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ABSTRACT

A policy briefing report discusses the initiatives currently in place in Vermont that are designed to enhance that state's economic and educational effectiveness in order to improve its international competitive position. The report is divided into four major areas of discussion: (1) an overview of the global economic challenge and the New England Board of Higher Education project that addresses international competitiveness; (2) Vermont's economy within the international context; (3) Vermont's programs for enhancing its international economic competitiveness; and (4) the role and development of higher education in Vermont in preparing the state for international economic competition. Included in the areas examined are the state's federal and regional resources, state-level strategies, international trade initiatives, educational initiatives, research and development (R&D) investment, and technology transfer and technical assistance. In addition, the concern about a lack of international awareness, what is being done about it, and recent legislative activity are discussed. Recommendations are made in education and training, stimulation of international awareness, R&D investments, technology transfer, and technical assistance. An appendix includes a description of the Workforce 2000 Council and a trade profile for Vermont. (GLR)

ECONOMIC COMPETITIVENESS AND INTERNATIONAL KNOWLEDGE IN VERMONT

Special Policy Briefing for Vermont Legislators

NEW ENGLAND BOARD OF HIGHER EDUCATION

Regional Project on the Global Economy
and Higher Education in New England

Connecticut • Maine • Massachusetts • New Hampshire • Rhode Island • Vermont

REGIONAL PROJECT ON THE GLOBAL ECONOMY AND HIGHER EDUCATION IN NEW ENGLAND

ECONOMIC COMPETITIVENESS AND INTERNATIONAL KNOWLEDGE

A Special Policy Briefing
for
Vermont Legislators

June 1989

Prepared
by
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The New England Board of Higher Education Regional Project on the Global Economy and Higher Education in New England, including the Vermont perspective, which follows, has had the benefit of more than two years of staff research prior to the commencement of a series of legislative briefings in each New England state. The Board is grateful to AT&T for partially underwriting this regional project in behalf of state legislators throughout the region. In many respects, AT&T exemplifies the knowledge-based, globally oriented frontier of worldwide telelcommunications which will shape international economic, political and cultural affairs as we approach the 21st century.

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Second Printing

About NEBHE and the Regional Project on the Global Economy and Higher Education in New England

NEBHE was created in 1955 by an interstate compact initiated by the governors of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont, approved by the state legislatures and ratified by the U.S. Congress.

Each of the six New England states is represented on the NEBHE Board of Directors by eight delegates who are appointed by the respective state governors and legislative leaders.

Basic funding to support NEBHE programs is provided by the six New England states which make annual assessments according to a regional population formula. NEBHE seeks supplemental funding from foundations, corporations and individuals. NEBHE is a private, nonprofit educational organization granted 501(c)(3) status by the U.S. Internal Revenue Service.

The legislation which created the New England Board of Higher Education directs NEBHE to:

- Increase educational opportunities and services in New England
- Promote regional coordination and efficient use of educational resources among the six state governments and New England's public and independent higher-education institutions
- Analyze and publish regional information related to higher education
- Sponsor policy studies and forums on higher-education issues
- Explore and strengthen the connection between higher education and economic development in New England.

The planning phase of the Regional Project on the Global Economy and Higher Education in New England has received the support of concerned private-sector organizations, including: AT&T, Bank of Boston, Bank of New England, The Boston Company, Boston Globe, The Henley Group, and Peat Marwick Mitchell. Additional corporations will be asked to participate.

From the inception of the planning phase of the Regional Project, the Caucus of New England State Legislatures has provided support to several aspects of the program. The Caucus is the six-state association of House speakers, Senate presidents and majority and minority leaders of both houses.

PREFACE

The Regional Project on the Global Economy and Higher Education in New England

by
John C. Hoy, President
New England Board of Higher Education

The call for "international economic competitiveness" has produced some of the most overworked rhetoric of the 1980s. Still, the problem is real for all New Englanders. At stake are jobs, income, economic growth and standard of living.

New England's response to the global economy must involve collaboration among government, business and higher education. These sectors must recognize a key premise: economic competitiveness requires educational effectiveness. As our products become more technological and our markets become more global, the need for literacy and basic skills increases. New England's workforce must have math and computer skills, as well as technological and international knowledge, at least equal to that of our major competitors.

NEW ECONOMIC REALITIES

In the past two decades, the United States has experienced a decline in productivity growth; periodic national and regional recessions; massive federal budget deficits and international trade deficits; and a decline in its share of worldwide gross national product.

New England, with its pre-eminence in technological innovation, has fared better than the nation as a whole over the past decade -- and economists in the United States and abroad have cited the region as a model of the nation's capacity to reindustrialize. However, New England's economy is no longer in the vibrant phases of growth. In addition, the U.S. trade deficit is an urgent problem for New England, as it is for the entire nation.

An estimated 80 percent of all U.S. goods now face international competition either at home or abroad. New England will sustain its recent success only by capitalizing on world markets -- many of which are just beginning to grow as U.S. markets mature.

Students, workers and consumers today have an economic imperative to become internationally aware. The export of innovative technological products and advanced professional services are among New England's and the nation's greatest growth fields. Yet, in 1986, exports represented only 5 percent of U.S. GNP, compared with 27 percent in West Germany, 24 percent in Canada, and 11 percent in Japan. Leaders of economic development agencies and trade associations in New England say a lack of international cultural awareness is a chief reason many U.S. businesses have not begun exporting.

EDUCATIONAL EFFECTIVENESS

New England's economic future depends on international savvy and global effectiveness. This know-how rests, in turn, on the effectiveness of higher education, and indeed, education at all levels. Broadly speaking, New England's 270 colleges and universities play two crucial roles in this regard. They offer the promise of generating a competent and internationally aware citizenry. And their research stimulates the entrepreneurial activity that makes New England a significant contributor to U.S. competitiveness in international markets.

Recognizing these crucial links, the New England Board of Higher Education (NEBHE) has initiated a study of the specific roles the region's colleges and universities must play in preparing citizens to be knowledgeable consumers and vital contributors to the global economy over the long term.

NEBHE has devoted more than two years of research to the Regional Project on the Global Economy and Higher Education in New England. The project aims to: upgrade education at all levels; heighten international awareness among all citizens; coordinate the international economic initiatives of business, higher education and government; develop more timely data on international issues; and foster technology transfer and technical assistance.

KEY ISSUES

In the course of its research, NEBHE has identified certain key issues that must be addressed if New England is to succeed in the global economy:

- Education and Training. Global economic competition adds to our demands for a well-educated workforce. But many signs indicate we are falling behind our economic competitors in literacy and basic education. Only about 70 percent of U.S. students finish high school, compared with Japan's 98 percent. Between 20 million and 30 million U.S. adults are considered functionally illiterate.

- International Awareness. Economic competitiveness requires international awareness. But foreign-language study in the United States has declined over the long term, and study-abroad and overseas-internship programs are limited. While the international dimension has not been integrated into most business-school curricula, international studies in the liberal arts usually lack an economic perspective.

- Business-Higher Education Coordination. New England business leaders increasingly focus on international issues. But their approaches and goals are not coordinated with those of higher education, resulting in duplicated efforts, and depriving faculty, students and businesses of the benefits they could offer one another in terms of internships, continuing education and data sharing.

- **Timely Data.** Throughout America, state and regional policymaking is hampered by a lack of timely U.S. data on state-by-state trade, as well as comparative information on educational achievement and other socio-economic characteristics pertinent to competitiveness. Little is known about the import side of the manufacturing trade equation at the state level, and even less is known about international aspects of the service sector. Students, teachers and corporate and government leaders have no central source to turn to for an overview.

- **Technology Transfer.** New England's research prowess is a major competitive asset. Transferring research-spawned knowledge to the world marketplace will be crucial to the nation's trade future and the careers of today's undergraduates. But technology transfer has not been adequate to transform research into economic gain. Students, businesses and policymakers do not have an effective network to help them apply new knowledge on a timely basis.

PROJECT COMPONENTS

The NEBHE Regional Project on the Global Economy and Higher Education in New England was established in early 1987. NEBHE research has focused primarily on what New England campuses are doing now and what they may do in the future to heighten international awareness and enhance the region's international competitiveness. A key consideration throughout this analysis has been how New England colleges and universities may share resources among themselves -- and with businesses, government and local school districts -- to meet the new challenges posed by global economic change.

To date, NEBHE has completed the following tasks in connection with the Regional Project:

The Future of New England Survey. In the spring of 1987, NEBHE's six-state Future of New England Survey asked New England governors, legislators, business executives, college presidents and governing board members to evaluate the effectiveness of colleges and universities in preparing the workforce for a global economy and suggest specific ways that educational effectiveness could be enhanced.

Only 32 percent of the business leaders said they believed colleges and universities were effective. Leaders ranked "design an undergraduate curriculum that ensures understanding of a global economy" as the most important step for colleges and universities in preparing New England's workforce for the global economy.

Case Study: International Initiatives at New England Campuses. NEBHE has conducted personal interviews with more than 200 internationally oriented scholars and administrators at 40 representative institutions of higher education (public and independent, two-year and four-year) throughout the region to evaluate campus initiatives for dealing with the increasingly global economy. This assessment is being expanded and updated in conjunction with legislative briefings in each New England state.

Case Study: Corporate Perspectives on International Knowledge and Economic Competitiveness. NEBHE has conducted personal interviews with approximately 50 corporate leaders and state trade office leaders to gain an indepth view of the business world's perspective on higher education's role in an international economy. This assessment also is being expanded in conjunction with legislative briefings. The following major themes have emerged:

- Because of a historical focus on domestic markets, the United States is adjusting too slowly to new global economic realties.
- If the United States is to increase export activity, businesses must have a broader base of international knowledge.
- Professionals who have the ability to conduct management, negotiation and marketing across cultures are increasingly valuable.

Pilot Legislative Briefings. NEBHE has begun a pilot round of briefings for legislators in each New England state. The briefings are intended to update lawmakers on the new realities of the global economy and recommend ways for higher education to collaborate with business and government to meet the new challenges. State-specific background papers have been prepared and issued in conjunction with the briefings.

Project Advisory Council. NEBHE has created a Project Advisory Council, comprised of knowledgeable individuals from the six participating states, to offer input, direction and evaluation for the project. NEBHE plans to expand membership of the Council.

This background paper is intended to shed light on the initiatives currently in place in Vermont, to enhance competitiveness, and offer recommendations to improve the state's competitive position.

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The loss of international economic competitiveness experienced in the United States over the past two decades has been well-documented. The facts reveal a decline in productivity growth; periodic national and regional recessions; growth of federal budget deficits as well as international trade deficits; decline in the U.S. share of worldwide gross national product; decline in nondefense research and development (R&D) expenditures as a percent of U.S. GNP; the lagging test performance of U.S. students compared with those of other countries; the fall in the numbers of U.S. students pursuing doctorates in science and technical fields ... the list of factors goes on.

New England has fared better than the nation as a whole over the past decade and has been cited both nationally and internationally as the prime example of the nation's capacity to reindustrialize. The region has experienced advanced industrial development based upon pre-eminent scientific infrastructure and technological innovation. New England's unequaled higher-education infrastructure has been credited for its primary impact on the region's economic renewal.

Nonetheless, New England is now at a major crossroads. With an economy that is no longer in the vibrant phases of growth, how can the region sustain its recent success? More importantly, how can we meet the complex challenges of intense international economic competition?

The economies that will meet this challenge are those capable of fostering a resourceful and flexible workforce that can utilize swiftly changing advanced technologies in an efficient and effective manner. Indeed, a well-educated workforce has been New England's primary advantage, and must become even more so as the economy becomes more international.

It has become clear that state inititatives in behalf of international competitiveness are required. This is a new role for the states. The territory is not well charted.

The NEBHE Regional Project

The New England Board of Higher Education's Regional Project on the Global Economy and Higher Education was established in early 1987.

The project is based on the following underlying premises:

- Competition on a global basis is a far more complex and demanding challenge than competition at home;
- As New England's economy becomes increasingly knowledge-intensive and dependent upon emerging advanced technologies and sophisticated services, the region also becomes more dependent upon the development of skilled human capital. This is one reason that institutions of higher education will become key players in state and regional initiatives to meet global economic challenges;
- Basic skills of U.S. entry-level employees are often not as high as basic skills of entry-level employees in other developed nations. Through attention to curriculum, higher education can foster long-term strategies to help the region address this issue, and enhance our competitiveness in an international context;
- The world economy, not the domestic economy, will grow significantly over the next several decades. New England's state and regional economies must be nurtured so they are well-positioned to take advantage of available worldwide markets;
- To be competitive in the global marketplace, policymakers must understand the strengths of each state's economy in an international context, as well as in an interstate and national context.

What follows is a summary of the issues as they pertain generally to the region and more specifically to the state of Vermont.

II. VERMONT ECONOMY IN AN INTERNATIONAL CONTEXT

Foreign Investment in Vermont

In the last year, the level of foreign investment in the United States has sparked concern. But studies by regional and national economists suggest that to date, the impact is relatively small both in New England and in the nation. What foreign investment has occurred has been beneficial to New England in the long term in that it has introduced diversity to local economies. As global trade increases, foreign investment in the United States and by U.S. companies in other nations is very likely to continue increasing.

As a percent of non-farm employment, employment by foreign-owned companies in Vermont is just about average for the region (see Table 1). The influence of foreign affiliates in Vermont, by other measures is of little significance compared with such influence in other states. In 1985, Vermont ranked 48th nationally in the total number of foreign affiliates with property, plant and equipment, and 46th in the gross book value of their property. In 1985, Vermont ranked 34th nationally in acres of land owned by foreign affiliates. Only in terms of employment by foreign affiliates per 1,000 population does Vermont rank rather high. At 19.3 percent, Vermont ranked fourth in the nation in this capacity.

TABLE 1
Foreign Employment in New England: 1986
(numbers in thousands)

	Non-farm Employment* (1)	Employment in Foreign Companies+ (2)	Percent in Foreign-Owned Companies**
CT	1,267.0	50.7	4.0%
ME	367.0	21.7	5.9%
MA	2,390.0	76.7	3.2%
NH	399.0	16.7	4.2%
RI	359.0	11.2	3.1%
VT	185.0	7.0	3.8%
NE	4,965.0	184.1	3.7%

*The government and financial sectors were removed from total non-farm employment for compatability purposes with non-bank company affiliates data.
+U.S. Department of Commerce data for non-bank foreign company affiliates

**Figures in Column (2) as percent of those in Column (1)

Note: Figures may not add up to totals due to rounding

Source: Wentrup, Hans J., "Foreign Ownership Has Only Mild Impact," New England Business, December 1988; and U.S. Department of Commerce, Statistical Abstract of the United States, 1988.

Manufactured Exports: Their Impact

The United States experienced flat growth in exports from 1981 through 1986, while imports grew at approximately 7.5 percent per year. The nation saw modest improvement in exports, beginning in early 1987. By mid-1987, American exports were surging and continued to do so throughout 1988. Although continued strength in imports has prevented significant improvement to the trade balance, the U.S. trade deficit by September 1988, shrank to its lowest level in three years. By the end of the first quarter of 1989, the trade deficit was reduced by almost 10 percent.

The current export boom has been attributed, in part, to a weakened U.S. dollar, yet many economists note other important factors, such as:

- Continued vitality in service exports (the trade balance for the service sector was in the black even when overall deficits were at record highs, but projections for 1988 suggest the service sector has lost strength);
- A new emphasis by the nation's exporters on making quality products and developing leading-edge technology;
- The return home of some manufacturing across the United States that had been shifted to nations with lower labor costs;
- The relative strength of foreign economies, particularly Japan's and Europe's, that are able to absorb U.S. exports both now and in the forseeable future.

Still, exporting has not come naturally to U.S. companies. In 1987, exports represented only 5.4 percent of U.S. GNP, compared with 26 percent of West Germany's GNP, 25 percent of Canada's, and 10.5 percent of Japan's.

The United States has long been considered the world's richest market. As a result, U.S. businesses have established a narrow frame of reference that generally ends at the Atlantic and Pacific oceans; U.S. businesses are relatively ignorant of foreign cultures, languages and markets. The global economy demands that we heighten our international awareness.

Dollar Value of Manufactured Exports

New England's manufactured exports totaled $20.9 billion in 1986, 15.5 percent more than in 1984. The region's largest exporting industries included non-electrical machinery, electronics, transportation equipment, scientific instruments and fabricated metals. These five industries accounted for approximately 71 percent of the value of the region's manufactured exports.

Exports of non-electrical machinery, the region's largest industry, totaled $5.5 billion in 1986, almost 20 percent above the 1984 level. Twelve

percent of the dollar value of the nation's total exports by this industry were made in New England.

The region's exports of electronic equipment were valued at $4.1 billion, approximately 32 percent above the 1984 level. This industry accounted for 9.6 percent of the electronics industry's total dollar exports nationwide.

Scientific instruments exported from New England ranked fourth in total dollar value in 1984. However, the value of New England's scientific instrument exports represent almost 15 percent of the value of all scientific instruments exported from the United States.

Vermont's manufactured exports totaled $833.9 million in 1986, 35 percent more than in 1984. Vermont's five leading export industries in dollar value were: electronics, non-electrical machinery, fabricated metals, food products and paper products. These five industries accounted for approximately 89 percent of the value of all Vermont manufactured exports (see Table 2 below).

TABLE 2
Value of Top Ten Manufacturing Industries in Vermont: 1984 and 1986
(in millions of dollars)

INDUSTRY	1986 VALUE	1984 VALUE
Electronics and Electronic Equipment	480.2	342.0
Non-Electrical Machinery	85.1	66.5
Fabricated Metal Products	73.8	93.2
Food and Kindred Products	70.7	9.3
Paper and Allied Products	31.7	29.4
Scientific Instruments	20.5	8.7
Rubber and Misc. Plastic Products	17.2	16.6
Printing and Publishing	14.7	10.8
Lumber and Wood Products	11.6	9.8
Stone, Clay and Glass Products	5.3	4.2

*Industries are listed in highest to lowest in order of the 1986 dollar value.

Source: U.S. Bureau of the Census, Annual Survey of Manufactures, Origin of Exports of Manufactured Products, 1984 and 1986, Table 5a.

In real dollars, Vermont's largest export industry is electronics. This industry also ranks first in terms of what share of total production was exported. By this latter measure, primary metals, scientific instruments, non-electrical machinery and fabricated metals rank second through fifth. Exports accounted for almost 27 percent of the value of primary metals, 22 percent of the value of scientific instruments, more than 21 percent of the value of non-electrical machinery and 17 percent of fabricated metals (see Table 3).

Particularly impressive in Vermont was the export performance of electronics, scientific instruments and food products in 1986. The total value of electronics exports increased by 40 percent from 1984 to 1986. Almost half of the value of this industry's production is dedicated to exports, a higher percentage value than in any other industry of a New England state.

The share of scientific instruments that was exported from 1984 to 1986 increased from 1 percent to slightly more than 21 percent of the industry's total shipments. This represented for an almost 136 percent increase, from the 1984 export value of $8.7 million to $20.5 million in 1986.

Exported food products, a tiny industry valued at $9.3 million in 1984, grew to $70.7 million in 1986, an increase of 660 percent. Food exports as a percent of the total value of shipments increased from 2 percent in 1984 to 12 percent in 1986.

Only fabricated metal exports showed a decline both in their overall value and in exports as a portion of total shipments between 1984 and 1986.

TABLE 3
The Value of Manufactured Exports
as a Percent of Total Shipments by Industry:
Vermont & the U.S.: 1984 and 1986

	1986		1984	
Industry+	VT	U.S.	VT	U.S.
Electronics	46.9	21.3	32.7	18.2
Primary Metals	26.5	23.3	20.9	19.5
Scientific Instruments	22.0	16.5	1.4	15.4
Non-Electrical Machinery	21.2	22.8	21.8	21.5
Fabricated Metals	17.0	12.9	22.3	11.6
Rubber & Misc. Plastics Products	16.0	13.0	16.5	11.7
Chemical and Allied Products	13.4	17.4	12.3	16.6
Food & Kindred Products	11.8	5.0	1.9	4.8
Paper & Allied Products	8.8	12.0	2.4	10.6
Textile Mill Products	8.1	8.2	6.8	7.4
Lumber & Wood Products	5.2	8.8	4.8	8.3
Printing & Publishing	4.8	4.3	4.1	4.2
Stone, Clay and Glass Products	3.9	7.3	4.1	7.2
Transportation Equipment	2.5	13.6	2.4	12.8
Apparel & Other Textile Products	1.9	3.6	1.4	3.0
Furniture & Other Fixtures	0.0	2.8	1.2	2.7
Miscellaneous Manufacturing	0.0	8.2	.6	7.4
Tabacco Products	0.0	12.1	0.0	14.6
Petroleum & Coal Products	0.0	9.1	0.0	7.8
Leather & Leather Products	0.0	8.8	0.0	6.8
All Industries	15.9	13.0	15.0	11.9

+Industries are listed in order of size (exports as percentage of total industry) in the state of Vermont.

Note: Includes employment in the manufacture of goods that become components of other goods that are exported.

Source: U.S. Bureau of the Census, Annual Survey of Manufactures, Origin of Exports of Manufactured Products, 1984 and 1986, Tables 4a and 5a.

Almost 4 percent of New England's exported manufactured goods and .3 percent of the nation's are made in Vermont. In 1986, more than 20 percent of all Vermont's products were exported to foreign nations. That is considerably higher than the New England and U.S. averages (see Table 4 below).

TABLE 4

VALUE OF MANUFACTURING INDUSTRIES EXPORTS IN NEW ENGLAND AND THE U.S.: 1984 and 1986

	1984				1986			
	Value of Exports ($'s in millions)	Exports as % of Total Shipments	Share of N.E. Exports (in %)	Share of U.S. Exports (in %)	Value of Exports ($'s in millions)	Exports as % of Total Shipments	Share of N.E. Exports (in %)	Share of U.S. Exports (in %)
CT	5,435.5	15.6	30.0	2.0	6,166.0	17.2	29.6	2.1
ME	1,215.0	12.2	6.7	.5	1,393.0	13.8	6.7	.5
MA	8,767.6	15.0	48.4	3.3	9,724.7	15.9	46.6	3.3
NH	1,128.8	12.9	6.2	.4	1,661.7	17.6	8.0	.6
RI	946.4	11.1	5.2	.4	1,068.9	12.7	5.1	.4
VT	617.2	10.2	3.4	.2	833.9	20.1	4.0	.3
NE	18,110.5	14.5	100.0	6.8	20,868.2	16.2	100.0	7.1
US	268,276.0	11.9		100.0	294,339.5	13.0		

Note: Figures may not add up due to rounding.

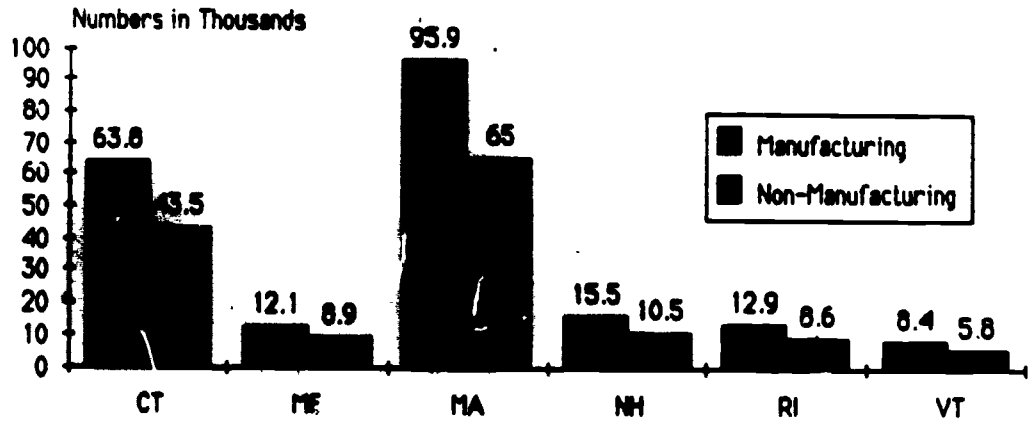
Source: U.S. Bureau of the Census, Annual Survey of Manufacturers, Origin of Exports of Manufactured Products, 1984 and 1986, Tables 4a and 5a.

Employment Related to Manufactured Exports

Throughout New England, export-related industries accounted for more than 350,900 jobs in 1986, 12.5 percent more than in 1984. Approximately 208,600 of these jobs were in manufacturing industries, which directly produced the exports, while 142,300 were export-related jobs in industries including transportation, communications, agriculture and business services (these same industries also export directly). Although New England is home to only 5 percent of the nation's population, it accounts for almost 8 percent of U.S. export-related employment. In addition, New Englanders hold 9 percent of all U.S. export-related manufacturing jobs (See Figure 1). Four of the six New England states rank among the top 10 nationally in export-related employment as a percent of total civilian employment. Vermont ranked 8th in 1986, and showed a steady improvement from its 1980 ranking of 20th (see Table 5).

FIGURE 1

Employment Related to Manufactured Exports: 1986



Note: Includes employment in the manufacture of goods and services that are components of other goods that are exported.

Source. U.S. Bureau of the Census, Annual Survey of Manufactures, Origin of Exports of Manufactured Products, 1986, Table 2a.

In 1986, approximately 14,200 Vermont jobs were related to manufactured exports. Vermont industries accounted for approximately 4 percent of New England's export employment, while New England accounted for almost 8 percent of the nation's in 1986.

Table 5

Employment Related to Manufactured Exports in New England and the United States: 1980, 1984 and 1986

	Export-Related Employment*								
	In Thousands			As Percent of Total Civilian Employment			Rank Among 50 States in Order of Size of+		
rea	1980	1984	1986	1980	1984	1986	1980	1984	1986
onnecticut	105.8	96.9	107.3	6.7	6.0	6.5	1	1	1
aine	19.5	18.8	21.0	4.2	3.6	4.0	28	22	22
assachusetts	151.4	144.9	160.9	5.5	5.0	5.5	11	3	2
ew Hampshire	23.0	21.6	26.0	5.4	4.5	5.2	13	8	7
hode Island	25.4	19.1	21.5	5.9	4.3	4.5	5	11	13
ermont	11.2	11.1	14.2	4.7	4.4	5.1	20	9	8
ew England	336.3	312.6	350.9	5.5	5.0	5.5			
nited States	4,808.3	4,096.7	4,576.6	4.8	3.8	4.1			

*Includes employment in the manufacture of goods and services that become components of other goods that are exported.

+Rank order is of export-related employment as percent of total civilian employment.

Source: U.S. Bureau of the Census, Annual Survey of Manufactures, Origin of Exports of Manufactured Products, 1984, Table 2a, and 1981, Table 2b.

New England Trade With Canada

State and regional policymaking is hampered by a lack of timely U.S. data on imports and exports. Although U.S. Bureau of the Census data provide descriptive information about state-level employment in export industries and the value of those industries' products, the data is old, and little is known about the current scenario. In addition, little is known about the import side of the trade equation at the state level.

The Canadian Government, however, provides data on import/export trade among all the Canadian provinces and U.S. states within approximately four months of the close of each calendar year.

The Canadian Consulate located in Boston provided 1987 figures for the following analysis. Table 6 below shows that although 1987 exports from Vermont to Canada increased by 93 percent over 1986, Canadian exports also increased considerably, causing a 9 percent increase in Vermont's trade deficit. Total trade between Vermont and Canada consisted of 24 percent shipments to Canada in 1986 and 26 percent in 1987.

TABLE 6

New England State Trade with Canada: 1986 and 1987
(in millions of U.S. dollars)

	1986			1987			1987 over 1986 % Increase in Exports to Canada
	Imports from Canada	Exports to Canada	Trade Balance	Imports from Canada	Exports to Canada	Trade Balance	
CT	850.4	830.7	-19.7	829.1	823.7	-5.4	-.8%
ME	766.4	256.6	-509.8	995.3	262.8	-732.5	2.4%
MA	2,358.6	1,462.8	-895.8	2,706.4	1,773.9	-932.5	21.3%
NH	319.9	128.4	-124.6	363.9	207.8	-156.1	11.5%
RI	465.0	128.4	-336.6	244.6	139.0	-105.6	8.3%
VT	802.0	190.4	-611.6	1,034.2	367.8	-666.4	93.2%
NE	5,553.3	3,055.2	-2,498.1	6,173.4	3,574.9	-2598.5	17.0%

Note: figures may not add up due to rounding

Source: Statistics Canada, "Domestic Exports/Imports to/from the United States, January to December 1987 (provided by the Canadian Consulate, Boston, MA); New England Council, "The U.S.-Canada Free Trade Agreement: A Study of the Costs and Benefits to New England," March, 1988 (used the same data for 1986 provided by the Canadian Consulate.

A 1986 comprehensive trade profile for Vermont and Canada was prepared by the Northeast-Midwest Institute and published by the New England Council (see Appendix).

The New England Council report suggests the U.S.-Canada Free Trade Agreement will benefit New England overall, and that Vermont specifically has much to gain, particularly from the stabilization of Canadian energy supplies. The electronic and computer industries should benefit from the elimination of export tariffs, as will the lumber and metal industries of Vermont that depend on Canada for raw materials.

Because the U.S. export boom started in mid-1987 and has continued at least through the first quarter of 1989, the Canadian data to be released in 1989 should prove most interesting. NEBHE staff will analyze this 1988 data and incorporate it into briefing materials for New England state legislative leaders later this year.

Important changes also are underway overseas. The integration of the Common Market economies of Western Europe into a single continental economy in 1992 could provide new advantages for American businesses selling products in Europe, if they begin preparing now. Likewise, the opening up of Eastern European economics could also provide new advantages in the years to come.

Potential Export Growth Among New England Small Businesses

Over the past 10 years, small businesses have been viewed as a key source of the nation's innovation and jobs. New England is unique among U.S. regions in that its economy is dominated by many small advanced-technology companies rather than large corporations. Data recently released by the U.S. Small Business Administration (SBA) show that small and medium-sized businesses make up approximately 98 percent of all businesses in Vermont and 97 percent in New England. It may be New England's small businesses that provide the greatest potential for growth in regional exports.

Employment in New England small businesses increased 25 percent from 1976 to 1984; and small businesses provided 50 percent of all jobs in the region from 1982 to 1986.

However, the SBA estimates that 11,000 small businesses in the nation's leading export industries have the capacity to export, but are not yet actively doing so.

Indeed, small businesses face special challenges as exporters. Companies with fewer than 20 employees often find exporting virtually impossible, in part because they lack professional expertise in overseas markets. Obstacles include: foreign languages, time zones, taxes, regulations, international licenses and patent considerations, tariffs, customs inspection laws, transportation and distribution systems, and varying cultural business practices.

Likewise, small businesses often lack the capital to sustain export operations through periods when the U.S. dollar's value is high relative to the currency of the importing nation. Although small businesses have lower levels of working capital than large corporations, they incur high overhead costs when beginning an endeavor. To make matters worse, export financing is very difficult to obtain, particularly for first-timers. Small businesses are often viewed as greater risks for financing.

Nonetheless, New England small businesses do dominate the advanced-technological industries that hold the greatest potential for export trade expansion and overall economic development. It behooves the region to nurture these companies.

Finding and Summary Comments

A review of the Vermont and New England economies in an international context suggests great promise, as well as certain key considerations for meeting the challenge of international economic competitiveness.

- U.S. citizens, in general, suffer from international myopia, and most lack a basic understanding of international issues.
- Although both New England and the state of Vermont hold their own in the U.S. international trade arena, the degree of involvement is still small. Only 5.1 percent of Vermont's and 5.5 percent of New England's civilian employment was export-related in 1986. Strategies must be designed to nurture industrial expansion in an international context.
- U.S. data regarding the international economic position of the states and their industries is terribly outdated at the time of its release. Steps should be taken to generate better data on a more timely basis to aid state and regional policymakers in developing the international dimensions of their economies.
- At the regional and state levels, a large number of small businesses are a dominant economic force, and these small businesses have certain competitive features that make them well-suited for international trade. But many of these small companies have not begun exporting. They may depend on other organizations for counseling, training, data analysis and market research, financial assistance, opportunities to attend trade shows and other services. A wide variety of such services exist. But the higher-education community, government and trade-related organizations must work together to further strengthen these businesses as they approach the international arena.

III. International Competitiveness: State Programs in Vermont

Governments, businesses, trade associations and higher education have devised national, regional, state and local initiatives to enhance international economic competitiveness. Althougn the programs vary widely, they generally aim to bolster economic development so that an overall competitive advantage can be achieved and sustained, or they specifically promote international trade.

Federal Trade Resources

On the federal level, international trade programs are sponsored by: the Agency for International Development, the departments of Agriculture, Commerce, State and Education, the Export-Import Bank, the Overseas Private Investment Corporation, the SBA, the Trade and Development Program and the Office of the U.S. Trade Representative.

A recent publication of the Small Business Administration (SBA) is a must for all state and regional organizations as well as institutions of higher education that provide international trade counseling or technical assistance. The SBA's Exporter's Guide to Federal Resources for Small Business (1988) outlines the multitude of federal programs designed to provide financial and/or technical support to U.S. companies seeking entry into or expansion in international markets. It is an excellent resource for Vermont's small and medium-sized companies and for those advising them on the export process.

Two federal agencies involved in international trade deserve special attention. They are the Department of Commerce's International Trade Administration and the SBA.

The International Trade Administration (ITA)

ITA, established in 1980 to promote world trade, is the official U.S. government organization coordinating all issues concerning trade development, international economic policy and programs in the area of international commerce and import administration.

Two of ITA's four offices are charged with increasing export awareness and stimulating the export of goods and services. These offices provide individual export counseling, sponsor trade missions and fairs, develop catalog and video catalog exhibitions, provide electronic information for foreign sales leads, and conduct conferences and seminars to help companies enter new markets.

Through ITA, 2,800 companies participated last year in 142 overseas trade fairs and missions, reaching almost 5 million prospective buyers, agents and distributors. Projects are generally coordinated with local offices of the SBA, state agencies and area trade associations. ITA has 48 offices in the United States, as well as posts in more than 120 foreign countries.

The ITA office serving Vermont is located in Boston. The Boston office also serves Maine, Massachusetts and New Hampshire.

ITA's biweekly publication, called Business America, is a useful tool for state and local leaders involved in international trade development as well as for current and future exporters.

Small Business Administration (SBA) Resources in Vermont

The SBA offers a multitude of services for the small-business person, as well as for individuals contemplating the creation of a small-business enterprise. Many SBA services are delivered locally through coordination with colleges and universities. While some SBA services are designed to assist small businesses with management in general, others are specifically geared

toward providing international trade assistance, both financial and technical.

The SBA's Small Business Institutes (SBIs) offer free guidance and assistance to small businesses. The SBIs are staffed by college seniors and graduate business administration students (for academic credit) and their faculty advisors under SBA guidance. SBIs are located at Green Mountain College, Johnson State College, Lyndon State College, Southern Vermont College and the University of Vermont.

The SBA's Small Business Development Centers (SBDCs) draw upon federal, state and local government resources, as well as the private sector and universities, to provide small businesses with management and technical assistance, counseling and practical training. SBDCs in Vermont are coordinated by the University of Vermont's Extension Service. SBDC satellite offices are also located at Extension Service offices throughout Vermont: the Chittenden County office in Winooski serves the state's northwestern region, the Rutland County office serves the southwestern region, the Calendonia County office in St. Johnsbury serves the northeastern region, the Washington County office in Montpelier serves the central region, and the Windham County office in Brattleboro serves the southwestern region. The central region of Vermont is also served by a new SBDC Resource Center located at the UVM Extension Service office in Morrisville.

From an organizational standpoint, the coordination of university-based SBDCs in Vermont is unique. Being housed with the Extension Service offers strengths and weaknesses. Strengths include access to the Extension Service's broad network of branch offices that have been active for several years. One weakness is that at the University itself, the Extension Service is somewhat isolated. Program managers do not have access to the School of Business's graduate student interns and researchers as other SBDCs do. Plans are now under study to have the SBDC office report to the University's central

administration, rather than the Extension Service, to gain greater access to university resources, including the Graduate School of Business. Utilization of Extension Service branch offices is likely to continue.

The International Trade Counseling and Training Program is the SBA program most specifically related to international trade. Established in the 1970s, this program provides one-time free legal advice for small and medium-sized companies that are new to exporting, as well as counseling and financial assistance for managers of small businesses that are considering entering international markets or expanding current export operations. Much of this activity is managed by the SBA's Business Development staff and coordinated with the Department of Commerce's International Trade Administration. Vermont small businesses have access to a computerized export/import information service available to state SBA offices through the University of Georgia. Through this system, known as Export Information Service (XIS), data reports are available for over 2,700 product categories. A small-business person can obtain a list of the 25 largest importing markets for a particular product, the 10 best markets for U.S. exporters of that product and the major sources of foreign competition. Reports also identify the major products being imported by selected countries. For more comprehensive analysis, small businesses can gain access to this service through the SBA state headquarters in Montpelier.

Regional Resources

Certain regional organizations are involved in promoting international trade by New England businesses. They include the Small Business Association of New England, Massport's Trade Development Unit and the International Business Center of New England. Though these organizations are regional in scope, they are all located in the Greater Boston Area, and Boston-area businesses benefit the most from their services.

Small Business Association of New England (SBANE)

SBANE, a member organization for small businesses in the region maintains an international trade committee, called SINTRAC, which meets monthly to discuss problems and issues pertinent to exporting. This committee's 36 members are drawn from small businesses that are already exporting, as well as representatives of the U. S. Department of Commerce, SBA and appropriate state offices throughout New England. SINTRAC members also include representatives of a small number of business organizations serving the international trade community.

SINTRAC projects include training programs in export administration (co-sponsored with the International Business Center of New England), and export dialogue programs involving chief executive officers who are experienced in foreign trade and willing to share their experience in marketing and distribution, and shed light on their relationships with bankers, agents, brokers and freight forwarders. In 1989, SBANE's annual New England Business Conference, for the first time, included an international trade component, with general sessions on international trade, selling products overseas, financing international business, developing international joint ventures, the U.S.-Canada Free Trade Agreement and the European Community in 1992. The international component is likely to become a permanent part of SBANE's annual meetings.

Massport's Trade Development Unit

For more than a decade, the Trade Development Unit of Massport has provided referrals, research, marketing assistance and general guidance to small and medium-sized New England manufacturers seeking to begin exporting or expand current export operations. Each year, Massport assists more than 100 businesses through market research and analysis of products and countries.

Massport also sponsors trade shows, trade missions and business meetings, and provides general information on international business and export opportunities. In addition, for companies doing market research, Massport operates an international business library located at the World Trade Center in Boston. While the majority of Massport's clients are based in Massachusetts, 10 percent to 25 percent are drawn from the remaining five New England states. Massport maintains international trade offices in London and Tokyo.

International Business Center of New England

The International Business Center of New England, established in 1956, sponsors seminars and programs for businesses interested in international trade. The center coordinates its efforts with other regional organizations, as well as those serving the Greater Boston area.

Other Regional Programs

Several other regional organizations have provided policy studies and data analysis; others have coordinated workshops, seminars and meetings related to the issue of international economic competitiveness. These organizations include the New England Board of Higher Education, the New England Caucus of State Legislatures, the New England Council and the New England Governors' Conference.

State-Level Strategies in Vermont

Vermont has put in place an interesting mix of policies that are designed to enhance yet control economic development of the state. Financial incentives are traditional in nature. Newer incentives such as state-supported venture capital and seed funds for small product development

are lacking. Policies reflect tremendous concern for managing growth to sustain the state's beauty and natural environments and maintaining local autonomy in planning regional development. Only two states across the U.S. have gained national reputations for managing development effectively. Oregon and Vermont have carefully guarded the environment while their economies have evolved through strict land-use planning requirements.

In the past, Vermont has not had the financial resources of many other states to promote new growth but has benefited significantly in recent years from spin-off growth of new advanced technologies throughout the region, its own entrepreneurial spirit and its regard for high quality across a wide variety of industries. Vermont's diversified economy should prove to be a key strength during regional and national recessions. In addition, Vermont has well-coordinated education, training, tourist promotion, childcare and maternity-leave initiatives in place to serve as a foundation for encouraging job growth.

The Agency of Development and Community Affairs (ADCA) coordinates state economic development programs. Within the Agency are departments of Economic Development, Housing and Community Affairs and Solid Waste Management, plus divisions of Historic Preservation, Travel, Administration, Vermont Life Magazine and a Film Bureau. ADCA also serves as the prime "packager" of Vermont's training system for new and existing industries. Programs themselves are provided by the Vermont departments of Employment and Training, Labor and Industry, Education and by institutions of higher education.

Financial Incentives to Enhance Economic Development

As previously suggested, state financial incentives are traditional in nature, and lack tax credits as well as venture capital and seed funds for product development. Existing finance programs are managed by the Vermont Industrial Development Authority.

Vermont Industrial Development Authority (VIDA)

Created by the General Assembly in 1974, VIDA's purpose is to promote economic growth and increase employment through financing programs, and industrial and agricultural projects. Programs include: a Direct Loan Program for businesses to purchase land or to purchase or construct buildings, machinery and equipment, and for industrial purposes at a 4 percent interest rate; industrial revenue bonds with tax-exempt or low interest status for the acquisition of land, buildings, machinery and equipment for manufacturing purposes; assistance to local development corporations to purchase land for industrial parks or industrial park planning and development, or for construction or improvement of speculative buildings and small-business incubators; a loan guarantee program to aid businesses in securing commercial loans; family farm assistance, agricultural facilities loans and debt-stabilization loans to assist family farmers or agricultural facility operators with the acquisition of land, machinery and equipment, refinancing of agricultural operating loans and improvement of buildings. VIDA also manages the SBA's 504 Certified Development Company, which provides loans to small businesses for construction, conversion, expansion or purchase of fixed assets.

Venture Capital Fund

Though there is no public fund for venture capital formation in Vermont, a for-profit fund was established in 1988. The Investment Venture Capital Fund received a $2 million investment from the retirement pension funds of state employees and teachers of Vermont. With a goal of only $3 million, the Investment Venture Capital Fund raised $7.6 million in its first year.

Regional Development Corporations

Every area in Vermont is served by a Regional Development Corporation, staffed by a full-time professional responsible for encouraging economic development. These corporations are in 12 locations. Assistance from these regional corporations include financial packaging, permit assistance, space location and referral/contact services.

Other Financial Incentives

Additionally, there are more than 30 industrial parks throughout the state and approximately 25 regional and local revolving-loan programs.

The Vermont Agency of Development and Community Affairs (ADCA) manages three grant programs. Through its Planning Grant Program, Vermont municipalities can complete studies, surveys or plans that lead to comprehensive community development. Priority is given to those projects that encourage citizen involvement. Through its Implementation Grant Program, VADCA provides municipalities with funds for housing, economic development, public facilities and public service improvements. Because the city has ecoomic development programs in place, both grant programs exclude Burlington.

ADCA also manages a Rapid Response Program for municipalities (excluding Burlington) to address conditions in housing and economic development which are, or will be, a serious and immediate threat to the health and welfare of a community if not corrected. This is a loan program that requires a one-to-one match of private funds if the loan is made to a for-profit business.

Job Creation: Training, Employment Search Assistance, Job Start and Development Programs

Vermont has a strong record in providing comprehensive and well-coordinated job training programs. In 1985, education and training

organizations in Vermont began the process of pooling their resources to meet the needs of employees and the unemployed, as well.

Vermont Department of Employment and Training and the Consolidated Council for Employment and Training

The Consolidated Council for Employment and Training was created by the governor to include representatives from the private sector, education, labor, state employment services, social services, and private citizens. The Council's primary role is to oversee the state's use of the federal Job Training Partnership Act (JTPA). The Council works closely with the Vermont Department of Employment and Training which administers the JTPA and other state-funded programs. Vermont's job-training programs include employment search assistance, an adult diploma program and on-the-job training. There are also model programs to serve specific groups with unique needs, such as single heads of households, criminal offenders, youths, older workers, dislocated workers, handicapped people and veterans. Vermont also targets job-development funds to areas experiencing high levels of unemployment. A partial list of state programs follows.

- Competency-based Training for Youth
  Vermont's competency-based training system for youth was one of the first established under JTPA and has been recognized as a national model. This program includes three components: pre-employment skills, work maturity skills and occupation-specific skills.

- Restart Program
  The Restart Program provides vocational assessment, counseling, remedial vocational training and job placement assistance to individuals who are on probation or parole from state correctional facilities. A similar Youth Rehabilitation program is provided for young people incarcerated in Vermont's Woodside Juvenile Rehabilitation Facility.

- Step-Up
  This program, initiated in 1986, is designed to assist women in preparing for non-traditional jobs. It includes classroom programs that help women meet physical fitness requirements, address issues of communication with fellow workers, and develop hands-on skill training. The program also provides counseling, outreach, testing (where required), on-the-job training, and where possible, apprenticeship programs.

- Frontiers
  Provided by a consortium of public and private agencies in the St. Johnsbury area, "Frontiers" serves single parents with "life skills" and vocational training through coordination by Community College of Vermont and area vocational centers. Services include counseling, aptitude and interest testing, training, worksite experience and relocation assistance.

- Entrepreneurial Training
  Designed for economically disadvantaged individuals, this program's goal is self-employment. Training is held at Johnson State College after a period of skill assessment and remedial education.

Though Vermont has a comprehensive set of education and training programs that are well-coordinated by a variety of training organizations, the state may benefit from an assessment of Rhode Island's unique funding mechanism for education and training of adults. Known as Workforce 2000, this Rhode Island fund allows for program expansion without raising state taxes (see Appendix for details on Workforce 2000).

Vermont Job Development Zone Program (VJDZP)

This program, formed in 1986, is managed by the Economic Development Department of the Vermont Agency of Development and Community Affairs. Upon the creation of VJDZP, three zones were created across Vermont. The program focuses on job creation and provides training, financial assistance, tax credits for job creation and support for local infrastructure projects in each zone. The program has helped companies remain in a designated zone, thus retaining jobs in a given area, and has helped companies to expand in a zone, thereby creating new jobs. To augment program services, a variety of other state and federal resources are called upon including JTPA, state training programs, and state financial assistance through VIDA.

Vermont Job Start (VJS)

Established in 1978, VJS provides low-interest loans up to $10,000 to people who want to start or expand a small business, but are unable to obtain a loan from commercial sources. Designed to serve low-income residents, VJS has provided more than $1 million in loans to agricultural, manufacturing and logging enterprises, as well as to restaurants, plumbers, accountants and craft people. Under this program, the overall average business failure rate is impressive -- only 7 percent.

On-the-Job-Training Program

Through the Department of Employment and Training (DET), Vermont businesses can be reimbursed up to 50 percent of trainee wages through the Vermont On-the-Job-Training Program. The average training contract is for 600 hours, but the periods range from 80 to 1600 hours. DET requires a brief training outline and contract for eligible workers. Trainees and supervisors meet monthly through the training period to evaluate worker progress and resolve any problems.

Vermont's Job Training Program also provides up to 100 percent of the cost of pre-employment training and classroom training after hire.

Governor's Commissions and Councils: Higher Education, Vocational Education, Economic Development and Growth

Education and economic development clearly have been priorities of Governor Kunin's administration, and the governor has understood the intricate relationship between the two. She has stressed the importance of the natural environment to Vermonters and offered policies for its management as the economy evolves.

With the view that "good jobs are generated by good education," the governor has established important commissions and charged existing bodies with important tasks related to economic development.

Higher Education Planning Commission

In the mid-1970s through executive orders of several governors, the Higher Education Planning Commission was created to provide for structured communication between the publicly supported higher education community, Vermont private colleges, the legislature, and the public at large. This Commission's role has evolved over time. Priorities have included development of comprehensive information systems for planning, preparation of a major funding study in 1979 and a more specific public financing study in the early 1980s.

In April 1985, Governor Kunin asked the Commission to look at higher education as it relates to the economy and its potential to develop programs and policies that enhance the economy. This charge resulted in a 1987 report called Higher Education and the Business Community of Vermont. The report, a comprehensive review of higher education/economic development liaisons, found that three areas could be strengthened: applied research and development; technical assistance and consulting; and education and training.

Council of Economic Advisors (CEA)

In 1985, Governor Kunin established a permanent Council of Economic Advisors, a group of prominent business people whose role is to act as a sounding board for the administration as it formulates and implements economic policy for the state. The 15-member group was originally assigned the task of reacting to an Economic Strategy Plan prepared by the Department of Economic Development in the Agency of Development and Community Affairs. Through the

establishment of this council, closer ties were established between the public and private sectors that have generated several subsequent commissions and reports. CEA now meets several times per year to discuss pertinent issues related to the economy as they arise.

Getting Ready to Work Commission

The Getting Ready to Work Commission, comprised of legislators, educators, and representatives from the appropriate state offices, businesses, school districts and colleges, was charged in mid-1988 to look at vocational education and preparation of the workforce. Members began exploring what the Vermont economy would look like by the year 2000, what skills Vermonters would need to participate in it, what elements would be key to vocational training, and what barriers must be overcome to meet the challenges of the future. An interim report, completed in February 1989, made the following observations: the state's labor market is tight and is likely to remain so; and a shift from manufacturing to professional service industries would demand higher levels of education and training. The report included a review of new skills that would be needed by the workforce in 2000. Twelve challenges were raised, and three working teams were established to create a blueprint to address the challenges. A blueprint draft is due in early summer 1989, with review and final presentation to be made to the governor on Sept. 30, 1989. Major areas under review include general education, vocational education at both the secondary and post-secondary levels, transition from school to work, apprenticeships and adult training.

Higher Education Study Commission

The Higher Education Study Commission, known as the Hinds Commission (after J. Churchill Hinds, its chairman), was established by executive order in April 1989. The commission was asked to study the present relationship between the state and the higher-education community to determine the degree to which the relationship serves the needs of Vermont and to recommend improvements for the benefit of all Vermonters. With this broad charge, the Hinds Commission defined its task in ways that would not overlap studies being conducted by other organizations and commissions. Three areas of study have been established:

- How effective are the state and higher education in leveling the barriers to access and success for residents
- In the context of available financial resources, is higher education responsible and accountable to its constituencies
- What is the fiscal condition of higher education?

The Commission's report is due by Aug. 1, 1989.

Act 200: The Growth Management Act of 1988

In September, 1987, Governor Kunin created a nonpartisan Commission on Vermont's Future to assess what Vermonters most value about the present quality of life and what they want for the state's future. Through 13 public hearings and 10 focus sessions held in October and November of 1987, 3,000 residents expressed their views. Based on this exchange, the Growth Commission, as the group came to be known, identified four fundamental common goals of Vermonters: to maintain the state's strong community life; to support its agricultural heritage; to protect its environmental quality; and to provide opportunities for residents to obtain a quality job, a good education and decent, affordable housing. To achieve these goals, the Commission

recommended seven guidelines for legislation: adopt integrated, comprehensive development plans at the local regional and state levels; strengthen land-use regulations; remove disincentives of the property tax; foster economic development; protect natural resources; provide strong support for agriculture; and provide affordable housing for all residents. The result was Act 200, The Growth Management Act of 1988.

Act 200 requires that all local, regional and state development plans prepared after July 1, 1989, be considered in relation to their compatability with 30 new comprehensive planning goals. In addition, Act 200 was responsible for: establishing a Housing and Conservation Trust Fund that received a $20-million endowment from the state surplus of last year and will be augmented by property taxes; revising the State Property Transfer Tax to increase support both for plannning and for the Trust Fund; and providing agricultural support in the form of subsidies. Act 200 also required the governor to establish study committees to assist in the preparation of a state economic plan that considers growth in the context of sustaining the natural environment of Vermont. The governor created an economic planning commission known as the Governor's Commission on the Economic Future of Vermont.

Commission on the Economic Future of Vermont (CEFV)

Established in 1988, CEFV's 27 members and 15 focus groups are studying the following issues: agriculture, education, government, manufacturing, trade, health-care services, transportation, finance, insurance and real estate, human resources, communication and information, recreation, travel and hospitality, energy, capital formation, the environment and housing. All focus groups as well as the Commission itself draw representation from government and business alike, and each has an appropriate state government professional coordinating its work. Focus group plans are to be completed

some time between the middle and the end of summer, and the full report will be completed by November 1989. Reports will be based on data collection and analysis, as well as focus-group hearings that are open to the public.

The Education Focus group is looking at elementary/secondary education and higher education in the context of their relationship to economic competitiveness. Themes include education's role in preparing knowledgeable citizens and competent workers, and education's roles in creating new knowledge to advance private enterprise, and in transferring and applying that new knowledge.

Private-Sector Initiatives: The Vermont Business Roundtable

The Vermont Business Roundtable was created in 1987 by business leaders interested in shaping Vermont's public policy agenda. With approximately 140 members (membership will be capped at 150) who are chief executive officers of businesses and of colleges and universities in the state, the group has commissioned several important studies. The first was the 20-year Population and Employment Forecast: 1988. Subsequently, a Population and Employment Forecast Study Commission was formed to evaluate the implications of the report and make recommendations for public policies to deal with them. Projects established in 1989 include an education and training project to articulate a business perspective of workforce needs in the 21st century, a study of wastewater capacity as it relates to future economic growth, and a quality-of-life survey being co-sponsored by St. Michael's College.

International Trade Initiatives

Vermont has made steady progress toward improving its export trade position. Ranked 20th among the 50 states in 1980 in terms of employment related to manufactured exports as a percent of civilian employment, the Green Mountain State moved to 8th in 1986. With Vermont's reputation for high-quality speciality products in a number of diverse sectors, the state is well-positioned to expand export sales in the future. However, little has been done until very recently to enhance export trade. Moreover, what is being done now is still quite small relative to initiatives of other New England states.

Agency for Development and Community Affairs: Department of Economic Development

Within Vermont's DED, a Director of International Business is responsible for the state's international trade program, consisting of export development and reverse investment.

DED also prepares a guide of Vermont manufacturers that export. This guide includes export nations and products exported. The Governor has recently charged the departmer. with completing a far more comprehensive study that would include exporting industries, industries exporting but interested in expansion and industries not yet exporting but interested in doing so.

Since 1986, Vermont has maintained an office in Osaka, Japan for export development and reverse investment. The state also operates a tourism promotion office in Montreal.

The Governor's Office

The governor of Vermont has taken a keen interest in expanding the international trade of Vermont products and attracting international businesses to the state. After taking office in 1985, Governor Kunin led a trade delegation of 10 public officials and private-sector executives to Japan. Two major events followed: 1.) the chairman of Sumitomo Metal Industries, Ltd., led a delegation of 13 companies to Vermont; 2.) the state of Vermont established its international trade office in Osaka.

Sumitomo Metal Industries has a branch plant in Vermont that is well-integrated in Vermont community affairs. Japan and Vermont share a strong concern for high-quality products. Japanese leaders view Vermont very favorably. They see it as a state with an industrious workforce capable of producing quality products in a beautiful environmental setting. For this reason, substantial export trade and reverse investment is taking place between Vermont and Japan.

More recently, the governor led trade missions to Switzerland and West Germany in 1988, and will join nine other governors this summer to meet with EEC Commissioners in Brussels, through a National Governor's Association Trade Program.

Also managed through the Governor's office is the Institute on International Affairs, a two-week international enrichment program funded by the state and private foundations. The summer institute gives high school students throughout Vermont an opportunity to become more culturally aware by discussing foreign affairs with experts in international matters. The Institute was hosted by Norwich University last year and will be hosted by UVM this summer. It is one of three Institute's sponsored each summer by the Governor. The Governor's Art Institute and Science and Technology Institute are also offered annually.

The Governor also has a keen interest in internationalizing education for students in Vermont, and her staff is studying ways to increase attention to global education in the public schools.

Other State Initiatives: Department of Education and the Legislature

The state of Vermont co-sponsors a Joint Vermont-Quebec Commission that reviews common concerns and issues in education, culture and business. Of significant interest to the Commission is the implementation of the Free-Trade Agreement as it impacts upon the province of Quebec and the state of Vermont.

The Vermont State Department of Education also co-sponsors with Quebec a Sister School exchange program for elementary and secondary-school students. In its fourth year of existence, this program provides Vermont school-children with a four-day experience in Quebec, where they stay in the homes of Quebec students who subsequently travel to Vermont for a similar four-day exchange experience. Last year's program involved nine schools; this year's involves 15. The Department of Education also reports that beginning in the fall of 1989, St. Johnsbury Academy (a quasi-public/private academy that serves residents of St. Johnsbury) will be offering instruction in Japanese to high school students.

In the Legislature, H-440, an Act to Support Instruction in Critical Languages was introduced and referred to committee in 1989. This bill proposes the appropriation of $50,000, matched on a 50/50 basis, to school districts for promoting instruction in three of the four critical foreign languages -- Chinese, Japanese and Russian. The other critical language is Arabic. If passed, this bill could begin to meet the tremendous need for promoting international awareness among elementary and secondary-school students. By installing international awareness at an early age, it is more likely that the state will produce a workforce capable of meeting

international challenges, something that other nations have been more effective at doing.

Japan Society of Vermont (JSV)

Founded in 1983, JSV is one of 40 such societies in the United States whose purpose is to develop communication and understanding between residents of the United States and Japan through cultural, business and educational programs. With over 400 members, JSV provides business and public affairs forums, a library of books, periodicals, videos, tapes and other resource materials, a newsletter that is published bi-monthly and general programs that include lectures, movies, drama, art, music, social events, language classes, study groups and workshops.

Chambers of Commerce

Vermont does not have a statewide World Trade Association. However, some Chambers of Commerce in the state are attempting to promote international trade. Three that are active include the Addison County Chamber in Middlebury, the Central Vermont Chamber in Barre and Lake Champlain Regional Chamber in Burlington. Addison County's Chamber has an International Trade Task Force that conducts informational networking meetings for members, while the Lake Champlain Chamber's international trade committee conducts informational networking meetings and provides certificates of origin for exporters as well. The Central Vermont Chamber provides certificates of origin for exporters.

International Trade Task Force (ITTF)

In the Fall of 1987, the state's international trade community, though small, established the ITTF to begin analyzing ways to promote export trade in Vermont. A recent undertaking of the Task Force was to hold a one-day seminar in April, 1989, for banks in Vermont. No bank in Vermont currently has an international department. The Task Force brought an expert from a Midwest Bank to review the nuts and bolts of establishing one and the potential for generating revenue through its operation. Two banks have considered establishing international departments--the Howard and Chittenden Banks.

The Task Force includes members representing the Vermont SBA office, the state Department of Economic Development, the Department of Commerce's International Trade Administration Office in Boston (which serves Vermont) and the SBDC at UVM. The Task Force also has one representative from the legislature.

The 16th Grafton Conference: Global Competence in Vermont: An Educational and Economic Imperative

In 1984, the Windham Foundation, located in Grafton, Vermont, instituted the Grafton Conference Project. Through this project, the Foundation attempts to assemble Vermont leaders four times per year to discuss social policy issues of importance for the state. To date, 16 conferences have been held, covering education, health care, economic development, the environment, the arts, housing, growth, women's issues, tax policy and journalism.

Twice the Foundation has joined forces with the Experiment in International Living's School for International Training (SIT) (see Section IV for more detailed information about SIT). In 1985, the two organizations brought Vermont leaders and international experts to the fourth Grafton Conference: "Economic Development in Vermont--International Perspectives on

Policy Issues." In April 1989, the 16th conference participants met to discuss "Global Competence in Vermont: The Educational and Economic Imperative." At this conference participants discussed how Vermonters might gain a global vision in order to become more knowledgeable about the rest of the world and to understand the cultural, economic and political forces shaping their lives. Though a conference goal was to formulate an action plan for the state, it was not accomplished. This NEBHE publication should assist leaders in creating such a plan. Commmon themes of both the Grafton Conference and NEBHE's Regional Project on the Global Economy and Higher Education is that linkages must be forged among schools, colleges, universities, governments and businesses to identify and implement essential elements of global education to adequately prepare our citizens to meet international competitive challenges.

Two Key Programs

Regional, state and local economic development groups, working with regional offices of the federal government, have designed an important program in conjunction with seven Boston area colleges and universities. It is based on a prototype designed by the Wharton School of Business at the University of Pennsylvania and is similar to a UMASS/Amherst program that has served the business communities of central and western Massachusetts for more than five years.

Known as BEST (Boston's Export Strategy Team), this cooperative effort by Boston-area graduate business schools is designed to help local companies identify and develop strategies to capture foreign markets for their products or services. BEST may serve as a prototype for initiatives by colleges, universities and local economic development and trade organizations serving specific regions within each New England state (see Appendix for some details about BEST).

A second important program was established in Massachusetts approximately three years ago. With funding from the legislature which leveraged matching funds from private and other public sources, five global education centers were created at colleges and universities to serve local school districts throughout the state. Through these centers, a wide variety of international resources is made available to school teachers serving grades K-12. Vermont's School for International Training and the University of Vermont have similar resource centers, but they are much smaller operations. With state funding, requiring an outside match, Vermont could enable these two and other newly created global education centers to serve as a broader resource for enhancing international student awareness (see Appendix for more details about Global Education Centers).

Findings and Summary Remarks

Part II of this paper pointed out that Vermont's export trade position in 1986 shows relative strength across five important industries. Particularly impressive was the export performance of electronics, scientific instruments and food products in terms of their rates of growth over 1984 exports. Moreover, Vermont's national ranking between 1980 and 1986 in terms of employment related to exports as a percent of civilian employment improved from 20th in 1980 to 9th in 1984 and 8th in 1986. The value of Vermont exports increased by 35 percent from 1984 to 1986. Clearly, the Green Mountain State has seen significant growth in export trade as an important aspect of its economy.

Relative to other New England states, however, Vermont lacks several of the mechanisms that have been put into place to support continued growth of exports:

- There is no World Trade Association serving state businesses in a comprehensive fashion;
- There is no bank with an international department. Businesses requiring financial assistance to expand or develop export operations generally must seek funding out-of-state;
- Only one professional in the state Department of Economic Development is responsible for export trade and foreign investment tasks. Both are tall orders for one person;
- The Small Business Development Center headquartered at UVM lacks close ties to the School of Business. As a result, a tremendous resource is missing in the form of comprehensive market research analyses conducted by graduate students and faculty;
- No state-initiated product development fund is available to assist with the start-up of new technology-based companies that might spin off from both university R&D and research being conducted by small high-tech companies. Such funds tend to enhance the technology transfer process, and result in economic gain within a state.
- Present consideration of legislation to appropriate matching funds to school districts for critical foreign language development is impressive, particularly given Vermont's strong ties to Japan in terms of reverse investment and exporting. Enactment of the legislation would be an important step in enhancing international awareness.

As the dollar's value rises, such initiatives might be necessary to assure continued growth in the export economy of Vermont. Clearly, Vermont lacks some of the infrastructure for international economic competitiveness that has been established in other states.

IV. HIGHER EDUCATION AND INTERNATIONAL ECONOMIC COMPETITIVENESS

The Need for Higher Levels of Education and International Awareness and Expanded Research, Development and Technology Transfer

Because New England's economy increasingly is fueled by advanced technologies, skilled labor is critical to continued growth. International economic competition also adds further to our demands for a well-educated workforce, heightened levels of R&D and subsequent technological innovation. But there are signs indicating we are falling behind our economic competitors in these fundamental areas. On a national basis, the facts are disturbing:

Education and Training

- Between 20 million and 30 million adults in the United States are considered functionally illiterate.
- A 1987 survey of 5,000 high school seniors in seven cities found that nearly 40 percent of Boston high school seniors could not name the six New England states.
- Participation and achievement by U.S. elementary and secondary-school students in science and math lag when compared with the performance of previous years and compared with the performance of students of other nations. Our middle school and high school students have scored at or near the bottom on international math exams for the last several years. In addition, high school graduates in both Japan and West Germany, our major economic competitors, are stronger in basic educational skills. Merry I. White, an analyst of Japanese educational policy, suggests that Japanese high school graduates are as well educated as American college graduates and that any worker at a Japanese factory can be expected to understand statistical material, work from complex graphs and charts and perform sophisticated math.
- Although we boast that 50 percent of our high school graduates go on to college, only 70 percent of U.S. students complete high school with their graduating class, compared with Japan's 98 percent. "Their bottom half is beating our bottom half" according to economist Lester Thurow.
- U.S. professional service industries complain about the dearth of qualified workers for entry-level jobs. U.S. manufacturers are finding it difficult to recruit workers who can understand robotics and computers.

- An estimated 75 percent of today's U.S. workforce will need retraining by the year 2000.

- Recent studies suggest that U.S. universities are not turning out enough scientists and engineers--particularly at the master and doctoral degree levels -- to meet new demand in the leading-edge areas of high technology and advanced production systems. The number of engineering doctorates decreased from 2,500 in 1970 to 1,280 in 1985. In addition, only 53 percent of the engineering doctorates awarded by U.S. colleges were awarded to U.S. citizens or permanent residents. A shortage of top-quality applicants is expected to greet the retirement of a generation of aging science and engineering faculty.

- Top-quality students are being steered toward the lucrative professions of finance and law, creating a brain drain in manufacturing industries. The study of manufacturing processes is being neglected.

International Awareness

- Only 17 percent of U.S. public elementary schools offer any form of foreign language instruction.

- The United States is one of the few developed nations where students routinely graduate from high school without competence in a second language. Although foreign language requirements for graduation from private four-year colleges and universities increased from 25 percent in academic year 1983-84 to 30 percent in 1988-89, such requirements at public four-year institutions inched from 9 percent to just 10 percent in those years, according to a recent national survey. In the United States, a student can earn a doctorate without ever having taken a foreign language course. Nonetheless, the language of trade remains the language of the customer. If we do not understand the customer, we will be unable to trade our goods, services and ideas.

- U.S. students, workers and consumers lack understanding of global geography and of the cultural and political differences between nations. Economic development and trade association leaders told NEBHE staff that this lack of international cultural awareness is one of the most significant hurdles they face in encouraging export trade by New England businesses.

R&D Investment and Technology Transfer

- The U.S. leadership position in R&D expenditures of 25 years ago faces a serious challenge. In 1962, the U.S. spent 2.7 percent of GNP on R&D, compared with 1.5 in Japan and 1.3 in West Germany. By 1985, the U.S. figure was still 2.7, but Japan's was 2.8 and West Germany's was 2.7. Relative to gross national product, non-defense R&D expenditures by the United States were well below both Japan's and West Germany's in 1988. Japan spent 2.8 percent of GNP on non-defense R&D in 1985, and West Germany spent 2.5 percent. The United States spent only 1.9.

- Although the United States leads the world in advanced technological industries, annual growth rate of these industries between 1972 and 1985 was 7.6 percent, compared with Japan's 14 percent, suggesting Japan is more effective in technology transfer for high-quality product development.

- 1987 marked the second consecutive year that foreign companies topped the list of U.S. patents awarded. Japanese companies were first and second, bumping General Electric to third.

Education In The Global Economy

International competitiveness requires educational effectiveness. Having earned worldwide respect, New England's systems of higher education have at hand tremendous resources to share in solving the states' problems of economic competitiveness on several levels.

Many of the problems we face in terms of lagging worker competence and lacking international awareness have traditionally been viewed as problems of elementary and secondary education. But we can no longer afford to make that distinction. The strength of the U.S. system of higher education depends on the strength of education at lower levels. International economic competitiveness rests on the strength of both systems. For this reason, viewing the educational process as a continuum will allow more effective long-term solutions to the problems presented by the global economy.

In terms of basic literacy skills and educational level, the nation's workforce presumably falls around the middle when compared with other industrialized countries. But as our products become more highly technological and our markets become global, literacy demands increase dramatically. And the United States trails even some developing countries in initiatives on literacy, basic education and worker retraining. As a result, the United States faces competition from developing countries, which not only have lower labor costs, but also make stronger efforts to train skilled, literate workers.

New England faces an additional challenge. The number of New England's high school graduates is projected to drop so fast that by 1994, the region will have 158,261 -- or 17 percent -- fewer high school graduates than would have been the case if high schools continued to graduate as many students as they did in 1988.

In a region whose economic "miracle" has been fueled by brains rather than brawn, this story from the high schools is very grim indeed.

The demographic changes upon us reinforce a few simple notions: New England's future economic well-being depends on our willingness to invest in education today. And we must extend the benefits of education to all New Englanders, whether they be members of minority groups who have not participated fully in higher education nor in the workforce, welfare recipients who may need further education and training to find good jobs and become independent of public assistance, or currently working people from chief executive down, whose skills must be upgraded constantly to keep pace with increasingly sophisticated business practices and formidable foreign competition.

Literacy and Education in Vermont

Vermont ranks 14th in the United States and second in New England (New Hampshire is first) in terms of its adult population that is literate. Nonetheless, adult illiteracy is an important problem for Vermont, particularly as its economy becomes more knowledge-intensive. Approximately 10 percent of Vermont's adult population was considered illiterate in 1985

In recent years, Vermont has ranked among the top two New England states in terms of high school graduation rates. High school dropout rates, however, increased between 1984 and 1986. Graduation rates improved from 80 percent of eligible students in 1982 to 83 percent in 1984, but decreased to 78 percent

in 1986. From 1980 to 1986, Vermont's national ranking sunk from eighth 16th. Its ranking among New England states dropped from 1st in 1982 and 1984 to 2nd behind Connecticut in 1986.

Average SAT scores peaked in Vermont in 1985 and declined in both 1987 and 1988 (from 918 to 914 and 909, respectively). Even with the 1988 decline in average scores, Vermont still ranked fifth nationally in this capacity. In the earlier years, the Green Mountain State ranked third. What is impressive in Vermont, however, is the steady increase in the number of students who took the exam in the four years that have been analyzed. In 1982, 54.2 percent took the exam. In 1985, the percentage taking the test had risen to 56.5 percent; in 1987, it rose to 63.9 percent, and in 1988, 64 percent.

Vermont ranked an impressive 10th nationally and third in New England in 1980, in the percentage of people age 25 and older with a college education. In Vermont, 19 percent of people in this age group were college educated, compared with the national average of 16.2 percent and New England's average of 19.2 percent.

In 1986, 49 percent of Vermont's 18 to 24-year olds were enrolled in higher education, slightly higher than the U.S. average of 47 percent, but lower than the regional average of 53 percent.

State government, business and education leaders must realize that raising the educational level of the population is a long-term proposition, and quick fixes simply will not work. Raising the educational levels of Vermont's young people in the short term will help cope with adult illiteracy in the long term, while leaders devise strategies to deal with the adult illiteracy that now exists.

Science and Engineering Education: Fueling a Knowledge-Intensive Economy

NEBHE completed a study in 1988 to assess the progress made by New England colleges and universities in supplying sufficient numbers of quality engineering graduates to meet industrial demands. The research showed that New England ranked first among all regions in enrollment of graduate students in science and engineering per 1,000 population. But more detailed analysis shows that while the region has responded fairly well to estimated demands in engineering and related fields at the baccalaureate level, it is increasingly clear that insufficient numbers of engineering doctorates are being awarded to meet the demand of high-technology companies and university faculties in both a regional and national context.

In Vermont, the University of Vermont (UVM) is the only institution of higher education that grants engineering degrees. A state-specific analysis of UVM's capacity to meet the demands of Vermont industries would be enlightening. Though the number of baccalaureate degrees awarded by UVM increased dramatically from 1982 to 1987 (by over 100 percent), master's and doctoral degree awards decreased. Only one Ph.D. was awarded by UVM in 1982, and none was awarded in 1987, according to NEBHE analysis of data from the Engineering Manpower Commission.

Vermont Initiatives to Heighten Levels of Education

The Corporation for Enterprise Development gave Vermont a "B" on its 1988 state-by-state report card for state educational initiatives. The state ranked 16th nationally and 3rd in New England in this capacity. In 1986, the Green Mountain State ranked 12th in K-12 spending as a percent of per capita income. Moreover, state support to public schools increased dramatically in 1987 and 1989, by 43 percent over the two-year period. But Vermont ranked

47th in higher education spending per pupil as a percent of per capita income in 1986.

Low pupil-to-teacher ratios are a strength for Vermont schools. In this regard, the state ranked second (to Connecticut) in the nation at 14 pupils per teacher in 1986. Likewise, teacher salary increases between 1986 and 1987 were impressive. As a result, Vermont was 3rd nationally in this capacity.

Vermont also has an impressive record on adult literacy initiatives. An Alliance for Adult Literacy in Vermont, with representatives from churches, state government, business, education and community action groups was organized in 1986. This group has identified literacy liaison staff at every college and university in Vermont, who will serve as contacts with adult basic education centers. Tailoring the curriculum for the older student is an important component of basic instruction for adults. For example, as an alternative to Vermont's General Education Development program, the adult basic education staff devised an adult diploma program that provides an opportunity to learn about state government or the economy, as well as acquiring basic skills.

The Vermont Department of Education has begun an effort to develop a literacy awareness and outreach model for use by schools, businesses, state agencies and community-based organizations. The Chittenden Bank is committed to developing a model training program for use by employees throughout the state.

Finally, Vermont has the only statewide adult basic education program that emphasizes home-based tutoring. In a rural state, getting the word out is a key challenge in solving the problem of adult illiteracy. Word-of-mouth has played a major role in recruiting many of the adult learners.

Improving public schools and maintaining a strong economy were the top public policy priorities of Vermont business, government and education leaders

surveyed in NEBHE's 1987 Future of New England Survey. Conservation of agricultural lands and national environments ranked second, indicative of the Green Mountain State's foresight in managing its environment as economic growth occurs.

Leaders emphasized improving public schools, suggesting that higher education might more effectively join in partnership with the broader community to improve the quality of teacher education. In addition, leaders emphasized the importance of broader levels of communication through collaborative partnerships between education, business and government. Finally, they recommended that faculty of Vermont colleges and universities provide more consultation and technical assistance to both businesses and government.

Using higher education resources to help solve specific problems at all levels of education makes good sense in any state. But it is particularly important in Vermont. Though per capita income in Vermont has increased steadily since 1983, it still stands at 94 percent of the U.S. average. The state's relatively low personal wealth means that some public initiatives may be desirable, but fiscally unreasonable. However, Vermont's higher education facilities are strategically located throughout the state, so school districts in each area, whether urban or rural, may continue to effectively join together with higher education and business leaders to solve pressing problems, without drawing significantly on state revenue.

Lack of International Awareness

In 1987, NEBHE completed a comprehensive study of the ways New England college and universities were adapting curricula and related activities to provide the new understanding and competencies necessary in a global economy. Using a case-study approach, NEBHE examined 40 colleges and universities,

including public and independent two-year and four-year institutions, across the region. This research has been expanded and updated in conjunction with NEBHE's legislative briefing in Vermont. NEBHE has considered institutional planning, business and liberal arts curricula, foreign languages, area studies, internationalization within various academic disciplines, foreign-student enrollment, study-abroad programs and library resources. The research has indicated that change occurring along the international dimension is one of the most powerful substantive developments in the history of higher education. But it also indicates that more must be done.

Campus-based International Initiatives

What follows is a sampling of campus-based activities to promote international awareness among Vermonters:

- St. Michael's College created a deanship and a Center for International Programs.
- The University of Vermont has established a professorship in Canadian-American Business and Economic Relations which includes a New England focus. The University has held several conferences on pertinent Canadian-American business issues, including the Free-Trade Agreement, and issues pertaining to natural resource management.
- Vermont is home to a unique international educational institution -- The Experiment in International Living's School for International Training. Founded in 1964, the School for International Training (SIT) offers semester and summer abroad programs to high school students, its own and those of other universities, and to interested citizens. The programs include cross-cultural orientation, a life and culture seminar, methods and techniques of field study, followed by an independent study project; a wide variety of language training programs; a world issues program that is a junior/senior two-year option for undergraduates and includes an international internship for each and programs of study focusing upon environmental studies, cross-cultural communication, peace studies, community and social development, and international economic development; a four-year world studies program, with graduates earning a bachelor of arts degree in International Studies with the same focus as the world issues program; master's programs in Teaching and in Intercultural Management, both of which are internationally-focused; third world development and training. Other exchange programs include short-term home-stay programs for foreign visitors (professionals, and special groups), an elders hostel program, and au pair arrangements (child care services by foreign visitors). All degree and language training programs are open to U.S. citizens and foreign nationals.

- Enrollment in Norwich University's Russian language program has more than doubled in 10 years and attracts students from other institutions of higher education throughout the region. The University has had to turn away potential students in recent years due to the increased demand.

- In 1987-88, Norwich became the first higher education institution to establish a training program for students who hope to enter the Peace Corps. This four-course, two-year program is an alternative to required Reserve Officer Training Corps programs.

- UVM and Norwich have recently added Chinese language to their international language programs.

- St. Michael's College in recent years has seen interest in Japan grow steadily. A number of Japanese have participated in its program for teaching English to foreigners, which resulted in English courses for executives from Sumitomo Metal Industries. Japan has assumed a special focus within the college's recently established Center for International Studies. This Center has received a foundation grant to train faculty in a variety of fields to incorporate Japanese issues into curricula.

- St. Michael's College participates in a model program for the education of Central American students, who enroll in the college's intensive English language training program and major in business.

- UVM was the first institution of higher education in the nation to establish a degree in Canadian studies. Moreover, under Title VI of the Higher Education Act which provides support for area studies programs on a nationally competitive basis, the nation's only federally designated undergraduate Canadian studies program is shared by UVM, the University of Maine at Orono and the State University of New York at Plattsburg.

- SIT has enabled more than 5,000 individuals from numerous institutions across the United States to undertake academic study abroad. SIT is the national leader in offering such programs focusing on Third World countries.

- St. Michael's and SIT, both with very large English-as-a-Second Language (ESL) enrollments, also train ESL teachers. SIT programs in ESL have served more than 10,000 people at locations in the U.S. and many times more in locations abroad.

- In 1989, St. Michael's College began offering a new six-credit course in Japanese mass media through its department of journalism. This course centers around a three-week trip to Japan, to be conducted for the first time this summer. This program is the first of its kind in the nation.

- Middlebury College provides five scholarships annually for area high school teachers to attend its six-week/six-credit intensive foreign language institute each summer.

- Castleton State College is creating an academic alliance in foreign languages with area high schools.
- In the summer of 1988, Norwich University hosted the Governor's Institute on International Affairs; UVM will do so in 1989.
- UVM co-sponsors a "Vermont/China Studies Project" with Vermont's Department of Education. Local school teachers study Chinese language, history, culture, political science and economics for one year in preparation for an overseas trip. Last year, 20 teachers went to China. This year 22 school districts have joined the Project.

Through early 1987, Vermont colleges and universities, like their counterparts in other New England states, had concentrated their internationalization efforts on curriculum development. Although many of these initiatives have been unique and impressive, comprehensive curricula planning typically lacked focus on economic issues.

While foreign-language enrollments have risen sharply after a decade of decline, few business students study foreign languages. And there is very little global business perspective in liberal arts programs, even though most liberal arts students eventually go to work for companies which are directly or indirectly involved in world trade.

In addition, very few overseas business internships are available. Likewise, very few post-doctoral research fellows are funded for overseas research positions. And those who do go overseas generally must complete a second post-doctoral assignment in the United States in order to be adequately connected to secure future employment. As a result, these research fellows are discouraged from going abroad.

Foreign-Student Enrollment

Growth in foreign-student enrollment in New England as well as the nation has flattened during the 1980s in relation to the tremendous growth that took place in the 1960s and 1970s. But foreign-student enrollment in New England

slowed to a lesser extent. The number of foreign students in New England grew from 23,191 in 1983-84, to 27,702 in 1987-88, less than 20 percent growth over the four-year period, but still substantial, compared with the national increase of 5 percent (339,000 to 356,000).

More troubling is the relatively small number of Americans studying abroad. According to the Institute of International Education's 1986-87 "Open Doors" survey, 48,483 Americans were studying for credit abroad, compared to 349,609 foreign students studying for credit in the United States. Equally striking: while 80 percent of the Americans were studying in Western Europe and only 5.4 percent were studying in Asia, students from Asia represented about half of the foreign students in the United States. New England has proportionately more students from Europe and Canada and fewer from Asia than does the nation as a whole. Institutions in the three northern New England states have been especially attractive to Canadian students. But the asymmetry of the foreign-student exchange is further revealed in how foreign and American students respectivel hoose their fields of study.

Foreign students are learning an enormous amount about science, engineering and business management in the United States. U.S. students overseas are learning almost nothing about science and business in their host countries. Primarily, these U.S. students abroad are studying fields associated with U.S. undergraduate curriculum, such as Western history, philosophy and culture.

More must be done to encourage study-abroad in our institutions of higher education, not only in Western nations but throughout the world. In addition, the foreign students here in New England could serve as tremendous resources of cultural knowledge not just for college students and faculty, but for students and teachers in middle schools, high schools and for the general public.

Business-Higher Education Lack Coordination

NEBHE's 1987 case study analysis of 40 New England colleges and universities suggested that leaders of the region's businesses, governments, economic development agencies and trade associations were increasingly focusing on international issues on a tract parallel to that of the region's colleges and universities, but that efforts by the different parties were rarely coordinated.

Although higher education has international resources relevant to the business community, and foreign investment tends to be attracted to areas offering educational advantages, New England communities had not yet developed business-higher education partnerships for international economic effectiveness. Vermont in particular has initiated few of these partnerships. Moreover, little has occurred at the state level to foster such relationships. Business leaders have expressed growing interest in the international economy, yet continuing education and executive development programs related to international business issues were, and still are, lacking.

It is critical that efforts be made to broaden the dialogue and improve international awareness among students, faculty and citizens in general.

In the area of R&D, Vermont has its own areas of strengths. Recently, a relationship between UVM and the business community has been forged to enhance technology transfer for advanced technological industrial development.

R&D Investment

New England's leading edge in basic research is striking and gives the region a major competitive asset in the international marketplace. But the nation's ability to transfer research-spawned knowledge to the world marketplace will be crucial to the nation's trade future and the careers of today's undergraduates. Yet on a national basis, technology transfer has not

been adequate to transform research into economic gain. Many discoveries born of American research become products made by other foreign competitors. Students, businesses and policymakers do not have an effective network to apply new knowledge on a timely basis.

The New England region relied upon informal relationships between university researchers and resulting spinoff businesses through the 1970s. In the early 1980s, economic policymakers and research universities across the nation begin to understand the serious implications for all sectors when regional economies failed or stagnated. The result was a concentrated effort to enhance university-based technology transfer and technical assistance initiatives in order to nurture the diversification of local economies.

But because the recession of the early 1980s did not affect the New England states as severely as states in other regions, the promotion of technology transfer and technical assistance has lagged in this region. Now, as the region's economy seems to be peaking and international competition is intensifying, purposeful action is critical to sustaining long-term economic development.

The nation's long-term commitment to research and development has served as a seedbed for new industrial products and processes, innovative capacity and productivity gains. Federal funding of basic and applied research has been vital in sustaining a prosperous economy. It has also created a partnership among government, business and academia, which is responsible for our international leadership in scientific and technological discoveries. Since World War II, federal support for basic and applied research has grown substantially and New England organizations have been leading recipients of the federal funds.

The region's strong R&D infrastructure allowed for the evolution of the computer industries of the 1970s, and the biotechnology, artificial

intelligence and software engineering industries as well as others developing in the 1980s. Nurturing R&D is crucial for further state and regional economic development.

Vermont's Share of Federal R&D

In 1980, federal R&D funding to all Vermont organizations was approximately $51 million, but by 1986, funding had dropped to $41 million lowering Vermont's national rank from 41st in 1980 to 44th in 1986.

Slightly more than 68 percent of all federal funds awarded to Vermont in 1980 were from the Department of Defense (DOD), but by 1986 only 25 percent were DOD funds. Conversely, Health and Human Services (HHS) dollars represented approximately 21 percent of the total state share in 1980, but 44 percent by 1986. This HHS money includes funding from the National Institutes of Health (NIH). Taken together, these two changes are an indication of the state's growing strength in biomedical research and its diminishing dependence on R&D funds from DOD.

Vermont ranked 49th nationally in HHS funds in 1985, but jumped to a ranking of 33rd in 1986. Though 44th in total funds from all federal agencies in 1986, Vermont ranked 29th in Department of Energy funds, 37th in NASA funds and 40th in DOD funds.

Though Vermont's industrial sector was the major recipient of federal R&D funds in 1980 (almost 50 percent versus universities' 24 percent), universities were the major recipient by 1986 (55 percent to industry's 17 percent). The university sector in Vermont receives a higher portion of total federal funds than is the case in any other New England state. The regional and national averages are only 16 percent and 13 percent repsectively.

University-directed federal R&D funds from HHS and the Department of Education in Vermont represent the highest portion of total fund awards. HHS

funds account for 43 percent of the total, while Deparment of Education funds account for 44 percent. Awards from the U.S. Department of Agriculture (USDA) represent 9 percent of the total. All other agency awards accounted for less than 3 percent.

One university in Vermont ranks among the top 100 institutions of higher education nationally for R&D obligations. Though not ranked in the top 100 in 1985, UVM ranked 94th in 1986. UVM also is ranked 10th among the top 40 receivers in New England.

UVM ranks among the top 20 universities regionally in funds from four specific agencies: third in USDA funds, seventh in Department of Education funds, eighth in HHS funds and 16th in National Science Foundation funds.

R&D Expenditures at Colleges and Universities

Colleges and universities receive R&D funding from several different sources. In addition to those awarded by the federal government, funds are received from state and local government, industry, internal institutional sources and other more minor sources.

On the expenditure side, Vermont colleges and universities fare much better than the nation's and region's in two sources of funds. Slightly more than 11 percent of R&D expenditures are from industrial and institutional sources, versus the nation's 6 percent and 17 percent averages from these two respective sources. State and local governments contribute a substantially greater share of R&D funding to Vermont colleges and universities -- 6.5 percent -- than the New England average of 2.3 percent, but less than the national average of 8.4 percent. Vermonts state/local government expenditure for R&D of $3.57 per capita almost matches the national average of $3.67, while the New England average is only $1.77. Almost 67 percent of all university R&D expenditures in Vermont are received from the federal

government. This is higher than the U.S. average of 62 percent, but lower than New England's 72 percent average.

Broken down by academic discipline, Vermont's expenditures are overwhelmingly allotted to the life sciences. Almost 90 percent of R&D expenditures are in life sciences, versus 45 percent and 54 percent averages for the region and nation, respectively. This is yet another example of Vermont's growing strength in biomedical R&D.

UVM ranked in the top 100 nationally in R&D expenditures in 1985, but dropped to 101 in 1986. However, the University ranked 62nd nationally in industry-sponsored research expenditures in 1986, and 71st among all public intitutions across the nation. Vermont did rank an impressive seventh nationally among all public institutions in relation to research expenditures per faculty member, suggesting that for its size, the university fares substantially well in R&D funding.

National Institutes of Health Funding (NIH)

New England ranked first among all regions of the nation in terms of federal R&D funds to all organizations and in university-based R&D expenditures on a per capita basis. With only 5.3 percent of the nation's population, New England captured 9.3 percent of federal funds awarded to universities nationally. Likewise the region spent 9.4 percent of national university-based R&D funding from all sources. The most impressive statistic, however is the region's No. 1 per capita rank in NIH awards. Almost 15 percent of all NIH R&D awards went to New England in both 1986 and 1987. Approximately $21.8 million were awarded to the state of Vermont by the NIH in 1987.

UVM ranked 75th among all domestic institutions and 62nd among all institutions of higher education in total dollar awards from the NIH during

1987. The University's College of Medicine ranked 48th in 1986, and 46th in 1987, among all medical schools across the nation. Though New England is home to a number of independent hospitals that secure NIH research dollars (many of which are affiliated with university-related medical schools) only one is in Vermont. Rutland Regional Medical Center ranked 142nd in 1987 among all independent hospitals in NIH research funds.

Summary Remarks

New England's national leadership in university-based R&D funding and expenditures is firmly established. UVM is Vermont's primary strength in this capacity. Unquestionably, UVM's strength lies in life sciences and biomedical R&D, providing the Green Mountain State with a considerable advantage for fostering technology transfer in biotechnology.

Technology Transfer and Technical Assistance

In the areas of technology transfer and technical assistance, some of the nation's colleges and universities have taken creative steps to help improve the health of local economies. Various initiatives have expanded technical and entrepreneurial assistance in economic and community planning, worker retraining, science and engineering technology transfer as well as consultations to small and medium-sized firms. Further examples of such technology transfer initiatives include: the creation of new business/university research parks, university industrial liaison programs, scientist exchange programs; technical and administrative support to university researchers interested in moving basic research forward for application. Some universities have provided incubator space at research facilities for new business ventures and established joint venture capital funds, as well. A sampling of Vermont's university-based initiatives follows.

Technology Transfer

- To promote interdisciplinary activity and expand its strength in biotechnology, UVM established a new department of microbiology in 1986. Drawn from the departments of medical microbiology (in the College of Medicine), microbiology and agricultural biochemistry (in the College of Agriculture and Life Sciences), faculty in the new department are engaged in research in molecular genetics, genetic toxicology, nitrogen fixation, host-parasite interactions, environmental health and water resource management.

- In 1988, UVM broke ground for the construction of the George D. Aiken Center for Microbiology and Agricultural Science. This joint federal/state project is expected to be one of a handful of top biotech research centers worldwide.

- UVM has set aside research funds for applied research partnerships with Vermont companies.

- UVM scientists have been working with food-processing firms to develop pesticide-free growing methods as well as new pest-resistant plant strains.

- Last year, UVM established a Technology Transfer Office to begin the transfer of university-based research for process and product development to benefit the economy of Vermont. The Office is currently assessing the research needs of the business community as well as expertise at the University and, where appropriate, is serving as the vehicle for creating cooperative ventures.

- Recent Vermont spin-off companies from UVM research include: Second Foundation, a computer software company specializing in artificial intelligence; Biotech Instruments Inc., a company that manufactures sophisticated laboratory apparatus; and Shelbourne Laboratories, which has developed prosthetic devices for joint replacement.

Technical Assistance

- In 1987, Trinity College was awarded a $3.3 million contract by the U.S. Department of Education to serve as the home of the Northeast Regional Resource Center of Special Education. Serving New England, New York and New Jersey, this Center provides technical assistance, consultation and training to state and local education agencies.

- Two faculty members of UVM's College of Education have operated a Center for World Education since 1974. Serving as a global resource center for elementary and secondary school teachers, the Center draws upon the expertise of area studies at the University. Services include a resource library, workshops and special courses to integrate international perspectives into curricula. Materials cross the spectrum of public school offerings.

- The School for International Training manages a Peace and Global Resource Exchange program for local school districts. Similar to UVMs' Center for World Education, the program's services include an internationally focused bibliography of resources, a quarterly newsletter, and course materials that help teachers integrate international perspectives into the curriculum.

- St. Michael's College has a Social Science Research Center, affiliated with its Department of Economics that provides social, economic and demographic studies for the broader community of Vermont. The Center is now completing a Quality of Life Survey of Vermont citizens for the Business Roundtable; it is scheduled for completion in late June, 1989.

- Landmark College offers a series of special training workshops for elementary and secondary school teachers.

- UVM President Lattie Coor is coordinating the Business Roundtable's Education and Training Study which is designed to forge a business perspective on the workforce needs in the 21st century. Planned for publication in late summer 1989, this study will have analyzed the requisite skills needed in a more technological workforce, providing a supply/demand model of education and training for Vermont.

- Community College of Vermont publishes a public policy journal twice a year. Since its inception in 1986, each issue of Vermont Affairs focuses on a public concern to Vermonters from varying perspectives.

- According to statistics provided by the Vermont Agency of Development and Community Affairs, more than 25 colleges and universities in Vermont provide some type of technical assistance or consulting services to business. For example, University Associates in Management and Engineering, Inc. at UVM has provided management and engineering assistance to such firms as IBM, Rutland Industrial Devlopment Corporation, the Northern New England Bankers Association, Boise Cascade, General Electric, Pizzagalli Construction and the Marble Savings Bank.

Coordinating Efforts

As noted previously, NEBHE's 1987 case study revealed campus efforts toward internationalization were not coordinated with those of business, government and the economic development community. Research conducted in conjunction with the preparation of this briefing paper has found that in 1988 and 1989, more is happening to foster this coordination.

University faculty and administrators have traditionally shared their work within academia. On the relatively rare occasions when findings have

been shared beyond the academic community, this information has generally been shared at the national level. Only in the last few years has attention shifted to the state level. There does seem to be a growing cooperative relationship between higher education and the business community of Vermont. But state policymakers who could benefit significantly from academic research are not being reached as effectively. More could be done to enhance higher education's benefit to the broader community. While there are abundant examples of state-funded technical assistance, international trade promotion, technology transfer initiatives, and public policy research efforts for state government planning provided by universities in Maine, Rhode Island and Connecticut, much less is being done in this capacity in Vermont. Only through the utilization of university resources in more traditional education and training capacities by the state's Department of Education and Training is there an impressive track record. Vermont public and private institutions of higher education are a tremendous resource that could benefit the state in a broader spectrum of ways. State policymaking could be informed far more significantly by university-based research for the broader community's benefits.

Because this reaching out to an expanded community is new to many college and university faculty members, leaders of higher education should foster such public service among faculty. Complicating this is the fact that faculty promotion and tenure are often based strictly upon teaching and publications, leaving little time for service to the broader community. Particularly in the case of publicly funded institutions which often include community service as part of their mission, more should be done to encourage faculty to serve on community agency boards, create alliances with local schools, provide policy analysis to local government, counsel small business in export trade, and the like. Government and business leaders must take care to foster a broader relationship with higher education.

Despite the areas that clearly need improvement and expanded cooperation, Vermont's campuses, businesses, government offices and economic development groups are laying a solid foundation to ensure the state's global economic competitiveness. Building upon this foundation should now be a major goal.

V. Recommendations

The following recommendations aim to enhance Vermont's reponse to the challenge of global economic competitiveness. Many of these recommendations do not relate strictly to higher education initiatives, but require the diversity of talent that exists in the academic community in partnership with business and government leaders.

Education and Training

To leaders of state government, business and higher education:

1. Create campus-based global education centers to:
   - Help local teachers at all levels upgrade basic education;
   - Develop model instructional materials to accomplish this;
   - Coordinate university-based speakers bureaus to encourage early interest in science, math and engineering careers;
   - Expand opportunities for science and math education in smaller rural areas through telecommunications.
2. Use university resources, coordinated by the state Department of Economic Development, to initiate a study of statewide industrial supply and demand for scientists and engineers.
3. Through the Consolidated Council for Employment and Training, evaluate Rhode Island's Workforce 2000 Council as a model for expanding education and training programs for workers and welfare recipients, without significant state spending. (See Appendix for details of Workforce 2000.)

International Awareness

To leaders of state government, business and higher education:

4. Use global education centers to:

   - Assist local teachers at all levels in introducing an international focus to curricula;
   - Expand opportunities for a wide variety of foreign-language study in elementary, middle and high schools, as well as international affairs courses in high schools.

5. Establish a mechanism for Vermont businesses and the state to fund study-abroad programs in non-Western regions.

To leaders of Higher Education:

6. Provide more opportunities for high school students to participate in foreign-language and international affairs programs at campus-based summer institutes. Also use the summer institutes to provide teachers at all levels with new internationally focused curricular resources.

7. Consider reinstating language requirements for admission to four-year institutions.

8. Focus on the global economy in liberal arts and in general education to familiarize undergraduate students with international issues that will have an impact upon their lives and careers.

9. Expand dual-degree programs, particularly for business and engineering students, so they can gain knowledge of a specific world region, learn a foreign language and have opportunities for overseas internships related to their fields of study.

10. Attempt to build a presence on campus of foreign students from all world regions, and encourage their involvement in programs designed to heighten international awareness among native students and local residents.

11. Encourage Vermont companies doing business abroad to assist in expanding internship possibilities for students.

12. Initiate continuing education and executive development programs in international business, international affairs and foreign languages, with particular emphasis on international management courses and programs for engineers, managers and other personnel in high-technology industries.

To the New England Board of Higher Education:

13. Undertake a regionwide review to determine which of New England's trading partners or potential trading partners are inadequately served by campus-based area studies centers and other international resource centers, and encourage creation of new centers to fill the gaps.

14. Encourage new and existing area studies centers and other international resource centers to:

- Establish semester exchange programs among the six New England states, focusing on international affairs, foreign language, liberal arts and business;
- Share relevant studies on trade, regulatory, monetary and economic development policy with government agencies and legislators as requested throughout New England;
- Provide seminars and literature for New England business people who want to begin exporting or expand current export operations;
- Develop relationships with foreign institutions to provide a framework for faculty and student exchange, as well as joint research and curriculum development opportunities.

15. Create and disseminate a comprehensive guide to academic centers, trade associations and state and nonprofit organizations that offer resources to enhance international economic competitiveness in New England.

R&D Investment, Technology Transfer and Technical Assistance

To leaders of state government, business and higher education:

16. Establish a statewide technology transfer council with representatives of business and appropriate university-based research centers to monitor:

- Current and future needs for research parks;
- The adequacy of seed money and venture capital;
- The need for incubators for new companies;
- Scientific and technological strengths that could be nurtured for economic diversification.

17. Establish a mechanism for businesses and the state to provide funding for expanded seminar programs, allowing exchange between university R&D staff and industrial R&D staff.

To leaders of higher education:

18. UVM should use its capabilities in advanced research, public policy and area studies to increase involvement in state-specific policy studies and technical assistance for Vermont's long-term economic and international trade development. Likewise, its Technology Transfer Office's role should be strengthened and expanded for Vermont's economic gain.

19. Create interdisciplinary institutes between schools of business and engineering to develop an integrated approach to competitiveness (Rhode Island College's Center for Industrial Technology as well as MIT's Leaders in Manufacturing Program serve as models for such an initiative).

20. Through graduate schools of business, coordinate efforts with economic development agencies and trade organizations to make more technical assistance available to local busniesses. (Boston's Export Strategy Team serves as a model for such an initiative -- see Appendix for details).

21. The six Land Grant Colleges of New England should devise a coordinated computer database for the region to generate needed demographic and economic data relevant for timely state planning (The California Almanac provides a good model for such an undertaking).

22. The Higher Education Planning Commission should coordinate the creation of an annual directory of individual faculty research expertise to include activities of the public and private institutions of higher education in the state. The directory should be disseminated to high-technology companies and international business people for use as a resource guide.

23. Consider ways to evaluate community and public service provided by faculty as additional criteria for tenure and promotion.

To the New England Board of Higher Education:

24. Assist research universities, technology-based companies and New England state governments in evaluating ways for faculty, post-doctoral students, and industrial engineers and scientists to pursue research sabbaticals in other nations.

25. Engender and coordinate a regionwide technology transfer council to monitor state-level technology transfer issues and create solutions for commonly shared technology transfer problems for the entire New England region.

International Trade Development

Vermont lacks several of the mechanisms that other New England states have put in place to support continued growth of exports. As the dollar's value rises, such programs may become necessary to assure economic growth in the state. The following steps are offered for consideration.

To leaders of state government:

26. Assess the need to create a Vermont World Trade Association.

27. Encourage banks to create international departments, serving strategic export regions of the state.

28. Encourage UVM to affiliate the Small Business Development Center (SBDC) with the Graduate School of Business and to create an export assistance center as part of the SBDC operation.

29. Evaluate the need for a state-funded product development venture capital program or seed fund.

30. Pass currently pending House legislation designed to support instruction in "critical" foreign languages.

APPENDIX

Massachusetts Global Education Centers Programs

All global education centers provide teacher training and curriculum resources to public-school teachers. A discussion of more specific activity at the centers follows.

- Clark University Teachers Center for Global Studies serves Central Massachusetts (28 participating cities and towns):
  - Offers workshops, seminars, forums, a speakers bureau, a summer institute and library resource materials to assist teachers in geography, world history, U.S. history, economics, foreign languages, English, humanities and the sciences
  - More than 250 public school teachers participate annually. More than 1,800 benefit directly, and more than 19,500, indirectly
  - State funding has leveraged contributions from Clark and other private sources
- Framingham State College, Schweitzer International Resource Center for Teachers serves Metro West area outside Boston (16 participating cities and towns):
  - Provides a network of faculty experts who work one-on-one with local teachers to create curriculum packages aimed at meeting needs of specific grade levels
  - Offers workshops on educational competitiveness and international knowledge bringing area business leaders and school superintendents together for discussion
  - One conference on the Pacific Rim attracted 100 teachers
  - Professionals from other nations have participated in various programs at local schools through coordination by the Center
  - State funding has leveraged contributions from other public and private sources
- Tufts University, International Studies Resource Center for Teachers serves Boston, Cambridge and eight surrounding towns:
  - Offers professional development workshops and seminars for local teachers, focusing on Africa, China, Japan, the Middle East and Vietnam
  - Conducts the Geography Workshop with the Massachusetts Geographic Alliance (supported by the National Geographic Society)

- Through the Fletcher School of Law and Diplomacy at Tufts, sponsors a speakers bureau, which sends foreign students into local classrooms

- Provides a linkage between public schools and the extensive resource library of the Massachusetts Global Education Project in Winchester

- Serves more than 400 teachers annually

- State funding has leveraged substantial contributions from Tufts and other private sources

- U/Mass-Amherst, International Studies Resource Center for Teachers serves four western Counties (21 participating cities and towns):

  - Spearheaded the formation of the Western Massachusetts Consortium for Global Education, combining the strengths and resources of local international and teacher organizations. The Consortium recently published a major resource directory that cataloges all international teaching resources in western Massachusetts

  - Has linked the Center's global environment resources directly to area schools for use by science teachers through a $5,000 computer system donated by Digital Equipment Corporation

  - Offers a summer institute and a series of eight regional workshops for teachers

  - State funding has leveraged other public and private contributions

- Wellesley College, The Global Education Resource Center for Teachers serves Greater Boston Area (18 participating cities and towns)

  - Offers after-school workshops, seminars, forums, a newsletter, and library

  - Sends international students directly into school classrooms

  - Offers a summer institute that provides professional development in areas studies including Latin America, the Far East, Africa, the Soviet Union and the Middle East

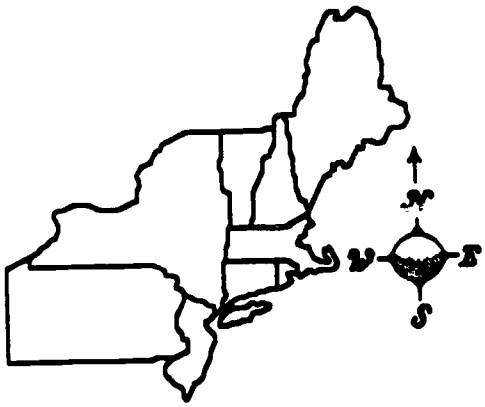
  - More than 1,500 public elementary and secondary-school teachers are served annually

  - State funding has leveraged contributions from Wellesley College and other private sources

WHAT YOU SHOULD KNOW ABOUT THE

B.E.S.T.

Boston's Export Strategy Team



What is BEST?

BEST is a cooperative effort by leading Boston-area graduate business schools to help local companies identify and develop strategies to capture foreign markets for their products or services. By combining university research talent with the expertise and resources of local economic development and trade organizations, BEST offers companies a unique opportunity to understand and pursue their export potential.

Who should participate in BEST?

BEST is specifically designed for Boston-area companies serious about making the most of their export potential.

How will BEST work for you?

Participation in BEST provides your company with three basic services:

1. A Practical Guide for Implementing Your Export Program. A professional market analysis and feasability study, prepared by a graduate student consulting team closely supervised by a business school faculty member in international marketing will provide your company with an export strategy. This will include recommendations on:

- o alternative export markets
- o marketing objectives
- o marketing strategies
- o product adjustments
- o promotion mix
- o distribution channels
- o pricing strategies

2.) Speakers on Export Topics. Trade experts will offer practical perspectives on important export topics: on the "nuts and bolts" of exporting as well as current trends. Specific topics will be chosen to reflect your company's particular export concerns. The discussions will center on developing strategic responses to assist you in strengthening your position in international trade.

3.) Ongoing Assistance. Through its public and private sector sponsors, BEST will assist you further in obtaining information and services necessary to implement your export program. Organizations such as the World Trade Institute, Massport's Foreign Trade Unit, the State's Office of International Trade and Investment, and the Small Business Administration will help BEST clients take advantage of their respective trade libraries and data bases. The City of Boston's Economic Development and Industrial Corporation (EDIC), and the Massachusetts Industrial Finance Authority (MIFA) will provide financing assistance to exporters.

Who are the business schools involved in BEST?

The business schools involved are:

- Babson College
- Bentley College
- Boston College
- Bunker Hill Community College
- Northeastern University
- Suffolk University
- University of Massachusetts/Boston

Who are the organizations participating in BEST?

Public and private organizations involved in the program include the:

- City of Boston's Economic Development and Industrial Corporation (EDIC)
- International Coordinating Council (ICC)
- International Business Center
- Massport's Foreign Trade Unit
- Massachusetts Industrial Financing Authority (MIFA)
- State's Office of International Trade and Investment (OITI)
- Small Business Administration (SBA)
- Small Business Association of New England (SBANE)
- World Trade Institute

What does it cost to participate in BEST?

A $200 fee is charged to participate in BEST. It covers the incidental costs students will incur during the semester in preparing the feasibility study (phone calls, transportation, printing, etc.) and the administrative costs of running the overall BEST program.

For further information about BEST, please give one of us a call.

Andrew Bendheim
Massport, 439-5560

Paul Horn
EDIC/Boston, 725-3342

Charlie van Nederpelt
Boston College, 552-3167

August, 1988

Boston's Export Strategy Team

B.E.S.T.

A Program to Assist Small Businesses in the Exploration of International Marketing Opportunities

A cooperative effort of Boston-area Business Schools and International Trade Organizations

Workforce 2000 Council

Workforce 2000 and its funding mechanism, the Job Development Fund were created by law in June 1988 to improve current and long-term employment and advancement opportunities for residents, while enhancing the competitiveness of Rhode Island businesses through customized job training and retraining, promotion of worksite-based literacy programs, and outreach programs for the unemployed and economically disadvantaged. In just six months, training and upgrading of skills have been provided for over 600 residents of Rhode Island.

Workforce 2000 is funded in two ways. A total of $500,000 has been appropriated from the state's administrative budget to provide for council staff. And one-tenth of one percent of the state's unemployment insurance liability fund has been earmarked for training purposes, accounting for approximately $4 million annually, according to projections. Thus, no new tax funds must be generated.

The Council's executive board includes the presidents of the University of Rhode Island, Rhode Island College, Community College of Rhode Island, business leaders, and state government representatives from the departments of Economic Development, Administration, Human Services, Elderly Affairs, Employment Security, and the Commissioners of Education and Higher Education. Various economic development organizations are also represented.

The Council solicits training proposals on a competitive basis. Eligible applicants include Rhode Island employers, business and trade associations, public and private educational institutions and agencies, non-profit agencies, JTPA agencies, organized labor organizations and state agencies.

The program has purposely been designed to be open-ended and flexible in order to best meet specific training needs for various businesses in the state. Clearly this program serves as a national model for state initiative to improve the quality and availability of the workforce. It has been recognized by the U.S. Department of Labor as such.

Trade Profile for Vermont

Vermont ranks fourth in New England for total trade with Canada, behind Massachusetts, Connecticut and Maine. In 1986, Vermont imported $802 million in Canadian goods while exporting $190 million, a deficit of $612 million. Of the six New England states, Vermont is the third largest importer and the fourth largest exporter to Canada. It is significant that in 1986, 80 percent of the trade between the two consisted of Canadian exports to Vermont. As shown in Figure 8, most of the trade was in finished goods.

Vermont Exports

On the export side, Vermont ships a fair portion of finished goods to Canada, as shown in Figure 8. The leading export is electronic tubes and semiconductors, with shipments valued at $81 million in 1986. The electronics industry is one of the largest employers in the state and could receive significant benefit from the FTA's proposed removal of Canada's relatively steep tariffs over the next five years. Telecommunications equipment in particular is subject to high Canadian tariffs (up to 17.8 percent) while computers face tariffs of up to 3.9 percent. Reductions of these tariffs, starting immediately and continuing over the next five years, might allow the Vermont electronics industries to become more cost competitive with Canada's industry.

Aircraft and related parts are another large export commodity from Vermont to Canada, with shipments of over $18 million in 1986. Because aircraft and related parts currently are shipped duty-free, the FTA would probably not affect this industry significantly.

Fabricated materials also are among Vermont's exports. In 1986, Canada imported $10 million worth of lumber from Vermont, although this amount was more than offset by the $62 million worth of lumber that Canada sold to Vermont. Given the duty-free status of lumber, the FTA would have little impact on this industry. Another leading Vermont export to Canada is metal and metal fabricated products, with shipments valued at $6 million in 1986.

Figure 8

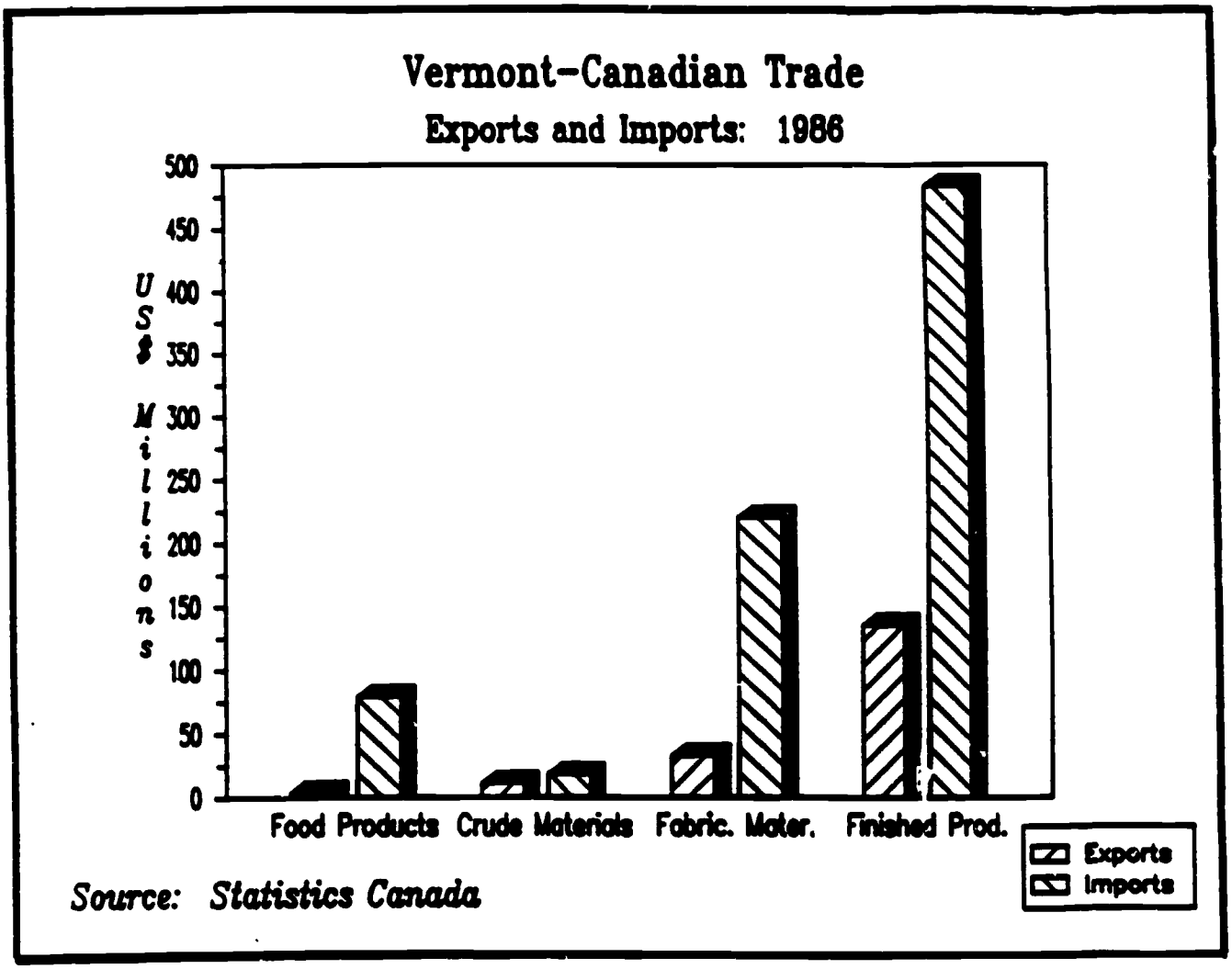

Vermont-Canadian Trade
Exports and Imports: 1986
US $ Millions
500
450
400
350
300
250
200
150
100
50
0
Food Products
Crude Materials
Fabric. Mater.
Finished Prod.
Exports
Imports
Source: Statistics Canada

Table 13
Leading Vermont Exports to Canada
By Major Commodity Category: 1986

Commodity	U.S. $1000s	Percent of total category
Food, Feed, Beverages, Tobacco		
Fodder and Feed	2,014	54
Fish and Fish Products	356	10
Sugar and Sugar Preparations	263	7
Live Animals	245	7
Cereals and Cereal Products	222	6
Cocoa and Chocolate	161	4
Dairy, Eggs and Honey	114	3
Vegetables and Vegetable Products	96	3
Meat	78	2
Fruit and Fruit Products	59	2
Total for ten leading exports	3,607	97
Total for commodity category	3,735	
Crude Materials		
Crude Non-metallic Minerals	5,201	45
Crude Wood Materials	3,251	28
Metal, Ore and Scrap	1,434	12
Man-made Fibers	517	5
Fur Skins and other Crude Animal Products	322	3
Total for five leading exports	10,726	93
Total for commodity category	11,475	
Fabricated Materials		
Lumber	10,186	31
Metals and Basic Metal Products	6,075	18
Paper and Paperboard	4,487	14
Dyes, Pigments, Paint and other Chemical Products	3,699	11
Plywood, Veneer and other Wood Fabricated Products	1,558	5
Textile Fabricated Materials	1,545	5
Gemstones and other Non-metallic Basic Mineral Products	1,133	3
Plastic, Shapes and Forms	1,129	3
Rubber Fabricated Materials	1,122	3
Petroleum and Coal Products	1,042	3
Total for ten leading exports	31,976	97
Total for commodity category	32,854	

(Table 13 continued)

Commodity	U.S. $1000s	Percent of total category
Finished Products		
Electronic Tubes and Semiconductors	80,858	59
Aircraft, Parts and Engines	18,365	14
Hand Tools and Equipment	4,182	3
Apparel and Footwear	3,695	3
Special Industry Machinery	2,611	2
Printed Matter	2,452	2
Engines, Generators and other General Purpose Industrial Machinery	1,971	1
Electrical and other Measuring Equipment	1,936	1
Telecommunication Equipment	1,295	1
Railway Stock	1,125	1
Containers and Closures	1,040	1
Games, Toys and Sporting Goods	1,033	1
Computers	938	1
Furniture and Fixtures	887	1
Watches, Clocks, Jewelry and Silverware	821	1
Agricultural machinery	776	1
Total for 16 leading exports	123,986	91
Total for commodity category	135,943	

SOURCE: Staff calculations from Statistics Canada, "Domestic Exports/Imports to/from the U.S.A, January to December, 1986."

Table 14
Leading Vermont Imports from Canada
By Major Commodity Category: 1986

Commodity	U.S. $1000s	Percent of total category
Food, Feed, Beverages, Tobacco		
Food and Food Materials	22,511	28
Feeds and Fodder	19,607	25
Sugar and Sugar Preparations	11,149	14
Meat	10,728	14
Cereals and Cereal Products	6,656	8
Live Animals	3,474	4
Dairy, Eggs and Honey	2,485	3
Whiskey and other Beverages	1,894	2
Total for eight leading exports	78,503	99
Total for commodity category	79,409	
Crude Materials		
Natural Gas	13,872	76
Asbestos and other Crude Non-metallic Minerals	2,088	11
Seeds, Oils, Nuts and other Crude Vegetable Products	817	4
Crude Wood Products	636	3
Rawhides, Skins and Other Crude Animal Products	199	1
Total for five leading exports	17,613	97
Total for commodity category	18,234	
Fabricated Material		
Electricity	74,467	34
Lumber	61,732	28
Metal and Basic Metal Products	17,424	8
Wood Pulp	15,113	7
Newsprint and other Paper	11,645	5
Petroleum and Coal Products	11,131	5
Abrasives and other Non-metallic Minerals	11,037	5
Shingles, Plywood and Other Wood Fabricated Materials	8,262	4
Fertilizers and Fertilizer Material	2,876	1
Textile Fabricated Materials	2,025	1
Rubber and Plastic Materials	1,624	1
Total for 11 leading exports	217,338	99
Total for commodity category	220,063	

(Table 14 continued)

Commodity	U.S. $1000s	Percent of total category
Finished Products		
Motor Vehicles	185,388	38
Railway Rolling Stock	137,735	28
Telecommunication Equipment	77,048	16
Aircraft, Engines and Parts	13,629	3
Toys and Games	12,050	2
Apparel and Footwear	7,416	2
Special Industry Machinery	5,573	1
Motor Vehicle Engines and Parts	5,229	1
Hand Tools and Equipment	4,261	1
Prefabricated Buildings and Structures	3,209	1
Printed Material	3,167	1
Engines, Generators and other General Purpose Industrial Machinery	3,139	1
Containers and Closures	2,357	
Total for 13 leading exports	457,846	95
Total for commodity category	483,288	

SOURCE: Staff calculations from Statistics Canada, "Domestic Exports/Imports to/from the U.S.A, January to December, 1986."

Summary

Vermont would have much to gain from the approval of the FTA. One of the most important benefits for this state is the stabilization of the energy supply. Vermont, which is highly dependent on Canada for electricity and natural gas, could possibly attract new industries and gain increased employment opportunities if it could guarantee long-term stability in price and supply.

Existing industries in Vermont can also benefit from approval of the FTA. The electronics and computer industry could increase their Candaian market share from the immediate elimination of tariffs on these products.

Another leading industry, aerospace, already enjoys free trade on aircraft and parts. The FTA would not change this status. A new opportunity might be created with the FTA's immediate elimination of the strict tariff on satellites.

Other Vermont industries, which depend on Canada for raw materials such as lumber and metal, would benefit from the removal of U.S. tariffs on these goods. Lower prices for raw materials translates into lower total costs and greater profits. The state also depends on Canada for food, could expect lower prices as a result of tariff reduction.

Appendix 16

END

U.S. Dept. of Education

Office of Education
Research and
Improvement (OERI)

ERIC

Date Filmed

March 29, 1991