NA
Industrial gases	2813	NA	24,130	NA	NA	23,048	NA
Inorganic pigments	2816	NA	10,206	NA	NA	11,828	NA
Industrial inorganic chemicals, nec	2819	NA	96,748	NA	NA	74,586	NA
<b>Drugs</b>	<b>2830</b>						
Medicinals and botanicals	2833	NA	18,274	NA	NA	20,848	NA
Pharmaceutical preparations	2834	NA	198,031	NA	NA	209,368	NA
Diagnostic substances	2835	NA	8,927	NA	NA	14,222	NA
Biological products, except diagnostic	2836	57	13,109	0.91	74	14,780	1.10
<b>Soaps, cleaners, etc.</b>	<b>2840</b>						
Soap and other detergents	2841	0	42,091	0.00	0	42,026	0.00
Polishes and sanitation goods	2842	18	38,058	0.10	20	34,118	0.13
Surface active agents	2843	0	7,833	0.00	0	7,223	0.00
Toilet preparations	2844	NA	71,257	NA	182	68,137	0.52
<b>Agricultural chemicals</b>	<b>2870</b>						
Nitrogenous fertilizers	2873	NA	9,762	NA	48	8,734	1.21

Phosphatic fertilizers	2874	0	10,878	0.00	0	9,972	0.00
Fertilizers, mixing only	2875	15	9,859	0.32	NA	9,729	NA
Agricultural chemicals, nec	2879	NA	25,191	NA	NA	24,735	NA
<b>Other 28</b>							
Plastics materials and resins	2821	NA	86,601	NA	NA	74,763	NA
Synthetic rubber	2822	0	15,379	0.00	NA	16,161	NA
Cellulosic manmade fibers	2823	0	13,787	0.00	0	17,673	0.00
Organic fibers, noncellulosic	2824	NA	64,480	NA	NA	47,988	NA
Paints and allied products	2851	NA	61,862	NA	NA	56,223	NA
Gum and wood chemicals	2861	0	4,043	0.00	0	2,657	0.00
Cyclic crudes and intermediates	2865	0	27,309	0.00	0	25,947	0.00
Industrial organic chemicals, nec	2869	NA	122,172	NA	NA	116,633	NA
Adhesives and sealants	2891	0	24,538	0.00	NA	24,523	NA
Explosives	2892	0	14,947	0.00	0	6,031	0.00
Printing ink	2893	0	15,523	0.00	NA	15,956	NA
Carbon black	2895	0	2,840	0.00	0	2,720	0.00
Chemical preparations, nec	2899	NA	41,553	NA	NA	40,978	NA
<b>Petroleum and coal products</b>							
Petroleum refining	2911	0	118,892	0.00	NA	104,383	NA
Asphalt paving mixtures and blocks	2951	349	13,792	5.28	NA	13,892	NA
Asphalt felts and coatings	2952	0	13,411	0.00	0	12,833	0.00
Lubricating oils and greases	2992	0	10,564	0.00	0	11,815	0.00
Petroleum and coal products, nec	2999	0	1,924	0.00	0	2,210	0.00
<b>Ordinance, etc. nec</b>							
Small arms ammunition	3482	0	9,806	0.00	NA	8,570	NA
Ammunition, except for small arms, nec	3483	0	46,089	0.00	0	26,284	0.00
Small arms	3484	NA	13,301	NA	NA	11,879	NA
Ordinance and accessories, nec	3489	NA	6,971	NA	NA	4,280	NA
<b>Farm and garden machinery</b>							
Farm machinery and equipment	3523	34	78,767	0.09	NA	74,748	NA
Lawn and garden equipment	3524	0	26,712	0.00	NA	28,114	NA
<b>Construction machinery</b>							
Construction machinery	3531	NA	86,478	NA	NA	78,777	NA
Mining machinery	3532	0	18,133	0.00	0	16,402	0.00
Oil and gas field machinery	3533	0	43,345	0.00	0	38,778	0.00
Elevators and moving stairways	3534	0	11,095	0.00	0	9,894	0.00
Conveyors and conveying equipment	3635	NA	33,979	NA	129	40,234	0.71
Hoists, cranes, and monorails	3536	NA	8,387	NA	NA	7,950	NA
Industrial trucks and tractors	3537	NA	28,934	NA	NA	29,154	NA
<b>Metalworking machinery</b>							
Machine tools, metal cutting types	3541	NA	46,481	NA	NA	39,652	NA
Machine tools, metal forming types	3542	NA	18,053	NA	0	17,166	0.00
Industrial patterns	3543	0	9,020	0.00	NA	8,820	NA
Special dies, tools, jigs, and fixtures	3544	318	147,905	0.45	218	162,244	0.30

Machine tool accessories	3545	235	56,221	0.87	253	50,891	1.10
Power-driven handtools	3546	NA	21,324	NA	0	24,928	0.00
Rolling mill machinery	3547	0	5,098	0.00	0	4,638	0.00
Welding apparatus	3548	NA	18,115	NA	NA	21,182	NA
Metalworking machinery, nec	3549	NA	7,579	NA	NA	10,679	NA
<b>Special industrial machinery</b>	<b>3550</b>						
Textile machinery	3552	NA	18,206	NA	NA	15,588	NA
Woodworking machinery	3553	NA	9,651	NA	NA	11,287	NA
Paper industries machinery	3554	NA	19,359	NA	NA	21,553	NA
Printing trades machinery	3555	0	25,115	0.00	NA	23,101	NA
Food products machinery	3556	0	23,829	0.00	0	24,889	0.00
Special industry machinery, nec	3559	470	63,647	1.54	109	74,374	0.32
<b>General industrial machinery</b>	<b>3560</b>						
Pumps and pumping equipment	3561	0	32,067	0.00	NA	29,295	NA
Ball and roller bearings	3562	0	45,063	0.00	0	39,077	0.00
Air and gas compressors	3563	0	25,729	0.00	0	26,089	0.00
Blowers and fans	3564	NA	32,140	NA	0	34,267	0.00
Packaging machinery	3565	NA	21,766	NA	NA	21,901	NA
Speed changers, drives, and gears	3566	0	15,744	0.00	0	16,760	0.00
Industrial furnaces and ovens	3567	0	18,557	0.00	0	18,084	0.00
Power transmission equipment, nec	3568	0	19,563	0.00	0	20,803	0.00
General industrial machinery, nec	3569	NA	39,764	NA	74	44,624	0.37
<b>Refrigeration machinery</b>	<b>3580</b>						
Automatic vending machines	3581	0	7,474	0.00	0	7,945	0.00
Commercial laundry equipment	3582	0	5,722	0.00	0	8,164	0.00
Refrigeration and heating equipment	3585	NA	121,570	NA	NA	139,016	NA
Measuring and dispensing pumps	3586	0	6,225	0.00	0	5,484	0.00
Service industry machinery, nec	3589	NA	36,779	NA	NA	43,059	NA
<b>Other 35</b>							
Turbines and turbine generator sets	3511	NA	25,528	NA	NA	25,308	NA
Internal combustion engines, nec	3519	0	61,623	0.00	0	62,083	0.00
Electronic computers(a)	3571	NA	280,943	NA	NA	192,012	NA
Computer storage devices(a)	3572	0	35,731	0.00	0	40,466	0.00
Computer terminals(a)	3575	0	21,413	0.00	0	20,225	0.00
Computer peripheral equipment, nec(a)	3577	NA	58,033	NA	NA	60,448	NA
Calculating and accounting equipment	3578	0	11,515	0.00	0	9,910	0.00
Office machines, nec	3579	NA	31,714	NA	NA	26,946	NA
Carburetors, pistons, rings, valves	3592	0	23,488	0.00	0	22,283	0.00
Fluid power cylinders and actuators	3593	NA	19,220	NA	NA	18,771	NA
Fluid power pumps and motors	3594	NA	29,531	NA	NA	26,482	NA
Scales and balances, except laboratory	3596	0	6,334	0.00	0	6,553	0.00
Industrial machinery, nec	3599	1,479	241,063	1.28	1,305	280,952	1.10
<b>Electric distribution equipment(a)</b>	<b>3610</b>						
Transformers, except electronic	3612	0	49,107	0.00	0	41,153	0.00
Switchgear and switchboard apparatus	3613	822	48,999	3.50	NA	42,517	NA

<b>Household audio and video equipment, etc.</b>	<b>3650</b>						
Household audio and video equipment	3651	0	62,517	0.00	NA	55,394	NA
Prerecorded records and tapes	3652	NA	21,913	NA	NA	27,618	NA

<b>Communications equipment(a)</b>	<b>3660</b>						
Telephone and telegraph apparatus	3661	NA	125,016	NA	NA	112,192	NA
Radio and tv communications equipment	3663	NA	113,375	NA	448	123,745	0.80
Communications equipment, nec	3668	0	23,868	0.00	NA	27,614	NA

<b>Electronic components(a)</b>	<b>3670</b>						
Electron tubes	3671	0	31,470	0.00	0	24,583	0.00
Printed circuit boards	3672	87	101,582	0.18	115	117,630	0.22
Semiconductors and related devices	3674	2,775	241,421	2.40	2,286	235,229	2.12
Electronic capacitors	3675	NA	21,624	NA	NA	21,580	NA
Electronic resistors	3676	0	12,356	0.00	0	10,714	0.00
Electronic coils and transformers	3677	NA	18,736	NA	NA	18,633	NA
Electronic connectors	3678	NA	15,659	NA	NA	17,184	NA
Electronic components, nec	3679	226	142,200	0.33	91	135,650	0.15

<b>Misc. electrical equipment(a)</b>	<b>3690</b>						
Storage batteries	3691	0	29,358	0.00	0	26,976	0.00
Primary batteries, dry and wet	3692	0	10,625	0.00	0	11,904	0.00
Engine electrical equipment	3694	NA	68,586	NA	NA	70,615	NA
Magnetic and optical recording media	3695	NA	18,584	NA	NA	17,036	NA
Electrical equipment and supplies, nec	3699	0	38,205	0.00	0	29,638	0.00

#### Other 36

Motors and generators	3621	0	84,038	0.00	0	78,869	0.00
Carbon and graphite products	3624	0	10,878	0.00	0	10,031	0.00
Relays and industrial controls	3625	NA	65,621	NA	NA	58,795	NA
Electrical industrial apparatus, nec	3629	NA	9,129	NA	NA	9,736	NA
Household cooking equipment	3631	0	19,828	0.00	0	21,420	0.00
Household refrigerators and freezers	3632	0	26,919	0.00	0	29,710	0.00
Household laundry equipment	3633	0	21,033	0.00	0	18,707	0.00
Electric housewares and fans	3634	NA	32,191	NA	NA	28,595	NA
Household vacuum cleaners	3635	0	11,959	0.00	0	10,637	0.00
Household appliances, nec	3639	0	12,378	0.00	0	13,090	0.00
Electric lamps	3641	NA	24,325	NA	724	22,760	7.01
Current-carrying wiring devices	3643	NA	72,180	NA	NA	62,002	NA
Noncurrent-carrying wiring devices	3644	0	17,461	0.00	0	17,893	0.00
Residential lighting fixtures	3645	NA	23,888	NA	NA	19,695	NA
Commercial lighting fixtures	3646	NA	22,911	NA	0	25,581	0.00
Vehicular lighting equipment	3647	0	18,027	0.00	0	17,982	0.00
Lighting equipment, nec	3648	0	10,520	0.00	0	12,508	0.00

<b>Motor vehicles and equipment</b>	<b>3710</b>						
Motor vehicles and car bodies	3711	NA	335,054	NA	NA	358,908	NA
Truck and bus bodies	3713	NA	39,629	NA	0	38,313	0.00
Motor vehicle parts and accessories	3714	NA	404,361	NA	NA	511,911	NA
Truck trailers	3715	0	28,532	0.00	NA	39,273	NA
Motor homes	3716	0	17,879	0.00	0	19,174	0.00

<b>Ship and boat building</b>	<b>3730</b>						
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Ship building and repairing	3731	NA	129,796	NA	NA	104,328	NA
Boat building and repairing	3732	1,031	56,981	3.78	1,105	53,923	4.52
<b>Other 37</b>							
Aircraft	3721	NA	381,988	NA	NA	243,843	NA
Aircraft engines and engine parts	3724	NA	151,984	NA	NA	92,180	NA
Aircraft parts and equipment, nec	3728	0	178,738	0.00	0	112,994	0.00
Railroad equipment	3743	NA	32,829	NA	NA	38,536	NA
Motorcycles, bicycles, and parts	3751	0	14,511	0.00	NA	20,832	NA
Guided missiles and space vehicles	3781	0	131,500	0.00	0	69,127	0.00
Space propulsion units and parts	3784	665	32,628	4.26	NA	16,969	NA
Space vehicle equipment, nec	3769	0	21,007	0.00	0	11,881	0.00
Travel trailers and campers	3792	NA	16,417	NA	NA	22,188	NA
Tanks and tank components	3795	0	14,721	0.00	0	7,936	0.00
Transportation equipment, nec	3799	11	13,993	0.16	NA	22,694	NA
<b>Laboratory Apparatus, etc.</b>							
Laboratory apparatus and furniture	3820						
	3821	NA	8,983	NA	NA	9,643	NA
Environmental controls	3822	NA	49,200	NA	NA	43,286	NA
Process control instruments	3823	NA	65,591	NA	108	63,963	0.37
Fluid meters and counting devices	3824	NA	11,989	NA	0	11,838	0.00
Instruments to measure electricity	3825	33	91,616	0.08	0	70,793	0.00
Analytical instruments	3826	NA	30,288	NA	NA	27,586	NA
Optical instruments and lenses	3827	0	19,806	0.00	0	18,165	0.00
Measuring and controlling devices, nec	3829	34	44,874	0.16	NA	40,888	NA
<b>Medical Instruments</b>							
Surgical and medical instruments	3841	NA	98,524	NA	NA	100,370	NA
Surgical appliances and supplies	3842	524	93,053	1.18	NA	94,590	NA
Dental equipment and supplies	3843	0	13,020	0.00	NA	13,853	NA
X-ray apparatus and tubes	3844	0	10,636	0.00	0	12,666	0.00
Electromedical equipment	3845	NA	29,475	NA	0	42,337	0.00
<b>Other 38</b>							
Search and navigation equipment	3812	NA	280,528	NA	NA	158,697	NA
Ophthalmic goods	3851	NA	43,487	NA	NA	36,810	NA
Photographic equipment and supplies	3861	0	100,637	0.00	NA	84,576	NA
Watches, clocks, watchcases, and parts	3873	0	10,486	0.00	0	7,971	0.00
<b>Telephone communications(a)</b>							
Radiotelephone communications	4812	194	37,843	1.07	309	99,840	0.68
Telephone communications, except radio	4813	2,689	874,062	0.84	2,111	786,758	0.59
<b>Electric services</b>							
Electric services	4910						
	4911	4,338	444,942	2.04	3,595	399,789	1.98
<b>Other 49</b>							
Natural gas transmission	4922	0	38,728	0.00	0	32,103	0.00
Gas transmission and distribution	4923	0	47,850	0.00	NA	40,427	NA

Natural gas distribution	4924	NA	75,406	NA	NA	76,620	NA
Gas production and/or distribution	4925	0	3,455	0.00	0	3,553	0.00
Electric and other services combined	4931	0	160,143	0.00	0	141,000	0.00
Gas and other services combined	4932	NA	29,505	NA	0	23,814	0.00
Combination utility, nec	4939	0	2,443	0.00	0	2,446	0.00
Water supply	4941	154	25,548	1.26	158	27,925	1.23
Sewerage systems	4952	10	3,439	0.61	56	4,671	2.64
Refuse systems	4953	329	99,282	0.69	136	127,728	0.34
Sanitary services, nec	4959	75	12,532	1.25	69	20,789	0.73
Steam and air-conditioning supply	4961	0	2,227	0.00	NA	1,853	NA
Irrigation systems	4971	NA	1,854	NA	NA	1,798	NA
<b>Security and commodity services</b>	<b>6280</b>						
Investment advice	6282	72	49,815	0.30	NA	76,875	NA
Security and commodity services, nec	6289	22	26,493	0.17	NA	24,535	NA
<b>Life insurance</b>	<b>6310</b>						
Life insurance	6311	571	482,961	0.25	348	410,210	0.19
<b>Accident and health insurance, etc.</b>	<b>6320</b>						
Accident and health insurance	6321	24	54,945	0.09	NA	61,532	NA
Hospital and medical service plans	6324	NA	184,944	NA	NA	242,237	NA
<b>Fire, marine, and casualty insurance</b>	<b>6330</b>						
Fire, marine, and casualty insurance	6331	1,770	555,228	0.67	1,768	530,786	0.73
<b>Investment and holding offices</b>	<b>6700</b>						
Bank holding companies	6712	NA	28,884	NA	NA	28,889	NA
Holding companies, nec	6719	NA	84,311	NA	NA	74,504	NA
Management investment, open-end	6722	NA	7,425	NA	NA	16,396	NA
Investment offices, nec	6726	NA	2,245	NA	NA	2,403	NA
Educational, religious, and charitable trusts	6732	NA	21,241	NA	NA	28,772	NA
Trusts, nec	6733	NA	12,055	NA	NA	12,814	NA
Oil royalty traders	6792	0	2,665	0.00	0	3,921	0.00
Patent owners and lessors	6764	3	15,195	0.04	NA	20,583	NA
Real estate investment trusts	6798	9	1,743	1.08	NA	2,401	NA
Investors, nec	6799	NA	12,710	NA	NA	12,646	NA
<b>Computer and data processing(a)</b>	<b>7370</b>						
Computer programming services	7371	138	154,421	0.19	138	243,150	0.13
Prepackaged software	7372	142	111,312	0.27	115	178,515	0.14
Computer integrated systems design	7373	160	100,912	0.33	244	128,886	0.42
Data processing and preparation	7374	544	200,248	0.57	433	224,012	0.43
Information retrieval services	7375	124	47,931	0.54	142	55,953	0.56
Computer facilities management	7376	9	25,620	0.07	NA	25,486	NA
Computer rental and leasing	7377	5	10,377	0.10	NA	8,778	NA
Computer maintenance and repair	7378	58	39,224	0.31	142	47,794	0.85
Computer-related services, nec	7379	81	91,594	0.18	291	171,424	0.37
<b>Engineering and architectural</b>	<b>8710</b>						
Engineering services	8711	2,453	614,342	0.83	2,249	629,075	0.79
Architectural services	8712	590	128,053	0.96	414	129,584	0.70
Surveying services	8713	699	50,540	2.89	472	52,050	2.00
<b>Research and testing labs</b>	<b>8730</b>						
Commercial physical research	8731	336	232,187	0.30	435	224,285	0.43

Commercial nonphysical research	8732	171	100,672	0.35	209	118,555	0.39
Noncommercial research organization	8733	325	148,590	1.16	1,099	136,454	1.78
Testing laboratories	8734	89	74,700	0.25	286	89,608	0.70
<b>Management and public relations</b>	<b>8740</b>						
Management services	8741	743	272,118	0.57	993	282,543	0.77
Management consulting services	8742	589	200,915	0.61	931	275,928	0.74
Public relations services	8743	82	33,311	0.51	183	34,005	1.06
Facilities support services	8744	81	59,206	0.29	76	74,335	0.23
Business consulting, nec	8748	373	78,879	1.01	422	141,150	0.87

Sources: U.S. Department of Labor, Bureau of Labor Statistics, Employment and Wages, Annual Averages, 1990, 1995.

List of industries taken from Nexus Associates, Maine's Science and Technology Environment (September, 1997).

NA indicates that data at the 4-digit level were withheld by the Bureau of Labor Statistics as per its disclosure policies.

"BLS withholds publication of UI covered employment and wage data for any industry level: (1) which consists of fewer than three reporting units; or (2) in which a single unit accounts for 80 percent or more of the industry's employment."

Employment and Wages, Annual Averages, 1990, p. 532. NA indicates data withheld.

"Employment is reported only for workers covered by the unemployment insurance system. "Excluded from

private sector coverage in 1990 were approximately 0.2 million wage and salary agricultural employees, 1.4 million self-employed farmers, 8.8 million self-employed nonagricultural workers, 0.8 million domestic workers, and 0.3 million unpaid family workers. Also excluded from industry detail tables in this publication were 1.6 million members of the Armed Forces stationed in the United States, and about 0.3 million workers covered by the railroad unemployment insurance system. Not covered by UI laws were about 0.7 million State and local government workers. In addition, certain types of nonprofit employers, e.g., religious organizations, are given a choice of coverage or noncoverage in a number of States." U.S. Department of Labor, Bureau of Labor Statistics, Employment and Wages, Annual Averages, 1990, p. 530.

\*\*\*Technology-intensive industries are defined as those industries that are in the top 25% in two of the following three categories (for U.S. as a whole): R&D expenditures per worker, capital investment per worker, and scientists and engineers as a % of total workforce." Nexus Associates, Maine's Science and Technology Environment (September, 1997) p. 4.

(a) Could be construed as covered by Chapter 557.

## **APPENDIX F**





# State Sales Tax Rates

July 1, 1997

State	Tax Rates	-----Exemptions-----		
		Food	Prescription Drugs	Non-prescription Drugs
ALABAMA	4		*	
ALASKA	none			
ARIZONA	5	*	*	
ARKANSAS	4.625		*	
CALIFORNIA (4)	6	*	*	
COLORADO	3	*	*	
CONNECTICUT	6	*	*	
DELAWARE	none			
FLORIDA	6	*	*	*
GEORGIA	4	(3)	*	
HAWAII	4		*	
IDAHO	5		*	
ILLINOIS (2)	6.25	1%	1%	1%
INDIANA	5	*	*	
IOWA	5	*	*	
KANSAS	4.9		*	
KENTUCKY	6	*	*	
LOUISIANA	4		*	
MAINE	6	*	*	
MARYLAND	5	*	*	*
MASSACHUSETTS	5	*	*	
MICHIGAN	6	*	*	
MINNESOTA (2)	6.5	*	*	*
MISSISSIPPI	7		*	
MISSOURI	4.225	(6)	*	
MONTANA	none			
NEBRASKA	5	*	*	
NEVADA	6.5	*	*	
NEW HAMPSHIRE	none			

NEW JERSEY	6	*	*	*
NEW MEXICO	5			
NEW YORK	4	*	*	*
NORTH CAROLINA	4		*	
NORTH DAKOTA	5	*	*	
OHIO	5	*	*	
OKLAHOMA	4.5		*	
OREGON	none			
PENNSYLVANIA	6	*	*	*
RHODE ISLAND	7	*	*	*
SOUTH CAROLINA	5		*	
SOUTH DAKOTA	4		*	
TENNESSEE	6		*	
TEXAS	6.25	*	*	
UTAH	4.75		*	
VERMONT	5	*	*	*
VIRGINIA	3.5		*	*
WASHINGTON	6.5	*	*	
WEST VIRGINIA	6		*	
WISCONSIN	5	*	*	
WYOMING (5)	4		*	
DIST. OF COLUMBIA	5.75	*	*	*

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*Source: Compiled by FTA from various sources.*

*(1) Some state tax food, but allow an (income) tax credit to compensate poor households. They are: HI, ID, KS, SD, and WY.*

*(2) 1.25% of the tax in IL and 0.5% in MN is distributed to local governments.*

*(3) Exemption: half (10/1/96-9/30/97), three quarters (10/1/97-9/3/98), full (10/1/98).*

*(4) Includes a 0.5% temporary tax pending a judicial ruling on school finance.*

*(5) Tax rate may be adjusted annually according to a formula based on balances in the unappropriated general fund and the school foundation fund.*

*(6) Effective 10/1/97 to 9/30/98 the state tax rate on all retail food is reduced to 1.225%.*

# RANGE OF STATE CORPORATE INCOME TAX RATES

(For tax year 1997 -- as of January 1, 1997)

STATE	TAX RATE (percent)	TAX BRACKETS		NUMBER OF BRACKETS	TAX RATE (a) (percent)	FEDERAL INCOME TAX DEDUCTIBLE
		LOWEST	HIGHEST			
ALABAMA	5.0	---Flat Rate---		1	5.0	
ALASKA	1.0 - 9.4	10,000	90,000	10	1.0 - 9.4	
ARIZONA	9.0 (b)	---Flat Rate---		1	9.0 (b)	
ARKANSAS	1.0 - 6.5	3,000	100,000	6	1.0 - 6.5	
CALIFORNIA	8.84 (c)	---Flat Rate---		1	10.84 (c)	
COLORADO	5.0	---Flat Rate---		1	5.0	
CONNECTICUT	10.5 (d)	---Flat Rate---		1	10.5 (d)	
DELAWARE	8.7	---Flat Rate---		1	8.7-2.7 (e)	
FLORIDA	5.5 (f)	---Flat Rate---		1	5.5 (f)	
GEORGIA	6.0	---Flat Rate---		1	6.0	
HAWAII	4.4 - 6.4 (g)	25,000	100,000	3	7.92 (g)	
IDAHO	8.0 (h)	---Flat Rate---		1	8.0 (h)	
ILLINOIS	7.3 (i)	---Flat Rate---		1	7.3 (i)	
INDIANA	7.9 (j)	---Flat Rate---		1	7.9 (j)	
IOWA	6.0 - 12.0	25,000	250,000	4	5.0	* (k)
KANSAS	4.0 (l)	---Flat Rate---		1	4.5 (l)	
KENTUCKY	4.0 - 8.25	25,000	250,000	5	-- (a)	
LOUISIANA	4.0 - 8.0	25,000	200,000	5	-- (a)	
MAINE	3.5 - 8.93 (m)	25,000	250,000	4	1.0	
MARYLAND	7.0	---Flat Rate---		1	7.0	
MASSACHUSETTS	9.5 (n)	---Flat Rate---		1	11.72 (n)	
MINNESOTA	9.8 (o)	---Flat Rate---		1	9.8 (o)	
MISSISSIPPI	3.0 - 5.0	5,000	10,000	3	-- (a)	
MISSOURI	6.25	---Flat Rate---		3	7.0	* (k)
MONTANA	6.75 (p)	---Flat Rate---		1	6.75 (p)	
NEBRASKA	5.58 - 7.81	50,000		2	-- (a)	
NEW HAMPSHIRE	7.0 (q)	---Flat Rate---		1	7.0 (q)	
NEW JERSEY	9.0 (r)	---Flat Rate---		1	3 (r)	
NEW MEXICO	4.8 - 7.6	500,000	1 million	3	4.8 - 7.6	
NEW YORK	9.0 (t)	---Flat Rate---		1	9.0 (t)	
NORTH CAROLINA	7.5 (u)	---Flat Rate---		1	7.5 (u)	
NORTH DAKOTA	3.0 - 10.5 (v)	3,000	50,000	6	7.0 (v)	
OHIO	5.1 - 8.9 (w)	50,000		2	-- (w)	
OKLAHOMA	6.0	---Flat Rate---		1	6.0	
OREGON	6.6 (b)	---Flat Rate---		1	6.6 (b)	
PENNSYLVANIA	9.99 (s)	---Flat Rate---		1	-- (a)	
RHODE ISLAND	9.0	---Flat Rate---		1	8.0 (x)	
SOUTH CAROLINA	5.0	---Flat Rate---		1	4.5 (y)	
SOUTH DAKOTA	---				6.0-1.0% (b)	
TENNESSEE	6.0	---Flat Rate---		1	6.0	
UTAH	5.0 (b)	---Flat Rate---			5.0 (b)	
VERMONT	5.5 - 8.25 (b)	10,000	250,000	4	5.5 - 8.25 (b)	
VIRGINIA	6.0	---Flat Rate---		1	6.0 (z)	
WEST VIRGINIA	9.0	---Flat Rate---		1	9.0	
WISCONSIN	7.9 (aa)	---Flat Rate---		1	7.9	
DIST. OF COLUMBIA	9.975 (bb)	---Flat Rate---			9.975 (bb)	

# STATE INDIVIDUAL INCOME TAXES

(Tax rates for tax year 1997 - as of January 1, 1997)

	TAX RATE RANGE		Number of Bracket	INCOME BRACKETS		PERSONAL EXEMPTIONS			FEDERAL INCOME TAX DEDUCTIBLE
	Low	High		Lowest	Highest	Single	Married	Dependents	
ALABAMA	2.0	- 5.0	3	500 (b)	- 3,000 (b)	1,500	3,000	300	*
ALASKA	No State Income Tax								
ARIZONA	3.0	- 5.6	5	10,000 (b)	- 150,000 (b)	2,100	4,200	2,300	
ARKANSAS	1.0	- 7.0 (e)	6	2,999	- 25,000	20 (c)	40 (c)	20 (c)	
CALIFORNIA (a)	1.0	- 9.3	6	4,908 (b)	- 223,390 (b)	67 (c)	134 (c)	37 (c)	
COLORADO	5.0		1	Flat rate		None			
CONNECTICUT	3.0	- 4.5	2	2,250 (b)	- 2,250 (b)	12,000 (f)	24,000 (f)	0	
DELAWARE	0.0	- 6.9	7	4,500	- 30,000	100 (c)	200 (c)	100 (c)	
FLORIDA	No State Income Tax								
GEORGIA	1.0	- 6.0	6	750 (g)	- 7,000 (g)	1,500	3,000	1,500	
HAWAII	2.0	- 10.0	8	1,500 (b)	- 20,500 (b)	1,040	2,080	1,040	
IDAHO	2.0	- 8.2	8	1,000 (g)	- 20,000 (g)	2,650 (d)	5,300 (d)	2,650 (d)	
ILLINOIS	3.0		1	Flat rate		1,000	2,000	1,000	
INDIANA	3.4		1	Flat rate		1,000	2,000	1,000	
IOWA (a)	0.4	- 9.98	9	1,112	- 50,040	20 (c)	40 (c)	40 (c)	*
KANSAS	4.4	- 7.75	3	20,000 (i)	- 30,000 (i)	2,000	4,000	2,000	
KENTUCKY	2.0	- 6.0	5	3,000	- 8,000	20 (c)	40 (c)	20 (c)	
LOUISIANA	2.0	- 6.0	3	10,000 (b)	- 50,000 (b)	4,500 (j)	9,000 (j)	1,000 (j)	*
MAINE (a)	2.0	- 8.5	4	4,150 (b)	- 18,500 (b)	2,100	4,200	2,100	
MARYLAND	2.0	- 5.0	4	1,000	- 3,000	1,200	2,400	1,200	
MASSACHUSETTS	5.85 (k)		1	Flat rate		2,200	4,400	1,000	
MICHIGAN (a)	4.4		1	Flat rate		2,500	5,000	2,500	
MINNESOTA (a)	6.0	- 8.5	3	16,510 (l)	- 54,250 (l)	2,650 (d)	5,300 (d)	2,650 (d)	
MISSISSIPPI	3.0	- 5.0	3	5,000	- 10,000	6,000	9,500	1,500	
MISSOURI	1.5	- 6.0	10	1,000	- 9,000	1,200	2,400	400	* (m)
MONTANA (a)	2.0	- 11.0	10	1,900	- 68,399	1,520	3,040	1,520	*
NEBRASKA (a)	2.62	- 6.99	4	2,400 (n)	- 26,500 (n)	69 (c)	138 (c)	69 (c)	
NEVADA	No State Income Tax								
NEW HAMPSHIRE	State Income Tax is Limited to Dividends and Interest Income Only.								
NEW JERSEY	1.4	- 6.37	6	20,000 (o)	- 75,000 (o)	1,000	2,000	1,500	
NEW MEXICO	1.7	- 8.5	7	5,500 (p)	- 65,000 (p)	2,650 (d)	5,300 (d)	2,650 (d)	
NEW YORK	4.0	- 6.85	4	8,000 (b)	- 20,000 (b)	0	0	1,000	
NORTH CAROLINA	6.0	- 7.75	3	12,750 (q)	- 60,000 (q)	2,500 (d)	5,000 (d)	2,500 (d)	
NORTH DAKOTA	2.67	- 12.0 (r)	8	3,000	- 50,000	2,651 (d)	5,301 (d)	2,651 (d)	* (s)
OHIO (y)	0.693	- 7.004	9	5,000	- 200,000	850 (s)	1,700 (s)	850 (s)	
OKLAHOMA	0.5	- 7.0 (t)	8	1,000	- 10,000	1,000	2,000	1,000	* (t)
OREGON (a)	5.0	- 9.0	3	2,200 (b)	- 5,550 (b)	124 (c)	248 (c)	124 (c)	* (u)
PENNSYLVANIA	2.8		1	Flat rate		None			
RHODE ISLAND	27.5% Federal tax liability								
SOUTH CAROLINA (a)	2.5	- 7.0	6	2,280	- 11,400	2,650 (d)	5,300 (d)	2,650 (d)	
SOUTH DAKOTA	No State Income Tax								
TENNESSEE	State Income Tax is Limited to Dividends and Interest Income Only.								
TEXAS	No State Income Tax								
UTAH	2.3	- 7.0	6	750 (b)	- 3,750 (b)	1,988 (d)	3,975 (d)	1,988 (d)	* (v)
VERMONT	25% Federal tax liability (w)								
VIRGINIA	2.0	- 5.75	4	3,000	- 17,000	800	1,600	800	
WASHINGTON	No State Income Tax								
WEST VIRGINIA	3.0	- 6.5	5	10,000 (b)	- 60,000 (b)	2,000	4,000	2,000	
WISCONSIN	4.9	- 6.93 (x)	3	7,500	- 15,000	0	0	50 (c)	
WYOMING	No State Income Tax								
DIST. OF COLUMBIA	6.0	- 9.5	3	10,000	- 20,000	1,370	2,740	1,370	

## STATE INDIVIDUAL INCOME TAXES (footnotes)

Source: The Federation of Tax Administrators from various sources.

- (a) Seven states have statutory provision for automatic adjustment of tax brackets, personal exemption or standard deductions to the rate of inflation. Nebraska indexes the personal exemption amounts only.
- (b) For joint returns, the tax is twice the tax imposed on half the income.
- (c) tax credits.
- (d) These states allow personal exemption or standard deductions as provided in the IRC. Utah allows a personal exemption equal to three-fourths the federal exemptions. Amounts reported include the 1996 index adjustment.
- (e) A special tax table is available for low income taxpayers reducing their tax payments.
- (f) Combined personal exemptions and standard deduction. An additional tax credit is allowed ranging from 75% to 0% based on state adjusted gross income. Exemption amounts are phased out for higher income taxpayers until they are eliminated for households earning over \$71,000. For tax years beginning after 1996, the tax bracket amount increases to \$4,500.
- (g) The tax brackets reported are for single individuals and married households filing jointly. For married households filing separately, the same rates apply to income brackets ranging from \$500 to \$5,000.
- (h) For joint returns, the tax is twice the tax imposed on half the income. A \$10 filing fee is charge for each return and a \$15 credit is allowed for each exemption.
- (i) The tax brackets reported are for single individual and married households filing separately. For married household filing jointly, the rates range from 3.5% for income under \$30,000 to 6.45% for income over \$60,000.
- (j) Combined personal exemption and standard deduction.
- (k) A 12% tax rate applies to interest, dividends and capital gains.
- (l) The tax brackets reported are for single individuals. For married taxpayers filing jointly, the same rates apply to income brackets ranging from \$24,140 to \$95,920. An addition 0.5% tax is applied to certain income levels.
- (m) Limited to \$10,000 for joint returns and \$5,000 for individuals.
- (n) The tax brackets reported are for single individual. For married couples, the tax rates range from 2.62% for income under \$4,000 to 6.99% over \$46,750.
- (o) The tax brackets reported are for single individuals. A separate schedule is provided for married households filing jointly which ranges from 1.4% under \$20,000 to 6.37% for income over \$150,000.
- (p) The tax brackets reported are for single individuals. For married individuals filing jointly, the rate ranges from 1.7% under \$8,000 to 8.5% over \$100,000. Married households filing separately pay the tax imposed on half the income.
- (q) The tax brackets reported are for single individuals. For married taxpayers, the same rates apply to income brackets ranging from \$21,250 to \$100,000. An additional middle income tax credit is allowed.
- (r) Taxpayers have the option of paying 14% of the adjusted federal income tax liability, without a deduction of federal taxes. And additional \$300 personal exemption is allowed for joint returns or unmarried head of households.
- (s) Plus an additional \$20 per exemption tax credit.
- (t) The rate range reported is for single persons not deducting federal income tax. For married persons filing jointly, the same rates apply to income brackets ranging from \$2,000 to \$21,000. Separate schedules, with rates ranging from 0.5% to 10%, apply to taxpayers deducting federal income taxes.
- (u) Limited to \$3,000.
- (v) One half of the federal income taxes are deductible.
- (w) If Vermont tax liability for any taxable year exceeds the tax liability determinable under federal tax law in effect on December 31, 1994, the taxpayer will be entitled to a credit of 106% of the excess tax.
- (x) The tax brackets reported are for single individuals. For married taxpayers, the same rates apply to income brackets ranging from \$10,000 to \$20,000.
- (y) Tax Rates are temporarily adjusted downward for tax years 1996 and 1997 based on the amount of revenue in the general fund. Rates reported are adjusted for 1996. Statutory rates range from 0.743 to 7.5 percent with the same income brackets.



## SELECTED TAX INCENTIVES

PROGRAM	STATUTE	SUMMARY	ESTIMATED ANNUAL COST
Maine Employment Tax Increment Financing	36 MRSA c. 917 (§6751 et seq.)	A qualified business that adds 15 or more employees with health insurance and higher than average wage are entitled to reimbursement for a percentage of state withholding taxes paid (30% if in an area with unemployment equal to or less than state average; 50% in areas with unemployment greater than state average)	not estimated
Reimbursement for property taxes on business property	36 MRSA c. 915 (§6651 et seq.)	100% reimbursement of property taxes on qualified business property put into service after 1/1 95	\$35-37 million increases annually
Jobs and investment tax credit	36 MRSA §5215	Income tax credit equal to federal credit with qualified investment of \$5 million and at least 100 new jobs	\$ 2,847,000
Seed capital investment tax credit	36 MRSA §5216-B	Income tax credit up to 50% of tax owed on 30% of investment certified by FAME in qualified manufacturer or private venture capital fund	\$ 366,195
Investment tax credit	36 MRSA §5219-E	Income tax credit for 1% of investment in machinery and equipment that is does not receive property tax reimbursement	\$12,248,408
Research expense tax credit	36 MRSA §5219-K	Income tax credit for research payments eligible for federal credit (100% of first \$25,000 taxes due; 75% over \$25,000)	\$ 474,500
Supercredit for substantially increased research and development	36 MRSA §5219-L	Income tax credit, up to 50% of tax owed, on excess qualified research expenses based on federal credit	\$1.4 million (? Being checked)
High-technology investment tax credit	36 MRSA §5219-M	Income tax credit for purchaser or lessor of eligible equipment used in high-technology activity. Amount of credit equal to original basis of the eligible equipment	



PROGRAM	STATUTE	SUMMARY	ESTIMATED ANNUAL COST
Sales tax exclusion for custom computer software	36 MRSA §1752	Sales tax exclusion for computer software that is written or prepared exclusively for a particular customer	\$ 719,000
Sales to nonprofit medical research corporations and biology and ecology labs	36 MRSA §1760.16	Sales tax exemption for sales to nonprofit medical research corporation and labs for scientific study and investigation in fields of biology or ecology	\$250,00 to \$999,999
Sales of R&D machinery and equipment	36 MRSA §1760.32	Sales tax exemption for sales of machinery and equipment for research and development in experimental and laboratory sense	less than \$50,000
Sales to MSTF researchers	36 MRSA §1760.68	Sales to nonprofit organizations conducting scientific and technological research for MSTF and receiving funding through MSTF	less than \$50,000

# Programs Available for Applied Research and Development

Program	Description	Targets	Eligible Projects	Amount Currently Available and Source of Funds	Maximum Amount	Loans Made/Year Program Started	Other
Maine Economic Improvement Fund  (University of Maine)	Administer investments in targeted research and development and product innovation and to provide the basic investment necessary to obtain matching funds and competitive grants from private and federal sources	Aquaculture and marine sciences technology, biotechnology, composite materials engineering, environmental sciences and technology and information sciences and technology				Started: 1997	Specifics of the funding and usage are to be recommended by Research and Development study committee
Maine Technology Fund  (MSTF)	Two components:  Maine Technology Investment Fund: invests directly in small businesses with promising technology at the pre-commercialization stage  Maine Technology Capacity Fund: invests in program service and program match to increase commercialization opportunities	Marine Science, Biotechnology, Precision manufacturing, Software development, Composite materials, Environmental science and technology	Direct investment with royalty based return (or other, as agreed upon).	State funds: 1996-\$400,000 1997-\$400,000 1998-\$400,000  MSTF seeking private sector investment to increase dollars available for direct investment.	First round range between \$25,000 and \$100,000	First closing of applications to Investment Fund October 15, 1997; decisions to be made by December 15, 1997.	Requires minimum 1:1 cash match from applicant.

Program	Description	Targets	Eligible Projects	Amount Currently Available and Source of Funds	Maximum Amount	Loans Made/Year Program Started	Other
Research and Development Tax Credit  (Taxation)	<ul style="list-style-type: none"> <li>• Tax credit of 5% of qualified research expenses above the base amount spent on R&amp;D expenditures over the past three years</li> <li>• 7.5% tax credit of basic research payments</li> </ul>	Research and development	Allowable expenses and eligible business entities are provided in Tax Code Section 41		Credit limited to 100% of first \$25,000 of taxes due, plus 75% of taxes due in excess of \$25,000	Bureau of taxation estimates credit for FY97 at \$500,000	
Super Credit for Substantially Increased Research and Development  (Taxation)	Additional tax credit for qualified research expenses above 150% of the base amount spent on R&D expenditures over the past three years	Taxpayers qualifying under Research and Development Tax Credit			<p>Limited to 50% of tax due after allowance for other tax credits</p> <p>Cannot reduce tax liability to less than tax due in previous year after allowance of credits</p>	Fiscal note on legislation estimates revenue loss for R&D Super Credit and High-Technology Tax Credit at \$2,629,512	

Program	Description	Targets	Eligible Projects	Amount Currently Available and Source of Funds	Maximum Amount	Loans Made/Year Program Started	Other
Centers for Innovation (MSTF)	Matching grants provided by MSTF to non-profit groups to establish centers to promote competitiveness	Science and technology research, technology transfer or application of technology  Three Centers have been established: Technology Transfer (precision manufacturing), Biomedical Technology and Aquaculture	Research and development that leads to new technologies and creates jobs, transfer of R&D to marketplace and applying new technology to Maine firms	\$426,000 per year of state funds (FY97 and FY98), plus matching funds from private sector and other sources  (Annual matching funds have ranged from \$2.6 million in 1993 to \$1.3 million in 1996)			Each center is a separate non-profit corporation  The program is currently being examined to see how technology is delivered to industry
Small Enterprise Growth Fund (FAME)	Provide "patient" venture capital to small Maine business and entrepreneurs	Marine Science, Biotechnology, Manufacturing, Exporting, Software Development, Environmental Sciences, Value Added Natural Resources and other businesses that meet high growth potential and public benefit requirements	Provides capital on a matching basis with other financial resources  Businesses must have fewer than 25 employees and sales of less than \$2,000,000 per year	\$5,000,000 from bond issue approved by voters in November 1996	Up to \$150,000	Program implemented in 1997	"Patient capital" component allows investments to be repaid according to cash needs of the company.  Matching investment must be at risk for a minimum of 5 years  *Fund is overseen by an eleven-member board

Program	Description	Targets	Eligible Projects	Amount Currently Available and Source of Funds	Maximum Amount	Loans Made/Year Program Started	Other
EPSCoR (Experimental Program to Stimulate Competitive Research)  (MSTF)	Through the Research Capacity Committee (RCC), which is the state EPSCoR Committee, solicit and review proposals from public/private research institutions across the state for funding through federal agencies. Projects are federal/state/institutional partnerships. RCC recommends application of state dollars.	Research and development that is responsive to the needs of the industry sectors targeted for development by the Governor.  Selected projects must be meritorious, promote collaborations, and demonstrate that support will increase the state's technological capacity and workforce skills needed by Maine's industries.	Responsive to federal agency focus areas.	1997- \$1,806,000 state funds, \$2,022,000 federal funds 1998- \$1,370,000 state funds, \$2,319,000 federal funds	Funded projects are often multi-year	Current year includes funding from the following sources:  Department of Energy: (year 4 of 6) state funds \$802,000; federal funds \$600,000 to \$750,000; institutional \$1,245,000  National Aeronautics and Space Administration: (year 7 of 10) state funds \$100,000; federal funds \$205,000  National Science Foundation: (year 2 of 3) state funds \$468,000; federal funds \$1,514,000; institutional \$734,000; industry \$485,000	EPSCoR began in 1980

Program	Description	Targets	Eligible Projects	Amount Currently Available and Source of Funds	Maximum Amount	Loans Made/Year Program Started	Other
Maine Small Business Innovation Research  (MSTF)	Grants to assist individuals and companies in applying for Federal Business Innovation Research funds  MSTF program provides education and guidance to applicants. Goal is to increase number of successful stage 1 applicants and number of stage 3 into commercialization	Phase One: Feasibility study of new technology  Phase Two: Development of prototype  Phase Three: Commercialization	Consultants for pre-application work and prototype development	State funds for grants to assist with applications for federal funds: 1997: \$22,500 1998: \$22,500  Federal funds available: \$1 Billion annually in SBIR grants	Pre Phase-One: \$5,000 Phase Two and beyond: \$5,000	Program implemented in 1997	Federal Program: Research sponsored by 10 federal agencies in three stages: <ul style="list-style-type: none"> <li>• feasibility</li> <li>• prototype</li> <li>• commercialization</li> </ul> Maximum federal funds available: Stage 1: up to \$100,000 Stage 2: up to \$750,000
Sales Tax Exemption for Machinery and Equipment used in Research  (Taxation)	Sales of machinery and equipment for use by the purchaser directly and exclusively in research and development in the experimental and laboratory sense and sales of machinery, equipment, instruments and supplies for use by the purchaser directly and primarily in biotechnology applications are exempt from sales tax					Fiscal note on legislation estimates revenue loss at \$118,720 in fiscal years 1997-98 for this change in sales tax exemptions	

Program	Description	Targets	Eligible Projects	Amount Currently Available and Source of Funds	Maximum Amount	Loans Made/Year Program Started	Other
High Technology Investment Tax Credit  (Taxation)	Tax credit for the purchase of equipment for use in high-technology activity	Equipment used in the design, creation and production of computer software and computer equipment or the provision of Internet or electronic communication access services or support	Eligible equipment includes computer and electronic components and accessories and communications equipment		Cannot reduce tax liability to less than tax due in previous year after allowance of credits	Fiscal note on legislation estimates revenue loss at \$2,629,512 for R&D Super Credit and High-Technology Tax Credit	
Linked Investment Program for Commercial Enterprises  (FAME/private)	State of Maine makes investments in financial institutions at a reduced rate (2% below current interest rates) who in turn agree to finance eligible small businesses at reduced rates	Must have fewer than 25 employees and less than \$2,500,000 annual sales	Must concentrate in exports or be a Maine-resident owned manufacturer  Loan proceeds must be used for acquisition of or improvement to real property or fixed assets, research and development or working capital	\$4,000,000 of state funds to be invested in financial institutions	\$200,000 per qualified loan  At least one job must be created or retained for each \$20,000 in loans	Investment levels: FY92-\$1,369,563 FY93-\$1,468,300 FY94-\$2,877,406 FY95-\$3,999,999 FY96-\$3,978,708	Number of businesses receiving loans: FY92-12 FY93-10 FY94-30 FY95-41 FY96-34

Program	Description	Targets	Eligible Projects	Amount Currently Available and Source of Funds	Maximum Amount	Loans Made/Year Program Started	Other
Maine Seed Capital Tax Credit Program  (FAME/Taxation)	Equity investors in young, dynamic business ventures receive income tax credits equal to 30% of cash equity provided to Maine businesses	Businesses must be for-profit corporations, partnerships or joint ventures; annual sales in the last 12 months of no more than \$2,000,000; manufacturers or sell more than 60% of goods outside Maine or bring capital into the state (equal to the amount of the credit)	Investments must be in cash and used for fixed assets, research and development or working capital	Maximum amount of credits available:  1996-\$2,000,000 1997-\$3,000,000 1998-\$4,000,000 1999-\$5,000,000 2000-\$6,000,000 \$7,000,000 thereafter	Maximum of \$100,000 per investor per business  Maximum of \$600,000 per business  No limit on the number of businesses in which an investor can invest	Total investments (credits are 30% of investments):  FY89-\$90,000 FY90-\$229,000 FY91:\$0 FY92-\$115,000 FY93-\$626,000 FY94-\$1,064,000 FY95-\$1,239,000 FY96-\$1,174,000	Currently there are 31 businesses participating; 218 investments  Investment is unsecured and unguaranteed and remains in the business for at least 5 years with no principal paid to the investor during this period
Agricultural Marketing Loan Fund  (FAME and Dept. of Agriculture, Food and Rural Resources)	Assist natural resource based industries by providing a source of subordinated debt (loan fund and grant fund)	Employing aquaculture techniques; growing/harvesting plants; raising animals; producing plant or animal byproducts for sale; processing, storing, packing or marketing plant or animal products	Construction, renovation of buildings, docks, wharves, piers or storages; purchase of machinery and equipment; land purchases when connected with significant improvements to land or facilities	\$6,000,000 of bond issue approved by voters in November 1996	\$250,000-loan \$5,000-grant	Program implemented in 1997	Interest rate: 2% below prime (actual rate always between 5% and 8% )

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Sources: Finance Authority of Maine and Maine Department of Economic and Community Development, *Business Development Incentives in Maine: An Inventory and Statistical Analysis*.  
Information provided by Maine Science and Technology Foundation.  
Maine Revised Statutes Annotated and Code of Maine Rules for specific programs.





**TABLE 3:**  
**STATE TAX INCENTIVES FOR BUSINESS 1996**

	Corporate Income Tax Exemption	Personal Income Tax Exemption	Excise Tax Exemption	Tax Exemption or Moratorium on Land, Capital Improvements	Tax Exemption or Moratorium on Equipment, Machinery	Inventory Tax Exemption on Goods in Transit (Freight)	Tax Exemption on Manufacturers' Inventories	Sales/Use Tax Exemptions on New Equipment	Tax Exemption on Raw Materials Used in Manufacturing	Tax Incentive for Creation of Jobs	Tax Incentive for Industrial Investment	Tax Credits for Use of Specified State Products	Tax Stabilization Agreements for Specified Industries	Tax Exemption to Encourage Research and Development	Accelerated Depreciation of Industrial Equipment
ALABAMA	x	x	x	x	x	x	x	x	x	x	x				x
ALASKA		x	x	x				x	x	x		x		x	x
ARIZONA	x	x		x						x				x	x
ARKANSAS	x				x	x	x	x	x	x	x			x	x
CALIFORNIA		x		x	x	x	x	x	x	x	x				x
COLORADO	x		x		x	x	x	x	x	x	x				x
CONNECTICUT	x			x		x	x	x	x	x	x			x	x
DELAWARE	x	x	x	x	x	x	x	x	x	x	x			x	x
FLORIDA	x	x	x	x	x	x	x	x	x	x	x				x
GEORGIA				x		x	x	x	x	x	x				
HAWAII	x	x	x			x	x	x	x	x				x	x
IDAHO	x				x	x	x	x	x	x	x			x	x
ILLINOIS	x	x	x	x		x	x	x	x	x	x			x	x
INDIANA	x	x		x	x	x	x	x	x	x	x			x	x
IOWA	x	x	x	x	x	x	x	x	x	x	x			x	x
KANSAS	x	x		x	x		x	x	x	x	x				x
KENTUCKY															
LOUISIANA	x	x		x	x	x	x	x	x	x	x		x	x	x
MAINE	x	x			x	x	x	x	x	x	x			x	x
MARYLAND	x	x	x	x		x	x	x	x	x	x			x	x
MASSACHUSETTS	x	x	x	x	x	x	x	x	x	x	x			x	x
MICHIGAN	x	x		x	x	x	x	x	x	x	x			x	x
MINNESOTA			x	x	x	x	x	x	x	x	x			x	x
MISSISSIPPI	x	x				x	x	x	x	x	x			x	x
MISSOURI	x	x	x		x	x	x	x	x	x	x			x	x
MONTANA	x	x		x	x	x	x	x	x	x	x	x	x	x	x
NEBRASKA		x		x	x	x	x	x	x	x	x			x	x
NEVADA	x	x	x			x	x	x	x	x	x				
NEW HAMPSHIRE		x			x	x	x	x	x	x	x			x	
NEW JERSEY	x	x		x	x	x	x	x	x	x	x			x	x
NEW MEXICO				x	x	x	x	x	x	x	x			x	
NEW YORK	x	x	x	x	x	x	x	x	x	x	x			x	
NORTH CAROLINA							x	x	x	x	x				
NORTH DAKOTA	x		x	x	x	x	x	x	x	x	x			x	
OHIO	x	x		x	x	x	x	x	x	x	x			x	x
OKLAHOMA	x	x	x	x	x	x	x	x	x	x	x			x	x
OREGON				x	x	x	x	x	x	x	x			x	x
PENNSYLVANIA	x			x	x	x	x	x	x	x	x			x	x
RHODE ISLAND			x	x	x	x	x	x	x	x	x			x	x
SOUTH CAROLINA	x			x	x	x	x	x	x	x	x			x	x
SOUTH DAKOTA	x	x	x	x	x	x	x	x	x	x	x			x	x
TENNESSEE	x	x	x	x	x	x	x	x	x	x	x			x	x
TEXAS	x	x		x	x	x	x	x	x	x	x				x
UTAH					x	x	x	x	x	x	x				x
VERMONT			x					x	x	x	x				x
VIRGINIA	x			x	x	x	x	x	x	x	x			x	x
WASHINGTON	x	x	x			x	x	x	x	x	x			x	x
WEST VIRGINIA	x	x				x	x	x	x	x	x	x		x	x
WISCONSIN	x	x			x	x	x	x	x	x	x				
WYOMING	x	x	x			x	x	x	x	x	x				
STATE TOTALS	37	33	24	37	42	48	48	47	48	44	39	8	6	38	41

Source: Compiled by The Council of State Governments from October 1996 issue of *Site Selection*, Conway Data, Inc.

TABLE 4:

## STATE FINANCIAL INCENTIVES FOR BUSINESS 1996

	State-Sponsored Industrial Development Authority	Privately Sponsored Development Credit Corporation	State Authority or Agency Revenue Bond Financing	State Authority or Agency General Obligation Bond Financing	City and/or County Revenue Bond Financing	City and/or County General Obligation Bond Financing	State Loans for Building Construction	State Loans for Equipment Machinery	City and/or County Loans for Building Construction	City and/or County Loans for Equipment, Machinery	State Loan Guarantees for Building Construction	State Loan Guarantees for Equipment, Machinery	State Financing Aid for Existing Plant Expansion	State Matching Funds for City and/or County Industrial Financing Programs	State Incentives for Establishing Industrial Plants in Areas of High Unemployment	City and/or County Incentives for Establishing Industrial Plants in Area of High Unemployment
ALABAMA	X	X	X			X		X	X	X			X	X	X	X
ALASKA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ARIZONA					X	X	X	X	X	X	X	X	X	X	X	X
ARKANSAS	X	X	X	X	X		X	X	X	X			X	X	X	X
CALIFORNIA	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
COLORADO	X	X			X	X	X	X	X	X	X	X	X	X	X	X
CONNECTICUT	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
DELAWARE	X	X	X		X		X	X	X	X			X	X	X	X
FLORIDA			X		X	X	X	X	X	X			X	X	X	X
GEORGIA	X	X	X		X	X			X	X					X	X
HAWAII	X		X	X	X	X	X	X	X	X			X		X	X
IDAHO		X			X	X			X	X						
ILLINOIS	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
INDIANA	X	X			X	X	X	X	X	X	X	X	X	X	X	X
IOWA	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
KANSAS			X	X	X	X			X	X		X	X		X	X
KENTUCKY	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
LOUISIANA		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MAINE	X	X	X		X		X	X	X	X	X	X	X	X	X	X
MARYLAND	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MASSACHUSETTS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MICHIGAN	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
MINNESOTA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MISSISSIPPI	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MISSOURI	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
MONTANA		X	X	X	X	X	X	X	X	X			X			
NEBRASKA	X	X	X		X		X	X	X	X	X	X	X	X	X	X
NEVADA	X	X	X	X	X				X	X	X	X	X	X	X	X
NEW HAMPSHIRE	X	X	X						X	X	X	X	X			
NEW JERSEY	X		X		X	X	X	X	X	X	X	X	X		X	X
NEW MEXICO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NEW YORK	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NORTH CAROLINA	X			X	X	X	X	X	X	X	X	X	X	X	X	X
NORTH DAKOTA		X	X		X	X	X	X	X	X	X	X	X	X	X	X
OHIO	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
OKLAHOMA	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
OREGON	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PENNSYLVANIA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RHODE ISLAND	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SOUTH CAROLINA	X	X	X		X	X	X	X	X	X			X		X	X
SOUTH DAKOTA	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
TENNESSEE					X	X	X	X	X	X	X	X	X	X	X	X
TEXAS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
UTAH	X	X			X	X			X	X					X	X
VERMONT	X	X	X		X	X	X	X	X	X					X	X
VIRGINIA	X	X	X		X	X	X	X	X	X			X		X	X
WASHINGTON		X	X	X	X	X	X	X	X	X			X		X	X
WEST VIRGINIA	X	X	X		X		X	X	X	X	X	X	X	X	X	X
WISCONSIN					X		X	X	X	X	X	X	X	X	X	X
WYOMING	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
STATE TOTALS	22	33	44	21	40	27	42	43	48	44	23	30	44	31	41	39

Source: Compiled by The Council of State Governments from October 1996 issue of *Site Selection*, Conway Data, Inc.

## **APPENDIX G**



# Maine

## 1997 Report Card

### Economic Performance

Employment  
Earnings & Job Quality  
Equity

### Business Vitality

Business Competitiveness  
Entrepreneurial Energy  
Structural Diversity

### Development Capacity

Human Resources  
Technology Resources  
Financial Resources  
Infrastructure & Amenity Resources

### Tax & Fiscal System

#### Economic Performance

Maine received its best score since 1991 as it jumped two letter grades to a B. Improvements were seen across the board. Maine's unemployment rate was better than the median (compared to 37th last year) and the state could boast the nation's second best short-term employment growth. In addition, the state earned an excellent score on measures of equity, due in large part to a gap between rich and poor that is the 8th smallest and narrowing quickly. Even job-quality, though only average, improved as the rate of health coverage at work climbed and average annual pay growth improved from the country's 10th worst to rank near the middle this year. Rounding out the picture, Maine compared favorably on quality of life measures, including the second lowest infant mortality and the fifth lowest crime and teen pregnancy rates.

#### Business Vitality

The dynamism of Maine's business sector improved versus the other states, though the state's grade remains a D. This improvement was due to the nation's 13th highest rate of new company formations and strong improvement in the rate at which new companies are formed, both of which combined to boost the state to an average score on Entrepreneurial Energy. Otherwise, the state's performance was lackluster, with poorly diversified businesses that ranked only average on competitiveness.

#### Development Capacity

True to form, Maine received a D for the overall quality of its development resources. Despite the nation's best highway quality, its Infrastructure and Amenity Resources were poor overall, as were the state's Technology Resources. One promising sign is that Maine's ranks improved on two key commercial lending ratios and on Small Business Investment Company financings (now 13th), which together result in an improvement to an average mark on Financial Resources. The state's human resources were still below average due to very low college attainment rates of the workforce and a moderate high school graduation rate (28th).

#### Tax and Fiscal System

Maine could boast one of the better tax and fiscal systems, due to having the third most equitably distributed tax burden. Main had a high income tax threshold, a progressive tax system, and combined report requirements

B

### Where Maine Ranks—Measure By Measure

B

C

A

D

C

C

D

D

C

D

C

D

C

D

D

+

#### Economic Performance Measures

Employment Long-Term Employment Growth (15)  
Short-Term Employment Growth (2)  
Unemployment Rate (23)  
Unemployment Duration (39)  
Earnings & Job Quality Average Annual Pay (39)  
Average Annual Pay Growth (28)  
Employer Health Coverage (19)  
Equity Poverty Rate (21)  
Income Distribution (8)  
Income Distribution Change (5)  
Rural/Urban Disparity (24)  
Environmental Air Quality (34)  
Social & Health Superfund Dumpsites (43)  
Conditions Hazardous Waste Generation (3)  
Surface Water Discharge (22)  
Infant Mortality (2)  
Crime Rate (5)  
Teen Pregnancy (5)  
Heart Disease (28)  
Cancer Cases (48)  
Infectious Diseases (5)

50<sup>th</sup>40<sup>th</sup>30<sup>th</sup>20<sup>th</sup>10<sup>th</sup>1<sup>st</sup>

#### Business Vitality

Competitive- Traded Sector Strength (44)  
ness of Existing Change in Traded Sector Strength (24)  
Business Business Closings (21)  
Entrepreneurial New Companies (13)  
Energy Change in New Companies (38)  
New Business Job Growth (43)  
Structural Sectoral Diversity (32)  
Diversity Dynamic Diversity (37)

#### Development Capacity

Human High School Graduation (26)  
Resources High School Attainment (16)  
College Attainment (40)  
Technology Ph.D. Scientists & Engineers (27)  
Resources Science/Engineering Grad Students (49)  
Patents Issued (43)  
University Research & Development (50)  
Federal Research & Development (42)  
SBIR Grants (26)  
Financial Commercial Bank Deposits (46)  
Resources Loans to Deposits (15)  
Loans to Equity (26)  
Comm. & Ind. Loans (32)  
Comm. & Ind. Loans to Total Loans (14)  
Venture Capital Investments (38)  
SBIC Financing (13)  
Infrastructure Highway Deficiency (1)  
& Amenity Bridge Deficiency (36)  
Resources Urban Mass Transit (33)  
Energy Cost (40)  
Sewage Treatment Needs (29)  
Urban Housing Costs (24)  
Health Professional Shortage Areas (47)  
Tourism Spending (36)

#### Tax and Fiscal System

Total Tax & Fiscal Score (10)  
Fiscal Stability & Balanced Rev. (34)  
Tax Fairness (3)  
Fiscal Equalization (36)

# 1997 Performance Measures of the Maine Economic Growth Council

## FUNDAMENTAL PERFORMANCE MEASURES pg.6

- ⬇ 1 Gross State Product
- ➡ 2 Personal Income
- ⬇ 3 Employment

## INNOVATIVE BUSINESSES pg.6

- ⬆ 4 New Business Starts
- ⬆ 5 Job Growth Among New Businesses
- ⬆ 6 New Products or Services
- ⬆ 7 International Exports
- ⬇ 8 Technology Resources
- ➡ 9 Manufacturing Productivity
- ⬆ 10 On-the-Job Injuries

## SKILLED AND EDUCATED WORKERS pg.8

- ⬆ 11 High School Diplomas
- 12 Associate's Degrees
- ⬆ 13 Bachelor's Degrees
- 14 Graduate Degrees
- ⬆ 15 Citizen Participation in Continuing and Adult Education
- ➡ 16 Citizen Opinion of Training and Education
- ⬆ 17 Employer-sponsored Training for Front Line Employees
- ➡ 18 Business Opinion of Universities and Colleges

## VITAL COMMUNITIES pg.10

- ⬆ 19 Income Disparity Among Counties
- 20 Employment Disparity Among Counties
- 21 Income Disparity Among People
- ⬇ 22 Voter Turnout
- ➡ 23 Citizen Participation in Community Activities
- ➡ 24 Business Participation in School and Civic Events
- ⬆ 25 Jobs that Pay a Liveable Wage
- ⬆ 26 Women's Wages as a Percent of Men's Wages
- 27 Occupational Distribution of Women and Minorities
- 28 Employment Among People with Disabilities
- ➡ 29 Discrimination in the Workplace
- ⬇ 30 Infant Mortality
- ⬆ 31 Cigarette Smoking
- ➡ 32 Crime

## EFFICIENT GOVERNMENT pg.15

- ➡ 33 Citizen Satisfaction with State Government
- 34 Business Satisfaction with State Government
- ⬇ 35 Fiscal Stability and Balanced Revenue
- ⬇ 36 State and Local Tax Burden
- ⬇ 37 Tax Fairness

## STATE-OF-THE-ART INFRASTRUCTURE pg.17

- ⬆ 38 Condition of Roads
- ⬆ 39 Condition of Bridges
- ⬇ 40 Modes of Freight Transport
- ⬆ 41 Business Use of Advanced Communications Technology
- ⬆ 42 Cost of Energy
- 43 Access to Energy Sources

## HEALTHY NATURAL RESOURCES pg.19

- ⬆ 44 Air Quality
- ➡ 45 Water Quality of Lakes
- ➡ 46 Water Quality of Rivers
- ⬆ 47 Water Quality of Marine Areas
- ⬆ 48 Conservation Lands
- ⬆ 49 Industrial Use of Toxic Chemicals
- ⬇ 50 Paper and Lumber Value Added
- ⬇ 51 Paper and Lumber Employment
- ⬆ 52 Volume of Large Sawtimber Trees
- ➡ 53 Farming and Food Employment
- ⬇ 54 Agriculture Value Added as a Percent of Gross Sales
- ⬇ 55 Commercial Fishing
- ⬇ 56 Tourism Value Added
- ⬆ 57 Tourism Employment

### Key

- ⬆ We have moved toward the benchmark.
- ⬇ We have moved away from the benchmark.
- ➡ No significant movement either way.
- Data inconclusive or too old.
- ★ Exceptional performance. Very high national standing and/or dramatic recent improvement.
- ⬆ Needs attention. Very low national standing and/or dramatic recent decline.

## **APPENDIX H**





## **RECOMMENDED LEGISLATION:**

### **Resolve to Implement the Recommendations of the Commission to Study the Restructuring of the State's Fiscal Policies to Promote the Development of High-technology Industry in Maine**

**Sec. 1. Establishment of Ph.D. programs. Resolved:** The Chancellor of the University of Maine System shall identify, within the University of Maine System, the high-technology disciplines that would be the most productive for the establishment of Ph.D. programs to provide educational and professional opportunities for Maine students and economic opportunities through the establishment of significant academic high technology resources. The Chancellor should especially consider the establishment of Ph.D. programs in computer science and electrical engineering as well as other areas where Ph.D. programs do not currently exist within the target areas identified by the Maine Science and Technology Foundation: biotechnology, environmental technology, composite technology, information technology, and marine science technology. The Chancellor should present a plan to the 119th Legislature by January 1, 1999 for the establishment of Ph.D. programs in a timely manner.

**Sec. 2. Financial aid programs. Resolved:** The Finance Authority of Maine shall review existing student financial aid programs for supporting students pursuing high-technology courses of study and make recommendations to the 119th Legislature by January 1, 1999 including any legislation necessary to provide additional resources to support such students.

**Sec. 3. Availability of capital. Resolved:** The Finance Authority of Maine should analyze the availability of capital for business startup and development to determine if sufficient capital is available for all levels of high-technology business needs and to identify what barriers may exist to accessing capital. The Finance Authority of Maine shall develop strategies for increasing capital, if necessary, and for assisting fledgling businesses in locating and obtaining capital, and for removing barriers to access. The authority shall submit a report to the 119th Legislature by January 1, 1999 describing the results of its analysis and containing its recommendations.

#### **Sec. 4. Analysis and review of effectiveness of tax incentives. Resolved:**

**1. Analysis of tax incentives.** The Bureau of Revenue Services shall gather and analyze, to the maximum extent possible while preserving any statutory taxpayer confidentiality, data regarding businesses taking advantages of the following incentives:

- A. Maine Employment Tax Increment Financing;
- B. Seed capital investment tax credit;
- C. Research expense tax credit;
- D. Supercredit for substantially increased research and development;
- E. High-technology investment tax credit;
- F. Sales tax exclusion for custom computer software;
- G. Sales tax exemption for nonprofit medical research corporations and biology and ecology labs;
- H. Sales tax exemption for sales of research and development equipment; and
- I. Sales tax exemption for organizations conducting research for the Maine Science and Technology Foundation.

All other agencies involved in the administration of tax incentive subject to analysis shall provide any information requested by the Bureau of Revenue Services to complete the analysis required by this section.

**2. Effectiveness of tax incentives.** The Department of Economic and Community Development shall examine the information provided by the Bureau of Revenue Services and determine whether each tax provision is an effective means of providing incentives for the growth of high-technology businesses in Maine and make recommendations for any necessary changes.

**3. Report.** The Bureau of Revenue Services and the Department of Economic and Community Development shall jointly submit the results of the examination required by this section to the 119th Legislature by January 1, 1999.

**Sec. 5. High-technology marketing. Resolved:** The Maine Science and Technology Foundation and the Department of Economic and Community Development shall jointly develop a complete inventory of existing high-technology resources and identify strategies for attracting and developing new companies, including the a plan for marketing Maine as a high-technology location. The Foundation and the Department shall present a plan to the 119th Legislature by January 1, 1999 for aggressively marketing Maine's potential as the location for high technology businesses.

**Sec. 6. Clearing house. Resolved:** The Maine Science and Technology Foundation, the Maine Development Foundation, the Finance Authority of Maine, and the Department of Economic and Community Development shall jointly make recommendations to the 119th Legislature by January 1, 1999 regarding the establishment of a statewide clearing house to be the focal point for information and assistance to persons seeking to develop high-tech businesses in Maine.

## **Summary**

This bill implements the recommendations of the Commission to Study the Restructuring of the State's Fiscal Policies to Promote the Development of High-technology Industry in Maine established by Public Laws 1997, chapter 557, Part C.