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Cambridge Economic Development Policy



CITY OF CAMBRIDGE
Community Development Department

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Cambridge Economic Development Policy

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INTRODUCTION

This policy document grew out of a series of workshops conducted by the Economic Development Cabinet in the Summer and Fall of 1995 and is presented to the City Council with the goal of defining an economic development policy for the City. The intention is both to provide decision-makers with a framework for understanding the economic challenges and opportunities facing Cambridge and to serve as a basis for making decisions about what programs and interventions to pursue.

A community's economic development efforts translate directly into jobs, taxes, services, and the overall quality of life. A healthy variety of employment opportunities enables residents to prosper. A strong tax base enables a community to enjoy a high level of public services as well as invest for the future. A wide array of goods and services provided by the private sector make a community an attractive place to reside and conduct business. Together, the jobs, taxes and services generated by economic activity contribute to the quality of life experienced and enjoyed by residents and businesses alike. Recognizing the roles played by both the civic and business communities in generating the quality of life that makes Cambridge an attractive place to live and invest, the City seeks approaches to economic development that provide for mutual gains. The policy goals outlined in this paper explicitly aim to chart a course that both maintains a balance between the residential and business sectors of our community and builds upon their interdependence.

During the last three years the Community Development Department's Economic Development Division has restructured the City's economic development program to emphasize the support and enhancement of a healthy business climate and the community-wide quality of life. The real estate development focus of the late 1980s has given way to a more broadly defined and proactive program, designed to address the needs of Cambridge's unique entrepreneurial economy. The City's initiatives address the opportunities and challenges presented by specific features of the local economy. Efforts are now underway in the following areas:

- ***Entrepreneurship***
- ***Employment***
- ***Capital***
- ***Real Estate***
- ***Business Climate***

Across each of these areas the City recognizes its importance in enhancing the functioning of private markets as a facilitator of information flow, a broker seeking to resolve problems, a builder of networks to enhance resources available to Cambridge businesses, and a developer of interventions to improve the economic well-being of the City. This policy paper places these efforts within the context of the City's economic development goals, and proposes a comprehensive and targeted set of polices whose implementation will work to ensure the future economic vitality of Cambridge.

I. CORE VALUES

The economic development strategy chosen by a community reflects not only the functioning of regional, national and international markets, but, at its core, the community's civic values. Workplaces are as much a part of a community as churches, schools and parks. The role that the private sector assumes in a community has much to do with the quality of life experienced there. In developing an economic development policy, a community attempts to identify the highest possibilities for its quality of life by striking a healthy balance between the impacts of business activity and the character of residential life.

Defining the balance between civic and business interests is a task with which neighborhood organizations, business groups and local government wrestle when determining a policy for economic development. The desirable aspects of increasing jobs, availability of goods and services, and tax receipts must be weighed against the consequences of dense development and commercial traffic. A clear understanding of civic values helps to clarify a community's approach to the issues posed by economic development efforts. The section which follows defines the values around which Cambridge has built its economic development program.

A Favorable Pattern of Economic Development

The underlying values upon which this policy paper is based include a preference for policies that build upon the interdependence of civic and business life, that enhance economic participation and choice, and that augment the capacity of the local economy to be self-sustaining. Taken together, policies that incorporate these values are more likely to produce a pattern of economic development favorable to residents and businesses of Cambridge. Each of the three core values is examined in detail below.

1. Interdependence of Civic Life and Business Life

Cambridge's economic development activities are built around the notion that the civic and business communities are interdependent. Sound government policies and business investment both contribute to the health of a local economy; neither one alone is sufficient to ensure long-lasting economic vitality. The interdependence of the business and civic communities is felt in a number of areas:

- ***Jobs.*** A healthy business sector provides jobs, enabling citizens to contribute productively to society while earning wages to support themselves and their families. In turn, a well trained workforce makes a community a desirable business location.
- ***Taxes.*** In Cambridge, the business community pays two-thirds of the property taxes. Without this substantial commercial tax base, residents would face higher property taxes and, most likely, fewer services. The taxes and fees paid by the business community support services such as schools, parks, hospitals, youth centers, and affordable housing, as well as roads and other infrastructure investments.
- ***Quality of Life.*** A high quality of life makes the community a desirable place to reside and to conduct business. Economists, including MIT's Nobel Laureate Robert Solow, have identified quality of life as a key factor in business location and investment decisions.
- ***Local Spending.*** The discretionary spending of more than 100,000 workers employed in Cambridge supports the City's commercial districts in a variety of ways. In addition, the array of restaurants, entertainment and cultural events that make life in Cambridge so rich could not find an adequate market without the patronage of non-resident workers and visitors brought to the

city by the private sector. The more than 5,300 businesses located in the City enhance the local economy through their many purchases of goods and services from one another.

- ***Philanthropy.*** Contributions and volunteers from businesses support Cambridge's non-profit service and cultural organizations, which sponsor activities that strengthen the City's social fabric.

2. Participation and Choice

The majority of adults take part in a local economy by holding a job, owning a business or preparing for a career. However, not all forms of involvement provide the same level of financial security and quality of life. Cambridge seeks to remove the barriers that prevent residents from supporting themselves and their families in a reasonable manner. To accomplish this goal, the City must build an economy characterized by high levels of both participation and choice for residents. The following conditions are found in economies with high levels of participation and choice.

- ***An Adequate Job Supply.*** Most people participate in an economy by holding a job, so a favorable pattern of development presumes an adequate supply of jobs requiring a variety of skill levels and offering wages adequate to support a household.
- ***Training Opportunities.*** In order to exercise choice in the job market, residents must have training opportunities to prepare for available jobs and upgrade existing skills.
- ***Avenues to Business Ownership.*** Business ownership, ranging from self-employment, to "Mom and Pop's", to entrepreneurial ventures seeking high growth, increases self-determination.
- ***Limited Disparities Among Groups.*** A favorable pattern of economic development minimizes disparities among social groups, allowing the maximum number of residents of all socio-economic groups to participate in the economy by holding jobs and starting businesses.

3. A Self-Sustaining Economy

Every municipal economy is subject to the trends of the larger regional, national, and international economies within which it functions. However, economies that generate growth internally are in a much stronger position than those whose expansion is excessively conditioned on spill-over growth from other communities or on recruitment incentives. Some of the hallmarks of a self-sustaining economy include:

- ***Entrepreneurship.*** Entrepreneurship is the backbone of a self-sustaining economy. The continuous generation of new companies enables an economy to retain vitality, even as older generations of companies mature or leave.
- ***Innovation.*** Innovation creates new products and processes, changing the way companies do business, bringing new goods and services to the market, and improving the efficiency with which existing goods and services are produced. Increased productivity, in turn, yields higher wages and an improved standard of living.
- ***Balanced Development.*** An economy excessively dependent on any single business sector will encounter trouble sustaining a vibrant level of activity over the long run. Balanced development policies encourage a wide variety of industries to locate and operate within a community.
- ***Reinvestment.*** The reinvestment of capital by the financial community supports the continuous generation of economic activity in the local area.

- ***Export.*** Taking advantage of trade opportunities in the regional, national and international economies generates growth.
- ***Good Environmental Practices.*** Self-sustaining economies are at the forefront of good environmental practice because businesses understand that safeguarding the health and safety of workers and the community makes a company a desirable employer and enhances the value of investments.

The Role of Municipal Government in Economic Development

In market economies, the private sector is the driving force. However, the private sector relies on government to provide a stable climate in which it can conduct business. Although most governmental intervention in the economic sphere takes place at the federal and state levels, important roles that municipal government can take include:

- ***Maintaining a Positive Business Climate.*** A positive business climate allows companies to invest with confidence in the future vitality of a community. Municipal efforts to update and streamline permitting and licensing systems; investments in schools, roads, and utilities; and community planning that strikes a balance between the needs of business and residents all contribute to a positive business climate.
- ***Facilitating Information Flow.*** In economic theory, the proper functioning of markets relies on the free flow of information to all participants. In practice, the distribution of information can be highly variable. Municipal economic development efforts can facilitate the flow of information in labor markets, capital markets, real estate markets and in the regulatory system.
- ***Overcoming Market Imperfections.*** Markets do not always function perfectly. Municipal government can design programs to address specific imperfections in the capital, employment, and real estate markets. One example is the small business loan funds government can establish to provide capital to firms too small to qualify for bank funding.
- ***Advocacy.*** Local government can serve as an advocate to state and federal legislative and regulatory bodies on behalf of policies and programs that will support the local economy.
- ***Partnership.*** Government and business can share responsibility for maintaining the health of the economy. For example, business leaders who work with the public schools in developing curricula about biotechnology and in introducing computers into the learning environment serve their own interests in training future employees, while serving the community by making sure that public school graduates will have the skills needed to access jobs.

II. ASSESSING CAMBRIDGE'S COMPETITIVE ADVANTAGE

The program of economic development defined in this paper is rooted in an understanding of the unique character of Cambridge's economy; it is tailored to the specific opportunities and challenges presented by the City's physical and human resources, cost structure, capital markets, and social climate. The following inventory of economic conditions includes both those elements that contribute to this community's advantage as a place to do business, as well as those circumstances that pose challenges. In Cambridge, ***opportunities*** presented by the current economy include:

- ***Entrepreneurial Climate.*** Cambridge is a place of tremendous entrepreneurial energy. With over 5,300 businesses in a 6.5 square mile area, one need only look up and down any commercial corridor to see scores of examples of entrepreneurial drive and success. This ability to take ideas and inventions and convert them into products and services, combined with business skills, access to capital, and thriving commercial and industrial districts, enables the Cambridge economy to generate its own growth. Furthermore, the interaction between the academic and entrepreneurial sectors is unusually strong in Cambridge. The extensive ties between the universities and cutting edge firms in technology, architecture, management consulting, and business services provide evidence of the boost intellectual capital offers to the hothouse business environment found in the City.

- ***Discovery and Technology Transfer.*** The academic and medical research institutions in Cambridge and throughout the metropolitan region provide a continuous stream of scientific discoveries and technological innovations, for which patents are obtained and products commercialized. The role of academic and medical research institutions in generating and commercializing new technologies is of paramount importance for both Cambridge and the region.

- ***Availability of Capital.*** The metropolitan region is rich in capital resources including banks, venture capital, private investors, and quasi-public agencies. Cambridge's reputation for cutting-edge excellence enables firms to dominate in the competition for these resources.

- ***Highly Skilled Labor.*** Fifty-four percent of Cambridge residents have at least a college degree, and 30% have a graduate degree. Moreover, a quarter of a million students reside in the metropolitan region, taking advantage of undergraduate and professional schools that train engineers, scientists, MBA's, lawyers and other professionals, who enrich the employment mix. This highly skilled labor pool is attractive to knowledge-based businesses, enabling them both to locate qualified workers with ease and to reduce training and recruiting costs.

- ***Quality of Life.*** Cambridge's high quality of life is one of the City's most important economic assets. The successful layering of commercial and economic uses, pedestrian scale, rich cultural life, diverse and well educated population, wide array of recreational and entertainment choices, low crime, and high-quality municipal services make Cambridge an attractive business location.

While Cambridge has many significant competitive strengths, the City's economy also faces several ***challenges***:

- ***Limited Supply of Real Estate.*** Cambridge is densely developed, with a currently low commercial vacancy rate and limited areas which can sustain significant new development, factors that drive up costs. Further, a harmonious interface between residential and business areas is challenging to achieve in such a dense environment. Economic development planning cannot eliminate this constraint, but it can help to manage the limited supply of real estate available for development to attain the goals identified by both this economic development policy and the City's growth policy.

- ***Skills Mismatch.*** College educated workers thrive in the Cambridge economy, but those with less than a college degree find themselves with fewer options. Technical positions, which form the middle tier of employment in knowledge-based companies, require at least one year of post high school training. Many workers have been unable to make a smooth transition to the knowledge-based economy from manufacturing jobs, where entry-level training occurs on the job. Cambridge is not alone in facing a skills mismatch, but the extent of the specialization in knowledge-based industries is greater in Cambridge than many other communities, making access to technical training a critical need. If high levels of resident participation and choice in the local economy are indicators of a favorable pattern of economic development, the present skills mismatch is a challenge that must be mastered.

- ***Cost Structure.*** Cambridge presents a specialized business environment whose advantage is not based on low costs. Nevertheless, decision makers must be mindful of alternatives available to Cambridge firms. Suburban communities in the region can offer many of Cambridge's advantages at a lower cost. Lower cost locations outside the region, such as North Carolina's Research Triangle, continue to build a critical mass of resources needed to support technology-based firms. Although some costs are beyond the direct control of municipal government, such as the necessity of expensive structured parking in a city with a limited supply of real estate or relatively high energy costs, the demands of competition require that Cambridge assess its cost structure and seek to eliminate and reduce unnecessary transaction costs, such as those associated with delays in obtaining permits and licenses, and control the growth of other costs, such as taxes.

- ***Transportation and Parking.*** While Cambridge is well-served by the Red Line of the MBTA and a wide array of bus routes, workers commuting into Cambridge from the north and west face less efficient public transit options and often choose to drive. Compared to suburban locations, commuters find traffic conditions congested, and parking scarce and expensive. The 1990 parking freeze placed Cambridge at a disadvantage, as compared to the rest of the region, by contributing to the perception that businesses could not meet their transportation needs in the City. Fortunately, a Memorandum of Agreement has been signed by the City and the Commonwealth of Massachusetts setting out a timetable and vehicle trip reduction program that will replace the parking freeze. This will allow the City to apply a reasoned planning approach to managing the parking supply in Cambridge, while achieving air quality improvements equivalent or superior to that of the parking freeze.

III. OVERVIEW OF THE CAMBRIDGE ECONOMY

ENTREPRENEURSHIP

KEY IDEAS

- ***The ties between academic research and entrepreneurship are unusually strong in the Cambridge economy.***
- ***Cutbacks in federal research and development funding will have a disproportionate effect on Cambridge.***
- ***Entrepreneurship generates an internal dynamism which keeps Cambridge's economy vibrant without large scale recruitment efforts.***
- ***The City can enhance the growth of its economy by cultivating small businesses capable of growing into larger businesses and by working with businesses who want to relocate here.***
- ***Entrepreneurship is an important option for women and minorities.***
- ***The Cambridge location can be marketed to overseas firms attracted to academic research facilities and a highly skilled labor force.***

Technology Research and Commercialization

Innovation is a hallmark of the Cambridge economy. From the design of the mechanical eggbeater to the invention of the Internet, Cambridge's economy has long been fueled by innovation. But innovation alone is not enough to produce a vibrant economy. Entrepreneurship based in technology transfer sets Cambridge apart.

Since World War II, when ties between academic research and product commercialization were solidified at MIT, Cambridge has served as an incubator to companies with linkages to the academic community. In fact, MIT and Harvard combined garner nearly 10% of all the patents granted nationally to universities. MIT has led the nation in the number of patents issued for the last five years. Engineering, management consulting, architecture, software, hardware, and life science (biotechnology, medical equipment, and biomedical companies) are all Cambridge industries which benefit from extensive interaction between the academic and commercial worlds.

MIT's role in support of the entrepreneurial sector is particularly noteworthy. MIT has spawned a group of affiliates that support entrepreneurial endeavors including: the MIT Technology Licensing Office; the MIT Enterprise Forum, which assists start-up companies; the Technology Capital Network, a computerized service matching entrepreneurs with private investors; and the newly formed Center for Entrepreneurship at the Sloan School of Management, which prepares students to start businesses.

Federal research and development funding plays a key role in supporting the technology innovation taking place in academic and medical research centers and private industry. Reductions in federal funding for basic sciences have already had an adverse impact on employment in the institutional sector. Although decreases in military spending may reflect positive changes in national priorities, cutbacks in defense related research and development will continue to affect firms whose revenues have been dependent on military contracting. The current congressional debate over spending for research in basic

science and health care may result in cutbacks in funding to Massachusetts as high as 34%, and would fall disproportionately on Cambridge, whose institutions and companies garner a high proportion of these funds.

The Entrepreneurial City

Entrepreneurship generates an internal dynamism within Cambridge's economy which makes its growth self-sustaining. This internal dynamism sets Cambridge apart from many other communities, which attract spill-over from growing firms in their region or which recruit outside their region to attract companies. In fact, Inc. Magazine pronounced East Cambridge the "most entrepreneurial place on earth" in a 1991 article. Such notable corporations as Lotus and Abt Associates are successful entrepreneurial endeavors that progressed through the life cycle of early stage, start-up, growth, and maturity. Biogen is an example of the current generation of entrepreneurial companies that has successfully passed through the start-up stage to the growth stage.

Not all firms set out with the goal of high growth. For many first generation Americans and others with marketable skills, owning a small business is the path to economic self-sufficiency. For women and minorities, owning a business may offer freedom from limitations encountered by working for others, and represents a form of economic participation which has long been difficult to access.

Both entrepreneurial firms, whose goal is growth, and small businesses, whose goal is lifestyle independence, contribute to the employment base. However, entrepreneurial firms are of particular importance because of their capacity to generate larger numbers of jobs and greater amounts of tax revenue. It is extremely difficult to predict which start-up company will succeed in growing large enough to generate substantial employment, but the odds can be improved by supporting the continuous generation of new companies and by giving support to their growth. For this reason, support for entrepreneurship is one of the cornerstones of Cambridge's economic development program.

Minority and Women Owned Business

Business ownership offers high levels of self-determination and often higher earnings than working for someone else. Historically, it is a form of participation that few minorities and women have accessed. At present, Cambridge has roughly 400 companies owned by women and 100 companies owned by minorities out of a base of 5,300 firms. These are numbers that show promise, but which are not proportionately representative of the City's residents, who are 28% minority and 51% female.

The Community Development Department has worked intensively with minority and women owned businesses over the last several years. Examples include:

- The Economic Development Division of the Community Development Department provided one to one business development services to twenty minority owned businesses in 1995, ranging from assistance obtaining financing to assistance with market analysis. One notable success is OfficeMates, a three year old company which provides customized bookkeeping services to small companies. Already the nation's largest bookkeeping firm, OfficeMates is raising money for a national expansion and will maintain its headquarters in Cambridge.
- The Community Development Department published a directory of women-owned firms in 1995 after six months of intensive effort to identify them. The directory is used by the firms to market to each other, and to market the goods and services of this sector to the purchasing departments

of Cambridge's largest employers. Supporting the growth of minority and women-owned companies must continue to be a priority.

Support for Entrepreneurs

The Cambridge Business Development Center (CBDC) was founded by the Community Development Department and spun off as a non-profit with continuing support. The CBDC offers services to entrepreneurs designed to increase the success of their ventures. The Center provides mentored support groups to high tech companies with prospects for high growth and peer groups to neighborhood residents who are starting out in self-employment. The CBDC is currently undertaking a fund raising drive to support a full time director and expand its services. Examples of successful companies that use the CBDC services include: Intelligent Automation Systems, a process development firm, and Tammee's Homemade Pastries, a home catering business.

The Community Development Department also provides business development services to entrepreneurs. Individual companies receive assistance including market analysis, financial planning, preparing loan applications, developing business plans, and finding space. In 1995 the Community Development Department assisted 390 companies.

Space for Entrepreneurs

Another way to support the continuous generation of new economic activity is to maintain a supply of space that can accommodate the needs of start-up companies. Start-up companies typically need small spaces (often less that 2,000 square feet), low rents, and short term leases. Cambridge has two not-for-profit buildings serving the needs of start-up companies: 432 Columbia Street, the renovated Hyde Shoe building which has an incubator in the basement, and Green Works, the environmental industries incubator in East Cambridge. On a for-profit basis, 100 Inman Street serves as a reasonably priced incubator for the life sciences industry (biotechnology, medical equipment, and other biomedical companies). Each of these buildings is an older industrial building that has been converted to incubator space, taking advantage of the lower costs associated with older industrial buildings. Additional for-profit office incubators are located in first class office space in Kendall Square, Harvard Square, and Alewife.

In addition to the buildings developed as incubators, many Cambridge office buildings offer small spaces, one year leases, and reasonably priced rents to young companies. However, in the current very low vacancy real estate market, small space has come to be in short supply. Landlords, who might have leased small amounts of space at moderate rents when vacancy rates were high, now find small users to be uneconomical. For this reason, the City helps small users locate space.

As Cambridge positions itself to support the continuous generation of new companies, it is crucial that a supply of inexpensive space be maintained. Cambridge offers a competitive advantage to entrepreneurs in knowledge-based companies, many of whom prefer to be in close proximity to universities. The City can only exploit this advantage if there is a supply of space with rents that young companies can afford. In addition to office space, Cambridge needs to maintain a supply of space used formerly for industrial uses, as emerging technology companies frequently require space with industrial characteristics, such as high floor-to-ceiling heights. The expansion of these industries in recent years has absorbed most of the older space with rents suitable for start-ups. The creation of an incubator at Assembly Square in Somerville and the availability of cheap industrial space in other suburban communities provide alternatives to Cambridge's tight real estate market and have the potential to draw companies away. It is important that Cambridge assess the potential of older industrial buildings for conversion to incubators.

Attracting New Companies

The entrepreneurial nature of Cambridge's economy forms the basis of the City's practices regarding business recruitment and recruitment incentives. Because Cambridge is fortunate enough to have an economy that generates much of its own growth and which has very low commercial vacancy rates, heavy reliance on recruitment of firms from outside the City is not a primary strategy at this time. Because studies of incentive-based recruitment programs indicate that companies responding to recruitment efforts tend to leave once the incentives have expired, any use of incentives must be carefully evaluated for long term impacts and ability to further the City's goals.

Although recruitment is not a primary strategy, there are companies from outside the region for whom a Cambridge location can represent a competitive advantage and the City works actively to assist their relocation. The City and the Chamber of Commerce have jointly developed marketing materials that can be used to present the City as a business location to interested firms. Examples of firms from outside the region who have recently opened facilities in Cambridge include: Hybridon, a Worcester biotechnology company, which is renovating 620 Memorial Drive so that it can move its entire operation to Cambridge for proximity to the Longwood teaching hospitals; and Allaire Corporation, a formerly Minnesota-based Internet company, moving to be near a concentration of software engineers.

In addition, Cambridge may be an excellent location for overseas companies seeking to open research facilities in the United States. Cambridge's world class research institutions and highly skilled labor force offer advantages available in few other locations. Furthermore, European companies are accustomed to high real estate costs and higher taxes than those in the United States, so they are less likely than some American firms to be deterred from coming to Cambridge. Finally, Europeans place high value on cultural amenities and regard the Boston metropolitan area as an appealing location because it offers a large variety of these.

EMPLOYMENT

KEY IDEAS

- ***Cambridge is a regional employment center of 100,000 jobs, which are mainly concentrated in a diverse group of service industries.***
- ***Institutional employers (universities, government, hospitals) represent 25% of total jobs; restructuring in this sector is likely to constrain job growth in the next decade.***
- ***Cambridge's largest business sector employers continue to downsize in response to global competition and defense cutbacks.***
- ***The service sector offers rich employment prospects to white collar professionals, but offers fewer middle tier jobs for skilled and semi-skilled workers with less than a college degree than the manufacturing sector.***
- ***The City seeks to alleviate this jobs mismatch for those with less than a college degree by: working to diversify the job base, improving the education and training of the workforce, and entering into First Source Hiring Agreements with large scale developments receiving significant assistance from the City.***

The Structure of Employment

The Cambridge economy has a rich employment base of approximately 100,000 jobs, twice as many jobs as residents of working age. Approximately half of the working residents are employed within the City limits and half are employed outside Cambridge, mainly in neighboring communities. Cambridge is second only to Boston as an employment center in eastern Massachusetts, with residents of over 80 other communities from Rhode Island to New Hampshire finding work here.

Employment in Cambridge is concentrated in a diverse array of service industries, which comprise a full 85% of total employment, as shown in the chart below. According to this data, manufacturing is the only industry representing at least 5% of total jobs that is not a service industry. Another striking aspect of Cambridge's employment structure is the large size of the institutional sector (universities, hospitals, and government), which represents a quarter of the total jobs. (Note that the health services and educational services listed in the chart below include both institutional employment and jobs in settings that are not classified as institutional, such as independent health professionals and private elementary and secondary schools.)

Cambridge's unemployment rate is extraordinarily low, 2.2% as of October 1996, representing a full employment economy. However, a single statistic does not capture the full range of employment issues facing Cambridge. These issues are explored in this section of the policy paper.

Employment by Industries Representing Over 5% of Total Jobs

Manufacturing	
Total	***6.8%***
Services	
Wholesale/Retail Trade	*15.2%*
Business Repair Services	*14.9%*
Health Services	*5.5%*
Educational Services	*23.7%*
Other Professional Services	*17.6%*
Government	*7.6%*
Total	***84.5%***

Source: MA Department of Employment and Training, 1994

Institutional Employment

Cambridge's institutions: universities, health care facilities, and governmental agencies provide a stable employment base, representing 25% of total jobs in the economy. The three largest employers: Harvard, MIT, and the City of Cambridge have provided generations of stable employment in the community, offering a range of unskilled, skilled and highly skilled jobs with good benefits.

Cambridge's institutions not only support the economy by direct employment, they are highly interdependent with the entrepreneurial community. Many of Cambridge's technology and consulting firms are founded by faculty and graduates of local universities. Other firms choose Cambridge to be near academic libraries and laboratories. Business consulting firms such as Arthur D. Little, software firms such as Lotus/IBM, and engineering and technology firms such as Camp, Dresser, McKee all rely on a workforce trained at the local institutions. Cambridge's position as the hub of the East Coast's biotechnology industry stems from research done at MIT and proximity to nationally recognized teaching hospitals.

Unlike private corporations, which may be subject to out-migration to cheaper locales, these institutions are deeply connected to a Cambridge address. During the 1980's, Cambridge benefited from employment growth in its health care, government, and academic institutions. This pattern is not expected to continue in the nineties, as each industry in the institutional sector is restructuring.

Universities. Cambridge has four universities: MIT, Harvard, Lesley College and Cambridge College, which together comprise 15% of total employment. Harvard and MIT dominate both institutional employment and total employment as the two largest employers. Both Harvard and MIT have reduced their labor force during the last few years in response to reductions in federal support for higher education and pressures to contain tuition increases. These forces are expected to continue to constrain employment growth in this sector during the next ten years.

Hospitals. Cambridge has two acute care hospitals, Cambridge Hospital and the Mount Auburn Hospital, and two long term care facilities, the Youville Hospital and Neville Manor, representing 4% of total employment. The long term growth potential in the health care industry is fueled by the aging of the population and the discovery of new treatments for disease. However, pressures to contain costs are causing a wave of hospital mergers and downsizings throughout the region. Each of the two acute care hospitals is in the process of merging with other hospitals to maintain viability in the face of market and financial pressures in the industry. Uncertainty about the outcome of national efforts to reform the health care financing system makes long range planning difficult. Cambridge's four health care institutions are all exploring ways to insure their long term survival in this very uncertain climate. While the long term employment potential in the hospital sector is strong, short term employment trends are hard to predict.

Government. Government employment represents 7% of total employment. In addition to municipal government, federal, state, and county governments all have offices in Cambridge, including the federal Volpe Transportation Center, the United States Post Office, the state Department of Social Services, and the Middlesex County Jail and Court. Substantial cutbacks in state and federal funding over the last several years are expected to constrain growth for the foreseeable future. Although careful management has enabled the City of Cambridge to maintain a strong fiscal position with modest reductions in the size of the labor force, ongoing reductions in federal funding are expected to burden municipal finances in the next decade and will likely preclude employment growth.

Business Employment

Business employment in Cambridge is concentrated in small to mid-sized firms. Thirteen employers representing 12% of the employment base have 500 or more employees, a standard frequently used to distinguish small from mid-sized firms. None of Cambridge's largest businesses has more than 2,000 employees located in Cambridge. Although Cambridge's largest businesses are modest in size, they are pre-eminent in influence, with international reputations for leadership in their respective fields. Such well known firms include Lotus, Polaroid, Bolt, Beranek, and Newman, and Arthur D. Little, all of whom are products of Cambridge's entrepreneurial climate, starting with a few employees and growing to their present size. Four of the firms represented among the Top 25 Employers (listed on the next page) are successful local firms that were purchased by much larger firms: Badger Engineering by Raytheon, Bioran by Corning, Lotus Development by IBM, and Crimson Travel/Thomas Cook by American Express. While the Top 25 Employers list includes a preponderance of mature firms, it also includes several firms currently in their growth stage, such as Biogen and Cambridge Technology Partners. This growth of small firms into larger ones is an indicator of the strong self-sustaining capacity of the Cambridge economy and the reason Cambridge's economic development programs focus on supporting small firms that can be the large firms of the future.

Top Twenty-Five Cambridge Employers: May 1996

Rank	Name of Employer	Nature of Business	Employees
1	MIT	Education	7,384
2	Harvard University	Education	7,337
3	City of Cambridge	Government	4,090
4	Mount Auburn Hospital	Medical Services	1,900
5	Lotus Development Corp./IBM	Computer Software	1,685
6	Polaroid	Photo & Optic Equipment	1,500
7	Federal Government	Government	1,466
8	Bolt, Beranek & Newman	Research & Development	1,200
9	Draper Labs	Research & Development	1,161
10	Arthur D. Little	Management Consulting	1,152
11	Genzyme	Biotechnology/R&D	829
12	Star Market	Retail	792
13	Commonwealth of Massachusetts	Government	610
14	Youville Hospital	Medical	604
15	Raytheon Engineering	Construction	600
16	Camp, Dresser, McKee	Engineering	598
17	Corning Clinical Laboratories	Clinical Testing Services	525
18	ABT Associates	Management Consulting	525
19	Biogen	Biotechnology/R&D	511
20	Commonwealth Energy Systems	Utility	454
21	Middlesex County	Government	450
22	Genetics Institute	Biotechnology/R&D	450
23	American Express Travel Services	Travel Services	436
24	Lesley College	Education	401
25	Monitor Company	Management Consulting	375
		Total	**37,035**

Source: Cambridge Community Development; totals are full time equivalents, where available.

Professional Services. Both the previous chart of Top 25 Employers and the chart below demonstrate the significant role that services play in the business sector. Business services are concentrated in computer related areas including software and internet companies. Professional services such as health care, management consulting, engineering, and research and testing services all contribute to business sector employment.

Much of the business and professional services employment is in higher income jobs requiring white collar skills, and is well suited to the skills of the 54% of the population who have college degrees. This sector is also important because it is where technology transfer takes place in engineering, management consulting and research and development firms. Employment in Cambridge's emerging technology firms, such as life sciences and specialty materials, is frequently recorded in the research and testing category.

Cambridge's economic development strategy places emphasis on emerging technology industries because as they progress through the life cycle from research, to development, to manufacturing a product for the market, their employment base diversifies, offering technical positions for non-college graduates with post high school training. Biotechnology is an example of this growth pattern. According to the Massachusetts Biotechnology Research Institute, some 1,600 jobs were available in the Spring of 1996 in biotechnology firms in the metropolitan region, 250 of them in manufacturing. Entry level manufacturing jobs in biotechnology have starting salaries close to $30,000, and require a year of post high school training.

Also included in the Selected Professional Services category are jobs in personnel supply services. Although these jobs continue to be dominated by temporary secretarial jobs, contract employment has expanded to include computer professionals, engineers and managerial personnel. While temporary work offers flexibility in choosing assignments, it may offer less security and no or fewer benefits than a permanent job.

Cambridge Employment in Selected Professional Services Industries

Services	*1995*
Business Services	***14,407***
Computer & data processing	*10,322*
Personnel supply services	*1,816*
Health Services (Private)	***5,212***
Hospitals	*2,461*
Medical/Offices	*721*
Engineering & Management Services	***15,068***
Engineering & architectural services	*3,108*
Research & testing services	*6,966*
Management & public relations	*4,502*

Source: MA Department of Employment and Training; includes full and part-time workers

Wholesale and Retail Trade. Wholesale and retail trade represent 15% of the total jobs in the Cambridge economy and have commanded a relatively stable share of total employment in the last 20 years (see chart, page 16). While most retail jobs tend to command low wages and offer few prospects for advancement, the goods provided by this sector form the basis of Cambridge's thriving commercial districts. Although wages at a typical retail job will not support a family by themselves, retail employment offers many part-time jobs that provide an entry into the world of work for high school and college students and is used by adults to supplement other employment.

Business Repair Services. The business repair category represents 15% of employment and includes a heavy concentration of jobs for security guards and janitors, two categories offering limited wages and advancement opportunities. The business repair category and the retail and wholesale trade category together total nearly 25% of the jobs in Cambridge, confirming the concern raised by many economists that the service economy has a bifurcated structure offering limited opportunity to those without higher education and greater opportunity for the college educated.

Manufacturing. Cambridge established itself as a center for manufacturing during the industrial revolution and maintained an employment base dominated by blue collar jobs (manufacturing, construction, skilled trades) through the 1950s. This base began to erode during the post-war period, when factories moved South for cheaper labor, and have continued to move off shore to developing countries, where wages, living standards, and the cost of land are dramatically less than in the United States.

While the service economy has flourished during the last twenty years, the ongoing erosion of the manufacturing base has been dramatic. The chart on the following page shows that in 1972, one in four jobs were in construction and manufacturing; today less than one in ten jobs is in this category. The parts of the service sector which primarily represent higher skilled and white collar employment grew from 40% of total jobs to over 80% of jobs over the twenty year period.

A total of 11,234 service jobs were added to the Cambridge economy during the eighties, whereas over 8,700 manufacturing jobs were lost. From an employment perspective, the replacement of manufacturing jobs by service jobs is not an even trade. The manufacturing sector is rich in mid-level jobs that can be assumed by workers with less than a college degree and offers on-the-job training and advancement opportunities that tend to be richer than those offered by the service sector.

Cambridge will never again be a center for traditional manufacturing, which depends on cheap factor costs, such as land and labor, to maintain a competitive edge. However, the City does have the potential to rebuild some of its manufacturing base in high technology industries, where the skills of the labor force are of paramount importance. At least one year of post high school education is generally needed to qualify for entry level positions, making workforce preparation a critical component of attaining economic well being in the service economy. In addition, it may be possible to stabilize remaining traditional manufacturing jobs by better understanding their needs and the ways deployment of new technologies can increase efficiency in traditional manufacturers. For this reason the Community Development Department has surveyed manufacturing companies and hopes to gain an understanding of ways the City can retain this important employment sector.

Private Employment by Industry in Cambridge

Industry	*1972*		*1993*	
Manufacturing & Construction	*22,779*	*26.4%*	*7,285*	*7.9%*
Retail & Wholesale Trade	*16,858*	*19.5%*	*14,869*	*16.1%*
Services, Finance, Insurance & Real Estate	*36,557*	*42.4%*	*67,603*	*73.4%*
Transportation, Utilities & Miscellaneous	*10,071*	*11.7%*	*2,355*	*2.6%*
Total Private Employment	***86,265***	***100.0%***	***92,112***	***100.0%***

Source: MA Department of Employment and Training

Employment Outlook

DOWNSIZING BY LARGE EMPLOYERS

The City's largest businesses are subject to trends in the economy at large. The nineties continue to be a time of restructuring and downsizing as larger employers adjust to global competition and reductions in government contracting. Cambridge's total employment peaked in 1990 and declined with the regional recession. Job loss reached its height in 1993, with a net loss of 3,527 jobs, some 3.4% of the total job base. Much of the job loss was in precisely those firms that had added employment in the eighties: Polaroid, Lotus, Abt Associates, Badger Engineering and Bolt, Beranek and Newman, to name a few. These firms are trying to reposition themselves and some have begun adding new jobs; it remains to be seen whether employment in these mature firms will reach the peaks attained in the eighties.

Cambridge's job total recovered in 1995, with a year end figure of 103,988 jobs. When this total is broken out by industry and compared with 1993, the greatest increase is in services (+2153) followed by wholesale and retail trade (+974), finance, insurance and real estate (+533) and construction (+502). Manufacturing employment increased by a modest 135 jobs and government declined by 91 jobs.

Despite the downsizings among Cambridge's institutional and larger private employers, Cambridge's unemployment rate has consistently averaged 2% lower than both the statewide and national rates during the nineties. The current unemployment rate of 2.2% (October 1996) is below the 4% rate regarded by some economists as the "natural" rate of unemployment, a concept that refers to unemploy-

ment that is not caused by downturns in business cycles or by structural problems but by the normal transitions that people make when they move from school or raising a family to the job market, or leave one job or career to seek another. It reflects a full employment economy, but does not capture the problem of underemployment. It should also be noted that the 2.2% rate is a citywide average, disguising small populations experiencing higher rates.

UNDEREMPLOYMENT

The Skills Mismatch. Cambridge has a highly educated population: 30.8% of the population has a graduate or professional degree and 23.3% has a bachelors degree. In fact, the chart below shows that Cambridge residents are more educated than residents of the region, state and the nation. High educational attainment is well suited to the City's service economy; the City's extremely low unemployment rate attests to the health of this economy.

However, 46% of the population does not have at least a bachelor's degree and 15.6% of these do not have a high school diploma. In a service economy, these educational characteristics put workers at risk for underemployment. Underemployment takes a variety of forms, involving a mismatch between the job someone holds and her/his employment needs. For example, the wages may be too low to support a family, or a worker is unable to find a job suited to his/her skill level and must take something at a lower level. Underemployment prevents workers from achieving economic enfranchisement.

Underemployment cannot be estimated precisely, because Cambridge residents work not only within the City limits, but throughout the region. Nonetheless, the chart of educational attainment below provides evidence of a possible gap. Cambridge residents out-perform other locations on all levels of educational attainment, except they are less than half as likely as others to have an associates degree and are also less likely to have "some college", making them at risk for underemployment in a service economy, where mid-level technical positions generally require one to two years of post high school education. Another indication of the possible scope of the problem is the fact that in 1993, only 11% of Cambridge residents worked in skilled and semi-skilled blue collar jobs, meaning the remaining 35% of those with less than a college degree worked in the service sector.

Educational Attainment of Population 25 Years and Over

Location	*No HS Diploma*	*HS Diploma*	*Some College*	*Associates Degree*	*Bachelors Degree*	*Grad/Prof Degree*
Cambridge	*15.6%*	*15.8%*	*10.8%*	*3.6%*	*23.3%*	*30.8%*
Boston CSMA	*17.1%*	*29.0%*	*16.0%*	*7.3%*	*18.6%*	*12.1%*
Massachusetts	*20.0%*	*29.7%*	*15.8%*	*7.2%*	*16.6%*	*10.6%*
United States	*24.8%*	*30.0%*	*18.7%*	*6.2%*	*13.1%*	*7.2%*

Source: U.S. Department of the Census, 1990

Further evidence for the existence of a gap was provided in a 1991 survey by the Cambridge Community Development Department, which reported that residents filled just over 5% of all jobs for technicians, a job category generally requiring at least one year of post high school vocational training. Those least likely to have technical training (displaced manufacturing workers, new immigrants, and high school drop-outs) all face an economic future where the prospects for middle income employment are slim. However, jobs for technicians are a growing part of the economy. Training programs targeted to these jobs, career exposures for high school students, and guidance counseling geared to helping

students make choices that will enable them to obtain the necessary skills, can reduce the size of the gap and improve the economic prospects for people with less than a college degree.

The Size Gap. Another structural factor which fuels underemployment is the size of Cambridge establishments, displayed in the chart which follows. The greatest numbers of firms are concentrated in the smallest employment categories, yet larger employers have a more diversified range of jobs and greater ability to offer generous salaries and benefits. If the Cambridge economy was able to increase the number of firms within the 100+ employee range, diversification could be enhanced. Yet Cambridge's pattern of growth, as discussed later in the Real Estate section of this policy paper, is that firms tend to establish suburban satellites as they get larger, so the diversification may not take place in Cambridge.

Workplaces By Number of Employees

Size	*Number*	*Percent*
1-19	*3,458*	*84.7%*
20-99	*344*	*8.4%*
100-499	*74*	*1.8%*
500 Plus	*19*	*0.5%*
Unspecified	*186*	*4.6%*
Total	***4,081***	***100.0%***

Source: 1992 Employment Database, 1994 Dun & Bradstreet, 1995 Cambridge Community Dev. Dept.

Creating Opportunity

Diversification of the Job Base. Throughout the nation, communities are trying to come to grips with the growing duality in the structure of the job base. Several processes at work in Cambridge's economy make the issue of diversification of the job base especially important at this time: restructuring in the institutional sector, downsizing among Cambridge's larger business employers, and the tendency of growing firms to disperse all or part of their operations to suburban locations. The City has worked successfully with the biotechnology industry to enable firms to remain in Cambridge as they grow. The Genzyme Tissue Repair facility in University Park is an example of a biotechnology company doing manufacturing in Cambridge. Likewise, Lifeline Systems in the Ford Assembly building is an example of high tech manufacturing that can succeed in an urban location. The City continues to seek ways to retain growing companies in technology-based industries that can contribute to the diversification of the job base.

Education and Training. The education and training of the workforce at every level are of paramount importance to the Cambridge economy.

- **Higher Education.** Cambridge's competitive advantage in research-based technologies and highly skilled professional services is based on the graduates of academic and medical institutions in the area. The continued strength of these institutions is vital to the future of the economy.
- **Public Schools.** Cambridge's ability to insure that the knowledge-based economy works for a diverse range of residents rests on maintaining high quality public schools which prepare students for further technical and academic education. MIT economist Lester Thurow noted at a November 1996 Chamber of Commerce breakfast that the Cambridge Public Schools must not only be better than those of other communities in the United States, they must be better than the best public school systems in France, Germany, Japan, and Eastern Europe if graduates are to compete for the techni-

cal jobs of the future. In addition to academic preparation, the entry requirements for technical positions demand that the future career paths of non-college bound students be explored and anticipated before they leave high school. Exposure to work settings through school-to-work transition programs and apprenticeships provide students with a realistic picture of the demands of the workplace and the necessity for continuing education, as well as an opportunity to explore their interests.

- **Employment and Training System.** The skills training system functions as a second chance system for people who have not found a foothold in the world of work. Unfortunately, the system has been seen more as a way to get people off of welfare rather than as a system of workforce preparation. Entry requirements often screen out the working poor. Pressures to contain program costs may conflict with providing the quality of training needed to enable clients to achieve true financial independence. Efforts are underway at both the state and federal level to reform the system.

  Cambridge has created an Office of Workforce Development (OWD) to coordinate efforts in this arena. Training programs that provide first rate technical training in industries with growth potential offer the greatest potential to bridge the skills gap. Because some 15% of the Cambridge population has less than a high school diploma and because a substantial number of residents are immigrants, the efforts of the Community Learning Center and other organizations offering Adult Basic Education programs and English as a Second Language are extremely important and must be able to articulate into technical training.

First Source Hiring Agreements. Large new development projects requiring significant assistance from the City, such as Hybridon's rehabilitation of 620 Memorial Drive present an opportunity to see that Cambridge residents benefit directly from the jobs being created. Hybridon has signed a First Source Hiring Agreement and has agreed to make apprenticeship and summer employment opportunities available to Cambridge residents. First source hiring agreements benefit unemployed workers through a job matching service that provides them with access to new jobs being created. Through a first source hiring agreement, Cambridge employers would have access to:

- a pool of entry-level workers, many of whom are women and minorities,
- pre-screened candidates for full time and part-time employment,
- community recognition and good will,
- access to the recruitment networks of community agencies.

This agreement would assure that the OWD will be the employer's first source for recruitment of entry level workers. Employers will give notice of job openings to OWD during their internal posting period, typically a period of 5-7 days. The OWD will screen candidates for these positions through its own recruitment efforts and from a consortium of community-based employment and training agencies. The OWD will select from the pre-screened candidates those to be recommended to the employer. Employers will interview the candidates and make the final decision on whether to hire a candidate, but will be expected to make a good faith effort to hire Cambridge residents.

CAPITAL

KEY IDEAS

- ***Cambridge is fortunate to be in a capital rich region, where venture capital firms, private investors, banks, and quasi-public agencies all play important roles in financing economic growth.***
- ***Despite the rich array of resources, the Cambridge economy experiences capital gaps in three areas: information flow, small business loans, and equity investments.***
- ***The City's interventions to close these gaps include: acting as a broker of information to match companies with sources of funds, developing a small business lending consortium with local banks to make loans in amounts less than $150,000, and working with investors to start a privately managed development capital fund, which will make non-traditional debt/equity investments.***

Regional and National Trends

Capital is the fuel that enables companies to grow. Cambridge is fortunate to be in a capital rich region, where venture capital firms, quasi-public agencies, private investors and banks all play important roles in financing business growth.

Trends in the regional and national capital markets have a major impact on the local economy. During the recent regional recession, bank lending for business expansion was very limited and bank lending for construction of speculative office space (space built without being pre-leased) ceased. While the banking industry has largely recovered from the recession and has resumed business lending, the industry is more highly regulated than it was before the recession, and is thus, more risk averse. Loans are still unavailable for the construction of speculative space.

Cambridge currently has headquarters of four banks and branch offices of six regional banks. The industry continues to restructure through mergers and acquisitions. It is too early to know what the long range impact of these forces will be. One concern is that banks from outside the region which purchase local banks will drain business lending capital from the region. It is fortunate that BankBoston, which is a major business lender, has purchased BayBank, rather than being purchased itself by a bank from outside the region.

Research conducted by the Federal Reserve Bank indicates that larger banks have been shifting their lending away from small commercial and industrial loans (business loans not secured by real estate) in amounts of $1 million or less and orienting toward larger ones. Smaller banks, which were not previously involved in commercial and industrial lending, have begun lending to this market, simultaneously reducing the volume of real estate backed commercial loans. The shift in commercial and industrial lending from large banks to small ones raises the concern that small banks have much smaller asset bases from which to lend, so there could be a decline in capital available for small loans.

Cambridge companies have been successful in competing for venture capital funds, especially in technology related areas. Venture capital is an important financial resource, because it involves taking an

ownership interest in a company in exchange for obtaining a return, frequently five or more years from the date of the investment. Equity investments exact a higher rate of return than bank loans, but provide patient capital to firms that lack the cash flow needed to pay back a loan. According to the Price Waterhouse Venture Capital survey, 20% of the venture capital invested statewide was invested in Cambridge companies in the last two quarters of 1994 and the first two quarters of 1995. Cambridge is particularly dominant in biotechnology and software investments.

Another example of the way national capital markets impact Cambridge is the dramatic drop off of Wall Street funding for biotechnology in 1994. Biotechnology presents a high risk profile for investors as it is a new industry which requires massive infusions of capital for as many as 12 years before it is known whether a product can be brought to market. Yet the industry's promise is such that firms had been able to raise money on Wall Street in their start-up phase, before performing clinical trials to demonstrate the efficacy and safety of the products they hoped to commercialize. The failure of a number of products to win approval to enter the market in 1994 scared the market into a dramatic shutdown. Many companies changed strategy from striving to be fully integrated companies performing all functions from discovery to manufacturing, to forming strategic alliances with large pharmaceutical firms. These alliances pair the ability of small biotechnology companies to do cutting-edge research with the resources of large pharmaceutical companies who have funds, as well as production, distribution, and marketing capacities. In 1995, Wall Street resumed investing in biotechnology in response to a number of successful clinical trials and was rewarded by high returns on biotechnology stocks, demonstrating both the potential and the roller coaster nature of this industry. The resumption of funding enabled a number of Cambridge biotechnology companies, such as Millenium Pharmaceuticals, to expand. By the summer of 1996, the Cambridge real estate market had a zero percent vacancy rate for biotechnology space available for rent.

Capital Gaps

Information Flow

Despite the rich capital resources in the metro region, obtaining capital continues to be a challenge for Cambridge businesses. These challenges stem in part from issues related to the flow of information in the capital marketplace. There is no central source of information which tells businesses the investing preferences of different sources of capital. Many times a company will be turned down for financing and the owners assume that it cannot be financed, when the issue is that the lender's preference does not match the company's need. Further, decisions to lend or invest are based in part on an assessment of the likelihood of success of the individuals using the capital. This comfort level depends not only on quantifiable measures provided in the business plan, but on the quality of interaction between parties, as well as references from those in the business community. First time entrepreneurs may not have the history of success or personal connections needed to establish a comfort level for lending and/or investing. This credibility gap may be even wider for minorities and women, with whom lenders/investors may not be used to working. The CDD has developed good working relationships with lending institutions, venture capital funds and quasi-public agencies and serves as a referral and advocacy source for Cambridge firms. In addition, staff has been hired to assist firms developing capitalization strategies and doing business planning.

Specialized Borrowing Needs

Other gaps in the capital marketplace relate to the non-traditional nature of Cambridge firms. For example, many of Cambridge's service firms report difficulty in obtaining bank loans. The assets of

software and professional services firms are the human capital of their employees. These firms typically do not have properties, plants, or equipment that are traditionally used as collateral to secure a loan. Service firms would like to be able to obtain financing based on contracts in hand, but even firms with many years in business report they have not been able to do this.

Emerging technology firms often require years of research and development, creating large losses before bringing a product to market. These firms are generally financed through investments made by venture capital firms and private investors. However, they have needs for financing the fit-out of space, which is most inexpensively financed through debt. Bank loans have been hard to secure, which is why Cambridge created the HUD 108 Gap Financing Program. This program is designed to assist biotechnology firms finance the fit-out of space by reducing the risk to private lenders. Cambridge has lent $1.5 million as a participant in a $14 million loan in partnership with the Carpenters Local 40 Pension Fund and an investment subsidiary of Faisal Finance. This loan will enable Hybridon, a Worcester biotechnology company, to move to Cambridge.

Small Business Lending

Firms with small borrowing needs have also had difficulty obtaining bank loans. Because the processing costs on small loans are the same as those on loans for millions of dollars, it is more profitable for banks to make large loans. Banks have difficulty making a profit on small loans and often prefer to make loans from $150,000 up. A variety of small business loan products have been developed to fill this need.

- The Cambridge Savings Bank has established a special loan fund that makes loans of up to $20,000 to promising businesses on referral from the Community Development Department or from the Cambridge Business Development Center. Loans have been made to Meh International, a company that designs clothing made with fabric imported from Africa, All Nationalities Hair Salon, and A Touch of Class, an Inman Square antique dealer burned out in a fire.
- A 1995 survey by the CDD of women-owned businesses found that few of Cambridge's women owned businesses had ever had loans and that there was a perception that women-owned businesses lack the personal contacts to successfully compete for bank loans. The Small Business Administration (SBA) has developed a loan product that pre-qualifies women-owned businesses for SBA guarantees of bank loans. The City is working actively to assist women who might qualify for these loans. The Indri 8 Café has recently obtained a loan guarantee through this program.
- A number of loan funds are available to minority and majority owned firms through public organizations such as the Massachusetts Development Authority, the Community Development Finance Corporation, and the Small Business Administration. Despite the array of resources, pressures to maintain credibility by having a low default rate and pressures to maximize returns can result in investment criteria very similar to those of private sources of capital. The City's experience has been that active advocacy is needed to support loan applications by Cambridge companies. Examples of companies receiving loans from the above entities include Rhythm and Spice and OfficeMates. Nonetheless, there continues to be a capital gap for small loans under $150,000.
- The City is designing a loan fund with a consortium of Cambridge banks, who have made $3 million available to fill the gap for small business loans under $150,000. It is anticipated that the fund will begin lending in 1997.

Equity

Gaps also exist in equity financing. As the venture capital industry has matured, investments have shifted from early stage investments to later stage investments, which are regarded as less risky, making it harder for early stage and start-up firms to obtain funds. Cambridge's pension fund has made $5 million available through two private venture capital firms for investment to increase the pool of funds available. Recent investments in Cambridge firms include Corex Technology and Riverton Software Corporation. Gaps in venture investment involve not only life cycle issues, but rate of return criteria, as well. Venture capitalist investment criteria favor firms that will grow very quickly and produce very high rates of return. Firms that can make respectable, but not stellar returns are unable to obtain venture financing.

To close the gap in financing for firms that will not be candidates for venture capital investment and which do not have sufficient collateral and/or cash flow to be financed by banks, the City is working with private venture capitalists and investment bankers to design a privately run fund to be located in Cambridge. Following a positive feasibility analysis, the prospective fund is now trying to raise funds. If money can be raised, the fund should be operational in the last half of 1997.

REAL ESTATE

KEY IDEAS

- ***Cambridge's commercial vacancy rate is at a record low, creating shortages of space across all size and rent categories.***
- ***Building speculative space could relieve these shortages, but rent levels are not yet high enough to support the cost of building new speculative space.***
- ***Despite the current shortages, the long term projections for real estate development are considerably more modest than the 1980's, when the baby boom generation was absorbed into the workforce.***
- ***Scarce and expensive real estate and parking gives suburban locations an advantage for cost sensitive firms who may be forced to locate all or a portion of their operations in the suburbs.***
- ***The City is working to replace the parking freeze with transportation demand management strategies.***
- ***Thriving commercial districts provide goods and services, culture and entertainment, employment, and housing to Cambridge residents and visitors; support for these districts is an important part of the City's economic development program.***
- ***The City's development districts are employment centers that keep Cambridge's economy on the cutting edge and which represent the City's future development potential.***

Absorption Trends

Historically, Cambridge commercial real estate development has been highly cyclical. While Cambridge brought only 2 million square feet of new real estate development on line from 1964-1984, over 8 million square feet was added to the City's commercial landscape from 1985-1989, allowing Cambridge to significantly expand its tax base.

New construction dropped off sharply in Cambridge and the metropolitan region with the on-set of a recession in 1989. Downsizings of larger corporations and reduced absorption of first class commercial space resulted in an excess supply throughout the region. The collapse of the real estate market and resulting bank failures eliminated bank financing of speculative space (space developed without being pre-leased). In Cambridge, the commercial vacancy rate peaked in 1992 at 16%.

This halt in speculative real estate development had some short term benefits for Cambridge. Commercial rents declined to levels close to suburban levels, making it possible for cost sensitive firms to expand in Cambridge office buildings. Older industrial buildings were retrofitted for use by technology-related firms whose requirements include high floor-to-ceiling heights. Indeed, Cambridge's supply of industrial space is a critical resource which enables emerging technology firms to locate here. Examples of the successful reuse of older industrial buildings by technology related manufacturers include the 200,000 square foot renovation of the former Ford Assembly plant on Memorial Drive, which houses Lifeline

Systems, a medical equipment company, the renovation of a Windsor Street building for Analog Devices, and the reuse of the Wilson Structural Steel building in Alewife by Merlin Metalworks, a maker of titanium bicycle frames. Expansion of the biotechnology industry during the 1991-1993 peak absorbed an average of 300,000 square feet per year of older industrial space, turning around decades of vacancies in Cambridgeport, leaving few older buildings empty in East Cambridge, and spilling over to Alewife.

Worldwide capital markets in biotechnology entered a downturn in 1994 and many companies postponed expansion plans. Amgen, a California biotechnology company, purchased property at One Kendall Square and delayed the final decision on building until markets stabilized. Expansion resumed in 1995, reflected by the 90,000 square foot renovation of the former American Science and Engineering Building for Vertex, the start of a 91,000 square foot renovation at 620 Memorial Drive for Hybridon's expansion and move to Cambridge, and the leasing in University Park of 53,000 square feet for an expansion by Oravax and 76,000 square feet for the new Genzyme Tissue Repair manufacturing facility.

The major new construction projects completed in Cambridge since 1991, have been build-to-suit developments: Lotus Development's headquarters (now IBM), Biogen's phase one expansion, MIT's microbiology building, Biopure's headquarters, and the Whitehead Institute's expansion. Bank financing for speculative space continues to be unavailable.

The absorption of older industrial space by emerging technology companies and the absorption of office space by small software and other business service companies has brought the commercial vacancy rate down to its lowest level since 1981. Expansions of such consulting companies as CSC/Index, software firms including Gensym, and internet firms such as Open Market reduced the commercial vacancy rate for the end of the third quarter of 1996 to 3.98%, a record low.

Although Cambridge's recovery from recession is good news, the dramatic decrease in vacancies over the last three years brings challenges of its own. A commercial vacancy rate of around 10% is considered market equilibrium; the Cambridge market is well below equilibrium. At this point, some sectors of the Cambridge market offer prospective owners and tenants very little choice: virtually no build-out restaurant space is available, the small spaces that house start-ups are in short supply, no class A industrial space is available, no fit-out biotechnology space is on the market, and larger office space over 70,000 square feet is in scarce supply. Cambridge's below equilibrium vacancy rate compares with third quarter 1996 rates of 9.10% in Boston and 10.43% in the suburbs.

Shortages of space have forced some expanding companies to move to suburban locations. Delphi Internet, a promising Cambridge firm, sought 150,000 square feet of existing first class office space at a time when there was none available in Cambridge, even for prices in the $20-25 per square foot cost range. Although they preferred a Cambridge location, the offer of 150,000 square feet of space in the Wang Tower in Lowell for $7.50 per square feet with free parking left them no choice but to move.

Fortunately, the strength of the Cambridge real estate market is such that when growing companies are forced to locate branch facilities in other communities or relocate altogether, they are replaced by the next generation of growing firms. Figures provided by Whittier Partners' "Bottom Line Report" for Year End 1995 indicate that 645,000 square feet of out-migrating Cambridge companies absorbed 885,000 square feet of space throughout the Boston area. Despite this out-migration, Cambridge experienced a net absorption of 415,000 square feet, more than replacing what was lost through out-migration.

A tight supply of space has also produced upward pressures on rent, with Class A asking rents averaging in the mid-twenties per square foot. New speculative space would improve the supply, but rents would

have to be closer to the $30 per square foot range to support the cost of new development. This level of rent will not be reached until the suburban market tightens further. During this interim period, companies that are financible will continue to have the option of build-to-suit development in Cambridge, but those that are not financible may be forced to choose suburban locations for their expansion until market forces support the development of new speculative space.

Even after the excess supply of suburban office space is absorbed, the long term prospect for real estate development will continue to be more modest than the boom years. According to former MIT economist David Birch, the building boom of the eighties was not just the result of a strong economy, it was part of a national demographic trend. The real estate industry responded to the life cycle of the baby boom age group, building homes and schools during the sixties and seventies and offices in the eighties. David Birch estimates that 46% of the total commercial space constructed in the history of the United States was built during the 1980's.

Patterns Of Geographic Dispersion

Cambridge's small geographic size and dense pattern of development mean that real estate opportunities tend to be moderately sized and limited in the amount of available parking. This real estate market is best suited to those users for whom a Cambridge address adds value. Cutting-edge technology and professional service companies value proximity to academic resources and highly skilled labor enough to pay a premium to be here. Such firms also recognize that Cambridge's reputation for excellence adds value in raising capital because investors equate Cambridge with success.

However, Cambridge's cost structure and limited amount of available land mean that growing firms, especially in cost sensitive industries, may choose to locate all or a portion of their activity in Cambridge, and locate other activities in communities with more available land and lower costs. Lotus Development made such a decision in a time of financial difficulty, shortly before merging with IBM. Under pressure to control costs, Lotus moved their back office operations (such functions as payroll, billing, and accounting) to cheaper suburban space and built a new headquarters in Cambridge to house executive offices and research and development activities. This pattern of geographic dispersion is a common one not just in Cambridge but in high cost areas generally. A similar pattern is found among Boston banks, mutual funds and insurance companies, who frequently choose the downtown for their headquarters but locate their back office operations in cheaper space throughout the region.

Another pattern of geographic dispersion relates to workplace culture in growing firms. Start-up firms have few resources, small staffs and little need for highly formal management structures. Frequently technology start-ups hire very young staffs who are motivated to work long hours at modest wages in exchange for learning opportunities and who prefer to live and work in an urban environment. As firms become successful and grow larger, they tend to hire experienced managers, who may prefer to live in the suburbs and who prefer to work more standard business hours. For them, the commute at rush hour is unwelcome and Cambridge's scarce parking is a major inconvenience. CEOs who may themselves prefer a Cambridge location find themselves under pressure from staff to move or at least locate branch operations in suburban locations.

A further cause of geographic dispersion stems from the need to locate operations near critical suppliers, additional markets and distribution systems. In this era of global competition, where capital and technology are highly mobile, decisions to locate plants in other parts of the country or world often represent sound business judgment.

Geographic Dispersion and Diversification of the Job Base

One concern that these patterns of geographic dispersal raise is the diversification of the job base. Companies growing from a research and development stage into product production are at the point where their labor force is likely to diversify. For industries such as biotechnology, which typically requires an investment of up to $300 per square foot to build a manufacturing facility, moderate differentials in land cost may be less important than access to skilled labor or specialized supplies in moderately sized developments. Likewise, medical manufacturers need highly skilled workers and may have high enough value added to off-set some differential in real estate cost if an existing building can be converted to this use. However, manufacturing is a low density activity, typically requiring a single story layout. Property owners can make greater profits on high density uses where the land costs are spread over a multi-story build out. They are reluctant to develop their land for manufacturing, preferring instead to wait until a high density office use becomes feasible.

One example occurred when an older industrial building occupied by American Engineered Components (AEC), a machine shop employing 150 people, was sold. AEC wanted to remain in Cambridge to be near its highly skilled workforce, but was unable to find an existing industrial building of 120,000 square feet to rent. The City analyzed the possibility of providing a tax abatement and other incentives to offset the high cost of building a facility, but property owners approached about the potential development were unwilling to consider selling or ground leasing for such a low density use. AEC will relocate within commuting distance of its workforce so no jobs will be lost, however, future job growth is less likely to accrue to Cambridge residents.

Parking

Parking evokes a unanimity of concern from the business community which is unmatched by any other single issue. Cambridge's dense pattern of development, combined with scarce and expensive land, places it at a disadvantage when compared to suburban locations, where parking is free and plentiful. Many companies pay the cost of parking and T passes as a way to attract employees. The municipal garages in East Cambridge and Central Square have both reached their maximum monthly rentals and have waiting lists. The cost of garage parking in East Cambridge can run as high as $160 per space per month.

The parking freeze, which is in the process of being replaced with a transportation demand management program, placed Cambridge at a further disadvantage as the only community in the state which was subject to a freeze. Cambridge has responded to its parking challenges with a variety of initiatives designed to manage demand for parking, including:

- Enhancing other means of transit by creating a system of clearly delineated bicycle lanes and installing bicycle racks in public places.
- Encouraging commercial property owners and employers to develop Transportation Management Associations which provide shuttle service to MBTA stations.
- Encouraging employers to subsidize the cost of MBTA passes for employees.
- Working with the MBTA to expand public transit service and improve access to service and facilities.

Commercial Districts

From Central Square's Caribbean Carnival to Harvard Square's rich architectural heritage, Cambridge's six commercial squares and corridors reflect the diversity and rich layering of uses that define Cambridge's unique appeal. While each commercial district presents a different character and cluster of activities, common elements can also be defined and are discussed below.

- ***Convenience Shopping.*** Neighborhood commercial districts serve as a shopping place for surrounding residential neighborhoods and workers from the district. The proximity to residents gives these districts an edge in providing goods and services of the sort that people buy on short shopping trips: hardware, haircuts, drugs and beauty aids, convenience foods, and specialized clothing. These uses are well suited to the small floor plates common to the older buildings found in many of these districts. Owners of the businesses providing these goods and services have historically been small proprietors, but the increasing influence of chain retailers can be seen in each district.

- ***Destination Shopping.*** Destination shopping generally involves trips planned with the intention of purchasing the more expensive goods and services that are typically found in chain stores found in regional malls. Two of Cambridge's commercial districts offer a predominance of destination shopping: the CambridgeSide Galleria and Harvard Square. Others are more dominated by convenience shopping, although some destination retailers are found in these districts, as well.

- ***Culture and Entertainment.*** Local residents, visitors, and people working in commercial districts all enjoy the eclectic mix of restaurants, cafes, clubs, and theaters found in Cambridge's commercial districts. The extent to which the market for culture and entertainment is driven by neighborhood patrons versus patrons from outside the neighborhood varies significantly among districts. Harvard Square serves patrons from around the globe, while Cambridge Street is dominated by local users, and Central Square involves a mix of local and non-local users. The lively streets created by evening uses are an important deterrent to crime.

- ***Employment.*** Each district provides employment, not only to workers in the retail businesses, but also to people who work in the offices that are located in the upper floors of the buildings. Office employment supports the market for retail uses and for evening culture and entertainment uses.

- ***Housing.*** Cambridge's commercial districts vary in the extent to which housing is available directly in the district. Cambridge Street's predominant pattern combines retail and housing in its multi-story buildings. Central Square retains some of this pattern, and other districts have more limited housing opportunities, generally in buildings separate from retailers.

Cambridge's compact geography and modest population size mean that maintaining five vibrant commercial districts offering a retail mix which serves the range of needs expressed by residents is a challenge. The physical layout of the older districts, which have many small storefronts, runs counter to modern trends in retailing. Modern retailing competes based on volume and requires floorplates of 30,000-70,000 square feet. The suburban shopping malls which ring the City draw off the market for soft goods of the type carried by major retail chains. "Big box" retailers compete on the basis of low prices and high volume, further reducing the market draw of older commercial districts. Changes in

health care reimbursement threaten the survival of small independent pharmacies who cannot negotiate favorably priced contracts with health care insurers. Independent bookstores are being challenged by large chains.

Each commercial district must strike a balance between activities whose market is primarily the local neighborhood and those serving a regional market. Activities serving a broader market lend diversity to a retail district, but may inflate rents, making it harder for locally owned "Mom and Pop's" to find affordable space. While the customers attracted to a regional destination lend vitality to the streets, they also bring noise, litter, traffic congestion, and increase competition for parking spaces. Each district must define the balance that best suits its needs.

Central Square. Traditionally the City's downtown retail district, Central Square is undergoing a major revitalization effort. The ongoing effort to revitalize Central Square has culminated in the redesign of Massachusetts Avenue to make it more pedestrian friendly and improve the streetscape. The physical redesign is currently being constructed and will be completed in Spring 1997. A joint committee of the Square's residents and businesses is working on a plan to manage and maintain the physical enhancements to the Square. A facade improvement program has provided matching grant funds for the following facades: CPI, Putnam Furniture, 3MJ Realty, the Dance Complex, Useable Furniture, CCTV and Small Planet Bar & Grill. CDD staff members continue to work with Central Square businesses and neighbors to monitor vacant space and update the retail mix, as well as oversee the disposition of the Purity Supreme Supermarket.

Harvard Square. Harvard Square thrives on a unique blend of retail, entertainment, and cultural attractions that are rooted in history, academia, and the arts. Harvard Square's unique mix of history and avant garde trendiness attracts residents, business people and visitors from around the world. With 900,000 square feet of retail space, Harvard Square functions as a regional shopping mall in an urban context.

Two major projects that are undergoing review in Harvard Square are Eliot Square and Cambridge Savings Bank. Eliot Square is a mixed use development containing 50,000 square feet and seven stories. Three stories will contain retail and office uses, and four stories will contain a total of 12 residential units. The Grendel's Restaurant building and the Tweeter building will be retained. Eliot Square has been reviewed by the Harvard Square Advisory Committee and the Cambridge Historical Commission. Due to its scale and design, the project requires a special permit from the Planning Board, which has been approved. The Cambridge Savings Bank project involves the redevelopment of a site containing three historic buildings at the corner of Massachusetts Avenue and JFK Street. The development will contain approximately 49,000 square feet of retail and office space in three to five story buildings and will retain two existing end buildings. The Cambridge Savings Bank project is being discussed by the Harvard Square Advisory Committee and the Historical Commission, and will require approval from the Planning Board.

Cambridge Street Corridor/Inman Square. Cambridge Street successfully combines ground floor retail with housing, a combination that lends a neighborliness to the district. Changing trends in retailing and the end of rent control mean that ways to protect this unique local-serving business environment must be explored. The CDD has begun preparation of baseline studies to better understand the issues and conditions of concern to residents and businesses of this area. A community-wide meeting was held in July 1996 to discuss these issues and to begin to develop a common vision for the future of the district. Following the meeting, the City Manager appointed residents and business people

to serve on the Cambridge Street Advisory Committee. The Committee meets regularly to explore the major topics concerning the Cambridge Street area and will ultimately be making recommendations for implementation of ways to protect and enhance the district. A facade improvement program that is initially funded by the City budget will be available in early 1997.

North Massachusetts Avenue Corridor/Porter Square. Plans for the redevelopment of the Porter Square Shopping Center will update the design of the Center, add a new building along Massachusetts Avenue, improve pedestrian orientation and improve overall circulation. A Memorandum of Understanding was signed by the Porter Square Neighborhood Association, the Shopping Center (Gravestar) and the City that will require a truck management plan, a traffic and parking mitigation program, and the formation of an Advisory Board.

Streetscape enhancements which will include street trees, bicycle lanes and roadway resurfacing are being considered to occur in conjunction with an upcoming sewer project for the northern portion of Massachusetts Avenue from Porter Square to Alewife Brook Parkway.

The CDD is working with owners of properties in this Corridor who own automotive-related uses to ensure an understanding of potential future uses under the Overlay District requirements and to address clean up of properties from environmental hazards and preparation for future development

Cambridgeside Galleria. This regional mall includes approximately one million square feet of retail space. One major site remains available for development, 2 Canal Park. The Mall was first envisioned in the City's East Cambridge Riverfront Plan. The Plan has received many awards for its long term vision and implementation process, which has revitalized the Lechmere Canal area and enlivened East Cambridge. The Mall itself has also been awarded for its architectural and urban design merits. As part of the PUD special permit issued by the Planning Board, the developer also has a number of important mitigation requirements, including the CambridgeSide Shuttle Bus, which carried 660,000 riders this year. Additionally, the Mall participates in the maintenance of Lechmere Canal Park and Charles Park. The Lechmere Canal Committee, made up of abutters and Mall and City representatives, meets regularly regarding the management of Lechmere Canal Park, advising the City on park maintenance, establishing guidelines for park use and developing long range policies to maintain and preserve the park. Representatives of various City Departments and the East Cambridge Planning Team each meet with Mall representatives as necessary to address issues of concern, such as indoor and outdoor security.

Fresh Pond. The Fresh Pond commercial district serves both residents of North Cambridge and commuters driving through the district to destinations outside Cambridge. This district represents the most extreme example of strip development in the City and lacks the "urban village" context which characterizes most of the City's other commercial areas. The Alewife Brook and Fresh Pond Parkways from Route 2 to Huron Avenue are being redesigned to improve pedestrian and bicycle circulation and to provide landscape and urban design amenities. As part of this effort, property owners are being approached to discuss ways to improve the appearances of their property.

Development Districts

Cambridge's five development districts are major employment centers, offering a mix of office, research and development and manufacturing space to high and low technology companies. Much of the eight million square feet of new commercial real estate developed during the 1980's was in these districts. The development sites remaining in the five districts require a careful management to insure that future build out maximizes the City's economic development goals. The generic issues facing these districts include:

- ***Employment Mix.*** The financial incentives which cause developers to favor high density office development must be weighed against the goal of diversifying the job base. The potential to develop high tech manufacturing will not be achieved without deliberately maintaining lower densities in some areas.
- ***Older Industrial Buildings.*** These buildings are an invaluable resource for emerging technology companies. Low rents (compared to office buildings) and the physical characteristics which enable companies to install specialized ventilating systems, clean rooms and fume hoods enable emerging technology companies to retrofit industrial buildings at a fraction of the cost of building new space. Few of Cambridge's emerging technology companies are at a mature enough stage of development to afford new build out; preserving older industrial buildings is thus a critical need.
- ***Traffic and Parking.*** Close proximity to residential neighborhoods requires that traffic patterns in development districts be carefully designed to mitigate impacts on residents. Additionally, transportation demand management programs are being developed to improve the regional air quality, complete the process of replacing the parking freeze, and to reduce demand for additional employee parking.

Cambridgeport

The growth of emerging technology companies has brought new life to older industrial buildings in Cambridgeport. Biotechnology companies such as Vertex and Alkermes, process development firms such as Intelligent Automation Systems, computer integration consultants such as Cambridge Technology Partners, and medical equipment manufacturers such as Lifeline Systems, all enrich the district's job base. Major renovations along Memorial Drive have brought three older industrial buildings back into use as headquarters for Modern Continental at 600 Memorial Drive, headquarters for Hybridon at 620 Memorial Drive and a multi-tenant space at 640 Memorial Drive.

University Park, a 23 acre parcel owned by MIT and developed under an agreement to Forest Cities Development, has completed the leasing of its Phase 1 development, which includes 350,000 square feet of office space, and 179 units of housing. Forest Cities is preparing to break ground on Phase 2, which will include a 250 room hotel, 960 car garage, 45,000 square foot Star market, a headquarters for Tofias, Fleischman, and Shapiro, and 100,000 square feet of retail space intended to complement the existing retail uses in Central Square.

North Point

Congress Group Ventures is in the process of constructing a 159,000 square foot headquarters for the Swedish firm EF International. In addition, the Congress Group has received a permit to construct 440 units of housing and has begun work on the foundations for this project. The Metropolitian District

Commission is planning $80 million of open space improvements in approximately 40 acres of The New Charles River Basin, of which some 4 or 5 acres are in North Point. When built, this park will increase public access to the waterfront and provide an important amenity for the district. A proposal by Browning Ferris Industries to build a new waste transfer facility in North Point was denied, making an additional site potentially available for development, once a number of land disposition issues are resolved.

East Cambridge/Kendall Square

The East Cambridge/ Kendall Square industrial area has benefited from its proximity to MIT. Faculty and students starting companies prefer to be close to campus laboratories and libraries and find the district to be an easy walk. The stock of renovated older industrial buildings such as the Athenaeum building and One Kendall Square provide space to start-ups, and the Cambridge Center Developments offer modern space they can grow into. Recent build-to-suit development in the district includes headquarters for Biopure and Lotus/IBM. In addition, new laboratory buildings have been constructed for the Whitehead Institute, the MIT Microbiology Department, and Biogen; and the East Cambridge Savings bank has built a new operations center. Two proposals for small hotels have been approved, one for 112 rooms and one for 121 rooms.

Alewife

The Alewife district includes a mixture of older industrial buildings, and more modern office buildings. The pattern of emerging technology companies retro-fitting older industrial buildings is common in this district. Merlin Metalworks, a maker of high performance bicycle frames, is located in the former Wilson Steel fabrication plant. Modern office buildings house such well known Alewife firms as Bolt, Beranek, and Newman. Abt Associates and Arthur D. Little are both in the process of analyzing their space needs as both buildings are approaching functional obsolescence. A proposal by Spaulding and Slye to build a retail and restaurant development on the W. R. Grace site has been withdrawn and the Planning Board is in the process of recommending changes to the IC zone at Alewife.

BUSINESS CLIMATE

KEY IDEAS

- ***A high quality of life is one of Cambridge's most important competitive advantages as a business location.***
- ***Maintaining public schools that produce high school graduates whose skills equal those of the best educational systems around the globe, is one of the most important measures the City can take to protect its desirability as a location for business.***
- ***Cambridge's $7 billion commercial tax assessment provides a healthy base which is able to support high quality public services; maintaining a stable commercial tax rate is an important way to insure that Cambridge remains a desirable community for business.***
- ***Investment in infrastructure is one of the most important ways Cambridge can support business growth while mitigating impacts on residential neighborhoods; over the last 10 years, Cambridge has invested over $200 million in modernizing its infrastructure.***
- ***Cambridge seeks to enhance its competitive advantage by streamlining its permitting and licensing system.***

A strong business climate makes a community a desirable place for business investment. It enables company decision makers to feel confident that an investment made today will continue to be a good investment over the long term. Many elements, tangible and intangible, are involved in creating and maintaining a good business climate. This section of the policy will address issues relating to quality of life, the tax base, infrastructure, and permitting and licensing as the major elements that affect the quality of Cambridge's business climate.

Quality of Life

Economists who study business location decisions repeatedly stress that a high quality of life is one of the most important factors in the choice of a location. Business executives want to live and work in attractive places. A desirable address will also enable them to expend less resource recruiting employees. Noble prize winning economist Robert Solow spoke before the Chamber of Commerce in 1995 and stressed this view. Dr. Solow stated that a high quality of life is more important to business location decisions than the tax rate. Economist David Birch, whose Cambridge consulting firm studies entrepreneurial companies, finds that a high quality of life is particularly important to knowledge-based firms, which often can choose to locate anywhere.

Cambridge's desirability stems from the careful management of a dense mix of uses. Safe streets, a walkable scale, open space, recreational opportunities, cafes and restaurants, music and dance, educational opportunities, historic sites, tree-lined residential areas, and vibrant business districts are all in close proximity. Public investments in police and fire protection, health care, youth programs, afford-

able housing, parks, and the management of tourism all work to support the dynamic mix of activities that keep Cambridge on the cutting edge and support its desirability as a business and residential location.

Cambridge's larger employers have been leaders in contributing to maintenance of Cambridge's high quality of life through corporate philanthropy efforts ranging from senior care and day care to apprenticeship programs for high school students. Downsizings in this sector challenge the business community to develop the next generation of corporate good citizens among the smaller companies that are growing. The Chamber of Commerce is currently undertaking a social audit to determine the involvement and contributions of the business sector to the civic sector in Cambridge.

Public Education

Investment in a high quality public education system which prepares graduates for lifelong learning is one of the best measures any municipal government can take to safeguard the prosperity of its citizens and to maintain its desirability as a business location. Changes in the playing field on which workers compete for jobs put the public schools on the forefront of efforts to provide a secure future for American workers.

- The bifurcation of the employment structure has meant that earnings of non-college graduates have not kept pace with those of college graduates. In 1978, a male college graduate typically earned 49% more than a man whose highest level of education was a high school diploma. By 1993, the average male college graduate was earning 83% more than a high school graduate.
- The continuous introduction of new technologies into the workforce requires that workers be prepared to learn throughout their careers.
- The mobility of technology and capital will eliminate the wage premium American workers have enjoyed based on the better equipment (and hence greater productivity) they use to do their jobs. The best technologies will be increasingly available throughout the world.
- Global access to capital and equipment mean that the productivity of labor becomes the cutting edge of competition. This reality places American students in direct competition with students around the world.

Recent evidence that students from the United States may not be adequately prepared to face these challenges was provided by a study of the performance of eighth graders. Compared to students from other industrialized nations, American students were average in science and lagging in math. Mean test scores for the top 20 nations are listed below.

How the Nations Compare

Rankings show the science and math test scores of eigth graders from the top 20 of 25 industrialized nations, for which there was highly reliable data. Results from 16 other nations were considered less reliable.

Sciences	Mean test scores	Mathematics	Mean test scores
Singapore	607	Singapore	643
Czech Republic	574	Korea	607
Japan	571	Japan	605
Korea	565	Hong Kong	588
Hungary	554	Belgium	564
England	552	Czech Republic	564
Belgium	550	Slovak Republic	547
Slovak Republic	544	Switzerland	545
Russian Federation	538	France	538
Ireland	538	Hungary	537
Sweden	535	Russian Federation	535
United States	**534**	Ireland	527
Canada	531	Canada	527
Norway	527	Sweden	519
New Zealand	525	New Zealand	508
Hong Kong	522	England	506
Switzerland	522	Norway	503
Spain	517	**United States**	**500**
France	498	Latvia	493
Iceland	494	Spain	487

Source: GED testing Service; Stock Vaughn Co.

The Cambridge Public Schools have some of the finest students in the nation, including 12 recent National Merit Scholars. Per capita spending leads the state; a prestigious grant from the National Science Foundation has helped create cutting edge science course offerings, and computers are widely available throughout the schools. However, Cambridge's service based economy means that not only the top students, but all the students must be prepared to undertake post-high school education if they are to have a secure future.

The importance that businesses place on the quality of public education is revealed by a study conducted by Expansion Magazine, a national publication which provides information to firms making locational choices. The magazine conducted a national survey of 770 districts, each large enough to have over 450 students. The study established three measures: a Community Index (community education attainment and income), a Resource Index (per pupil expenditure, teacher salaries, and student-teacher ratios) and a Graduate Outcome Index (graduation rates and college board scores), which are averaged into an Education Quotient. All measures are reported on a scale of 50 to 150, where 100 is average. No communities in New England ranked in the top 15 districts for Graduate Outcome score. Only two communities in New England ranked in the top 15 communities for Education Quotient overall score (both in Connecticut).

Cambridge ranked in the average category with an Education Quotient of 119.4. The three measures on which this score was based follow: Graduate Outcome:106, Community Index:124, and Resource Index:128. It could be argued that Cambridge's lowest score, the Outcome Score is lower than top performing districts because a broader cross section of students take the college board exams. However, even Cambridge's highest index score, Resource Index, was lower than the average overall score of the top ranked districts.

No single study can capture all the issues related to the quality of education in Cambridge. Nonetheless, the unique demands of Cambridge's economy and the indications of a skills mismatch discussed earlier in this paper, suggest that further research into the career and educational outcomes of high school graduates in Cambridge should be undertaken.

Cambridge's Tax Base

Few decisions reflect a community's values as directly as investing decisions. Over the past decade, communities have had to make these decisions based on decreasing revenues from the federal government and the state, imbuing the trade off between taxes and services with a high level of immediacy.

Cambridge is fortunate to have a rich base of taxable property to support its service base. Despite the City's small geographic size and the fact that nearly 50% of all real property is owned by tax exempt organizations, Cambridge's tax base expanded dramatically in the 1980's with the development of close to nine million square feet of new development. The combination of this expansion of the base and tax reclassification shifted the incidence of property taxes from the residential to the commercial sector. By the end of the decade, the commercial sector represented two-thirds of the taxes paid.

Cambridge's assessed valuation peaked in 1991 at $8.6 billion, and declined during the regional recession, reversing the trend established in the eighties of declining tax rates and increasing valuations. Declining valuations and the slowdown in real estate development required that the City adopt cost containment measures and increase tax rates to stabilize the budget. Cambridge came very close to its tax levy limit in 1994. However, valuation stabilized in 1995 at a $7 billion assessment, and the City currently retains a strong cash reserve position, $12-15 million by the end of FY'96. Cambridge maintained its Aa-1 bond rating throughout the period, reflecting the confidence the investment community placed in the City's ability to maintain fiscal stability. At this point, revenues from new development and major rehabilitation, including previously rent-controlled properties, are increasing tax revenues by approximately 1% per year. It is anticipated that the end of rent control will add an estimated $300 million in additional valuation over the next several years. Assuming level funding of state aid, current projections are that the City would need between 2.5 and 3% annual generation in taxes from new development and major rehabilitation in order to maintain the existing excess property tax levy capacity.

Although economists do not place taxes at the top of the list in evaluating business location decisions, the cost of taxes is one of many elements companies take into consideration. The chart below compares Cambridge real property tax rates to those of Boston and nearby suburbs. While Cambridge's residential property tax rate is within pennies of the mean for the group of communities, Cambridge's commercial rate is second only to Boston.

Comparison of Tax Rates - November 1966

Community	Residential	Commercial
Bedford - FY96	13.37	31.67
Boston- FY96	13.78	42.59
Burlington- FY96	12.00	31.60
Cambridge- FY96	**13.22**	**34.89**
Framingham- FY96	17.34	29.69
Lexington- FY96	14.01	26.52
Waltham	13.55	31.42
Watertown	15.30	24.78
Mean	14.08	31.65

Source: MA Department of Revenue

While Cambridge's extraordinarily low commercial vacancy rate provides evidence that Cambridge's commercial tax rate is not a serious detriment to its business climate, the very low vacancy rate has increased rents faster than competitor communities, and parking restrictions in Cambridge drive up the cost of parking compared to suburban communities. The City cannot control the cost of commercial rents or eliminate the need for structured parking, but it can control the tax rate and has committed to a program of tax stability to insure that the City's competitive position is not undermined. Cost stability can not only help maintain costs in line with competitor communities, it can also give expanding firms the assurance that their financial planning (which is typically done on a ten year time horizon) will not be undermined by rapid changes in taxes.

Because Cambridge's economy is very strong overall, the use of property tax abatements as a tool to attract companies or to incent their expansion is likely to be used very strategically, unless there is a significant downturn in economic circumstances. In general, an abatement proposal would need to involve a large development that could contribute to the City's job base and tax base, or would need to diversify the job base by providing skilled employment for people with less than a college degree.

Infrastructure

Quality infrastructure is an important part of any community's competitive edge. Business depends on the ability to move goods and people efficiently. Truck routes enable them to receive supplies and to connect to major highways for the distribution of goods. Public transit and regional roadway systems enable workers to commute to work without undue delays and to readily access the airport. Well designed local roadway systems help route traffic away from residential areas, enabling businesses and residences to exist in close proximity. Adequate water and sewer hook-ups and fiber optic cables determine where development can happen. Readily available electricity, steam, gas, and fiber optic cables provide the groundwork for business operations.

Cambridge government regards investment in infrastructure as one of the important ways it can support business growth and has invested some $200 million since 1985 to upgrade infrastructure. Cambridge is currently replacing its water and sewer mains and rebuilding its water treatment plant. A wide range of transportation improvement projects are underway and in the planning stages. Those most directly related to economic development are outlined below.

Roadway Development Projects

The following transportation infrastructure projects are in planning or underway in Cambridge's commercial and industrial districts to enhance the City's economic development objectives:

Central Square. The reconstruction of Massachusetts Avenue in Central Square is well underway and should be completed by Spring of 1997. When complete, the street will be more pedestrian friendly, safer and have a clearer identity. This roadway project will enable the City and the community advisory committee to continue efforts to promote the economic revitalization of Central Square.

Cambridgeport Roadway Improvements. Cambridgeport has made a comeback from its decline as an older industrial area to become one of the City's most vital districts for emerging technology companies. With residential abutters in close proximity, the district's success depends on successfully managing traffic connected with the businesses in a way that does not impinge on the neighborhood. Roadway improvement projects in Cambridgeport include the following:

- The University Park development agreement couples roadway improvements with facilities and programs that provide High Occupancy Vehicles (HOV) and non-motorized commuting alternatives, with successive phases of development.
- A Community Development Action Grant for $390,000 has enabled the City to make traffic calming improvements to Brookline and Pacific Streets adjacent to University Park.
- The Lafayette Square/Massachusetts Avenue Roadway Project will connect Sidney Street with Main Street, thereby routing traffic destined for Cambridgeport and the BU Rotary away from the residential neighborhood. The project will rebuild Massachusetts Avenue from Lafayette Square to Memorial Drive, including reconfiguring travel lanes and providing bicycle lanes. Public safety will be improved and public spaces enhanced through street and pedestrian lighting, street trees, new sidewalks, and the creation of a new plaza area at Lafayette Square.
- The Cambridgeport Roadway Improvement Project will move traffic from Brookline and Pearl Streets to a new one-way pair created by reconstructing Sidney, Waverly, and Landsdowne Streets, plus parts of Albany and Erie Streets.

Alewife. The Alewife Brook and Fresh Pond Parkways from Route 2 to Huron Avenue are being redesigned to improve pedestrian and bicycle circulation and to provide landscape and urban design amenities. The MDC will complete their improvements along Alewife Brook Parkway between Route 2 and Concord Avenue later this year. The MDC improvements are being funded through the Massachusetts Highway Department (MHD) and include rebuilding the Alewife Brook Parkway Bridge over the Fitchburg division rail line, and installing bicycle lanes and better pedestrian crossings. The Cambridge City Council has appropriated money to complete the survey and design.

North Point. Cambridge is currently undertaking a roadway and infrastructure master plan that will include a new roadway system and all new utilities. When completed, the MHD will provide financing for the construction of this new infrastructure.

The Urban Ring

Public transit is as important to Cambridge's economic advantage as roadway systems. Public transit enables the workforce to commute efficiently and cheaply, alleviating the need for parking and helping to improve air quality. Although Cambridge is well served by the Red Line and local bus routes, commuters from the northern and western suburbs prefer to drive because the commute by public transit involves two or three service transfers, a prospect most users find too time consuming and inconvenient.

The "hub" design of the mass transit system moves people effectively between suburban locations and downtown Boston, but connections between the spokes of the "hub" are difficult. The Urban Ring, as the Circumferential Transit system is known, will provide connections between existing mass transit lines, greatly improving public transit access among the six communities in the urban core (Cambridge, Boston, Somerville, Chelsea, and Everett). The long term benefit to Cambridge will be improved public transit from the north and west, improved air quality, reduced demand for parking in Cambridge and decreased pressure on firms to relocate to the suburbs to meet the parking needs of their employees. Other potential long term benefits include improving access to the airport, connecting transit between the Longwood Medical Area and life science firms in the eastern sector of Cambridge, and connecting Kendall Square and Bunker Hill Community College to further Cambridge's goals of improving post high school training for residents.

Permitting and Licensing

Regulation establishes a playing field on which business functions. Thoughtful and consistent regulation can be helpful to business. Development controls prevented over-building and protected commercial property values from the worst impacts of the recent recession. Cambridge's Biosafety Ordinance enabled the biotech industry to invest with confidence, knowing that the ground rules had been established. Many other communities have recognized the importance of this ordinance by modeling their own ordinances after it.

While thoughtful and consistent regulation can support the business community, unclear regulations, slow administrative processes, inconsistency in applying regulations, and the use of a regulatory approach in situations where a simpler approach could be used, can lead to the perception that a community is "anti-business". Many communities around the country have discovered that they can enhance their competitive advantage by reviewing their regulatory structures, abandoning outdated and overly bureaucratic measures, and streamlining those regulations that are deemed necessary. Some of the endeavors on which other communities have embarked include on-line permit applications which can be simultaneously forwarded to all departments involved in issuing permits, "One Stop Centers" offering a single point of access for all permits which are processed by a central permitting manager, and simpler approaches that involve streamlining the existing systems without the expense of total centralization.

The Community Development Department has embarked on an effort to understand what the City of Cambridge can do to improve its own permitting and regulatory process. The effort has been con-

ducted in three stages: initial research, identification of issues and formation of an interdisciplinary working committee to make recommendations to the City Manager. Each stage is summarized below:

1. Research:

- ***Inventory.*** Regulations and procedures for obtaining permits and licenses were collected and examined from all departments requiring approvals for building, renovation or business activities.
- ***Observation.*** Hand-outs, information systems and staff contact with applicants were observed at several departments.
- ***Interviews.*** Developers and other applicants for permits and licenses were interviewed about their experiences and perceptions of the permitting process.
- ***Models.*** Cities who have adopted permitting reforms were studied to determine the best practices in use for improving the process.

2. Key Issues:

- ***Review of regulations.*** The City regulates a wide scope of land uses and business activities, an approach which supports both the business environment and livability of the City. However, periodic review is necessary to determine whether existing regulations continue to serve a valid and clear purpose and whether they duplicate or conflict with other City policies or procedures.
- ***Information and orientation.*** The system lacks clear guidance for orienting applicants to the process and steering them through it. The City has no gateway, no formal informational materials, and no central information system to track applications. The physical environments in which applicants encounter City staff are often cramped and noisy, making it difficult to ask questions and obtain needed information.
- ***Perception that community process is too long and unpredictable.*** All those interviewed agreed that community process is a needed and potentially beneficial aspect to the real estate development process. However, they also felt that the process needs to be refined so that project proponents can get input that does not drag on indefinitely. For developers, the ticking of the clock adds costs to financing and legal costs, which consume any surplus funds that might be available for community benefits.

3. Interdepartmental Working Committee:

- ***Index of permits and licenses.*** A summary document has been developed which catalogues all required permits and licenses, lists all departments with review or issuing authority, and all relevant state and local ordinances. This document can form the basis for a comprehensive guide to the system and will inform the committee's efforts to streamline the process.
- ***Review of the permitting process for food establishments and festivals.*** These two clusters of permits have been selected for study to determine whether the permits required and process can be streamlined.
- ***Future Initiatives.*** The committee's work will also include reviews of additional clusters of permits and an analysis of the feasibility of an on-line database that can process simple permits electronically.

IV. SUMMARY OF CURRENT INITIATIVES AND RECOMMENDATIONS FOR FUTURE INITIATIVES

This section identifies the current initiatives the City is implementing as well as making recommendations for future activities for Council consideration.

INNOVATION AND ENTREPRENEURSHIP

GOAL 1: Cultivate a supportive environment for entrepreneurial companies

1.1 Encourage a supply of inexpensive space suitable for start-up companies

Current Initiatives:

- Provide referral services for companies seeking less than 2,000 square feet of space.
- Collaborate with existing incubators supporting the needs of young companies.

Future Recommendation:

- Assess the need for an additional business incubator in Cambridge, as well as the availability of buildings, financing mechanisms, and ownership options.

1.2 Promote the formation and growth of minority and women owned businesses

Current Initiatives:

- Provide business development services, such as assistance developing business plans, assessing markets, and obtaining financing, to minority and women- owned businesses.
- Refer clients to training programs and sources of capital, such as the Center for Women's Enterprise and the Community Development Finance Corporation.

Future Recommendations:

- Publish a 1997 edition of the Cambridge Women's Business Directory to assist enterprises owned by women in marketing themselves.
- Convene a focus group of minority-owned businesses to better understand any unmet needs of this sector.
- Develop seminars on obtaining financing to respond to requests by women- owned businesses for training on this topic.
- Assess the continuing needs of women-owned businesses for support by the City.

1.3 Endorse efforts to eliminate potential cuts in federal research and development spending

Current Initiative:

- Determine ways the City of Cambridge can be helpful in fighting cutbacks in federal research and development moneys at Harvard and MIT.

Future Recommendations:

- Advocate for federal legislation which provides funding for academic and medical research and development and which local universities support.

1.4 Cultivate the growth of small businesses

Current Initiatives:

- Provide business development services such as, assistance developing marketing plans, analyzing markets, assessing capital needs and devising strategies to obtain financing to entrepreneurs and small business people.
- Work with the Cambridge Business Development Center and the Cambridge Savings Bank to redesign a micro-enterprise program serving the needs of neighborhood residents starting very small businesses.
- Fund the Cambridge Business Development Center, whose activities include mentored support groups for chief executive officers (CEO's) of young high growth companies and peer lending groups for neighborhood enterprises.

Future Recommendations:

- Market the City's economic development services to businesses in Cambridge's commercial districts as part of the commercial revitalization projects in such areas as Central Square and Cambridge Street.
- Assess the feasibility of serving larger numbers of small businesses by developing targeted programs serving the needs of specific sectors such as retail, food service, professional services, etc.

GOAL 2: *Market Cambridge's entrepreneurial environment to companies for whom a Cambridge location could provide a competitive advantage*

2.1 Develop a marketing strategy to promote the Cambridge location to appropriate businesses

Current Initiative:

- Develop marketing materials jointly with the Chamber of Commerce to promote the City as a business location.

Future Recommendation:

- Implement a marketing strategy for Cambridge.

2.2 Engage a consultant to develop a strategic plan to position Cambridge as a location for international businesses.

Future recommendations:

- Develop a request for proposals for consultant services to determine the most effective strategy for the City to pursue to attract international business.
- Implement a strategy to attract appropriate international businesses.

EMPLOYMENT

GOAL 3: Sustain an economy which maintains a diverse array of employment opportunities that are readily accessed by well trained Cambridge resident workers

3.1 Promote the diversification of the job base

Current Initiatives:

- Support the growth of the technology-based companies that have the potential to maintain small scale manufacturing facilities in Cambridge, including providing information regarding sites and financing and considering the use of tax incentives.
- Survey manufacturers to improve understanding of this sector and determine ways the City can retain manufacturing jobs.
- Study the telecommunications and software industries to better understand the growth potential and labor force needs of these industries.
- Enter into agreements with companies to whom Cambridge provides significant assistance to participate in training and school-to-work efforts in the City.

Future Recommendations:

- Work with the Office of Workforce Development to develop strategies that could increase mid-level employment opportunities by helping companies to define internal career ladders in existing companies (hospitals, hotels, and banks).
- Explore the possibility of preserving reasonably priced space for manufacturing firms by acquiring some industrial properties, so that costs can be controlled.

3.2 Cultivate a well-prepared resident workforce

Current Initiatives:

- Work to improve the employment and training system as a member of the Regional Employment Board.
- Support the efforts of the Regional Employment Board to launch a one-stop career center in Alewife.
- Work with the Office of Workforce Development to identify training and school-to-work opportunities for Cambridge residents.

Future Recommendations:

- Review the study of the Cambridge Rindge and Latin guidance counseling system and evaluate ways to improve information and access to training and jobs for non-college bound students.
- Commission a longitudinal study of the career and educational experiences of graduates of CRLS to identify ways to improve linkage to training and career opportunities.
- Interview staff of community colleges in the region to better understand their perception of the usage pattern and access issues of Cambridge residents.

- Encourage Bunker Hill Community College to strengthen technical training opportunities offered through its Cambridge satellite program.
- Present the economic development policy to the School Committee and Superintendent of Schools, emphasizing the importance of secondary education to the economy of the future.
- Organize a public forum on secondary education and careers.

3.3 *Improve linkages between Cambridge residents and employment opportunities created by large development projects*

Current Initiatives:

- Research the structure and effectiveness of first source hiring programs in effect in other cities.
- Establish first source hiring agreements with developers of large projects such as University Park and Hybridon.

Future Recommendation:

- Establish a first source hiring policy for employers requesting significant assistance from the City.

CAPITAL

GOAL 4: *Improve the access to capital for Cambridge businesses throughout the business life cycle*

4.1 *Facilitate the flow of information about capital markets*

Current Initiatives:

- Assist companies assessing capital needs and preparing loan applications and business plans.
- Introduce companies seeking financing to appropriate banks, quasi-public agencies and venture capitalists.

Future Recommendation:

- Offer periodic seminars about business finance.

4.2 *Reduce Capital Gaps*

Current Initiatives:

- Increase the availability of loans to small businesses by designing a small business lending pool in collaboration with banks.
- Work with private sources of capital to develop a non-traditional development capital company that will invest in a wider variety of firms than current venture capital firms will fund.

Future Recommendations:

- Market the small business lending consortium to Cambridge businesses.
- Act as the point of entry for companies seeking loans through the small business lending consortium, including pre-screening applicants for loans.

- Assess the need to maintain the HUD 108 biotechnology loan program; assess other uses of HUD 108 funds.
- Evaluate the possible role for tax exempt industrial revenue bonds as a financing vehicle, including the need to market the Cambridge Industrial Development Finance Authority to Cambridge manufacturers.

REAL ESTATE

GOAL 5: *Promote a real estate market which offers a diverse array of options for the development and leasing of business properties of different sizes, use categories and price ranges*

5.1 *Maintain a supply of space suitable for the incubation of small companies*

Current Initiatives:

- Monitor changes in real estate absorption.
- See initiatives in Goal 1 of this paper.

Future Recommendation:

- Assess the need for public incentives to attract and maintain business incubators in Cambridge.

5.2 *Evaluate the status of Cambridge's manufacturing sector to determine what actions the City can take to retain existing manufacturing jobs and encourage high tech firms growing to the manufacturing stage to locate manufacturing operations in Cambridge*

Current Initiative:

- Survey manufacturers to profile employment and better understand the needs of companies in this sector.

Future Recommendations:

- Assess the need for a manufacturing stabilization program based on the results of the manufacturing study now in progress.
- Assess whether the City should play a more aggressive role in retaining growing manufacturing companies through additional financing mechanisms, tax abatements, or acquiring land.

5.3 *Maintain thriving commercial districts*

Current Initiatives:.

- Central Square
  - Implement the Central Square Enhancement Plan.
  - Implement the Central Square Facade Improvement Program.
  - Attract a diverse retail mix to Central Square.
  - Retain a supermarket at the Purity Supreme site.
  - Work with new developments to insure conformity with the goals established for Central Square.

- **Cambridge Street**
  - Conduct baseline planning studies of the Cambridge Street Corridor.
  - Hold a community visioning meeting to involve residents and businesses in identification of issues and a future vision for the street.
  - Convene a citizens advisory group of residents and businesses to develop a comprehensive plan for the district.
  - Meet every three weeks with the Citizen Advisory Committee to develop a comprehensive revitalization plan for the district.
- **Porter Square**
  - Develop a memorandum of agreement between the neighborhood coalition and Gravestar, the Porter Square developer, to enable the Porter Square Shopping Center to be redesigned.

Future Recommendations:

- **Central Square**
  - Complete the physical enhancements to Central Square.
  - Work with the retail sub-committee of the Central Square Neighborhood Coalition to attract the desired retail mix.
  - Work with residents and businesses to assess the need for a Business Improvement District.
- **Cambridge Street**
  - Implement a facade improvement program to upgrade storefronts.
  - Implement a loan program in conjunction with the East Cambridge Savings Bank to enable property owners in need of capital to take full advantage of the facade improvement program.
  - Develop sub-committees to study the needs of the corridor in areas including transportation, urban design and marketing.
  - Prepare a comprehensive revitalization plan for Cambridge Street.
- **North Massachusetts Avenue**
  - Meet with gas station owners to increase understanding of the North Mass. Avenue Overlay District.
  - Help gas station owners interested in converting environmentally contaminated properties to new uses to assess the development potential of their site and the financing options available.
- As resources allow, assess the needs of the commercial districts between Harvard Square and Porter Square and Porter Square and Arlington.

5.4 Guide development in older industrial districts now zoned for mixed use development, including Kendall Square, Cambridgeport, Alewife, and North Point

Current Initiatives:

- Monitor development agreements relating to traffic generation, economic development and urban design entered into by the City and developers in University Park and North Point.

- Provide infrastructure in development districts which provides efficient traffic flow, while routing traffic away from residential areas. See initiatives in Goal 7.4.
- Evaluate development proposals for conformance with City Planning goals..
- Maintain a log of all permitted and proposed development projects in the City to facilitate communication within the Community Development Department and with other city departments.

Future Recommendations:

- Evaluate development proposals at the Polaroid building on Memorial Drive and other sites where development is proposed.
- Work with state agencies to ensure beneficial reuse of remnant land parcels resulting from MDC and MHD park and infrastructure development in North Point.
- Investigate Brownfields funding opportunities to facilitate environmental clean up and reuse of former industrial sites.
- Upgrade infrastructure . *See Goal 6.4*

5.5 *Replace the parking freeze with a transportation demand management program that does not put Cambridge at a competitive disadvantage with other communities.*

Current Initiatives:

- Implement vehicle trip reduction programs designed to reduce single occupancy vehicle use and enhance other means of transportation.
- Provide technical assistance to employers in determining and addressing the transportation needs of their employees.
- Encourage collaboration among employers and commercial property owners in providing transportation services and programs, including coordination with the Charles River Transportation Management Association in Cambridgeport.
- Work with the MBTA to expand public transportation service and improve access to service and facilities, including the City funded designs for extension of the Minuteman Bikeway to the Alewife Station and creation of drop-off areas at the Central Square Station.

Future Recommendations:

- Facilitate establishment of additional Transportation Management Associations and other collaborative efforts among employers in Cambridge.
- Advocate for the expansion and improved reliability of MBTA service, including extension of the crosstown bus service to connect Kendall Square and the Orange Line at Community College Station, extension of the Number 83 bus route to the Fresh Pond Shopping Center and service improvements on numerous other bus routes serving Cambridge.
- Establish the alignment for the Urban Ring transit service in conjunction with other Compact communities and advocate for state implementation of this project.

BUSINESS CLIMATE

GOAL 6: Maintain a supportive and stable business climate

6.1 Foster partnership between the public and private sectors to promote mutual gains

Current Initiatives:

- Visit the CEO's Cambridge companies to increase communication with the business community and hear their concerns about doing business in Cambridge.
- Work with members of the Central Square Committee in the ongoing management of the revitalized commercial district.
- Maintain the participation of the Cambridge Street business community in the planning process to revitalize this commercial district.
- Solicit members of the business community to participate in the summer jobs program organized by the Office of Workforce Development and in school-to-work programs run by the public schools.
- Maintain the CEO support groups at the Cambridge Business Development Center, where successful entrepreneurs serve as mentors to CEOs of young companies.

Future Recommendations:

- Support formation of additional Transportation Management Associations.
- Build support among business community leaders for the implementation of the Urban Ring.

6.2 Promote tax stability

Current Initiative:

- Stabilize commercial property tax rates; increases over the last 3 years average 1.3% per year.

Future Recommendation:

- Maintain a stable tax rate by balancing the need for new services with the generation of additional revenues.

6.3 Streamline the city's permitting and licensing process

Current Initiatives:

- Research best practices among other cities in streamlining the permitting process.
- Conduct a study of Cambridge's permitting and licensing system with the goal of understanding how users perceive the system.
- Develop a master list of all permits required in Cambridge, including listing all departments with sign-off or review authority.
- Staff an interdepartmental task force charged to streamline the permitting and licensing process.

Future Recommendations:

- Develop informational materials to orient prospective users of the system to the permits, processes, departments and departmental locations.
- Assess the need for one point of contact with the city's permitting system.
- Assess the need for an electronic database which would assist in tracking permits and enable some approvals to be granted via computer.
- Analyze clusters of permits, such as food related uses and festival permits, to determine ways to streamline the process.

6.4 Provide well maintained infrastructure to meet current and future needs

Current Initiatives:

- Aggressively seeking out state and federal funding for the construction of roadway improvement projects, including Lafayette Square/Mass. Avenue, Cambridgeport Roadway Improvements, and North Point Roadways and infrastructure.
- Fund the design of roadway improvements to provide a competitive edge in seeking state and federal transportation funds.
- Improve transportation facilities and landscaping amenities in commercial corridors, including reconstruction of roadways, sidewalks and public parking lots in Central Square and design of pedestrian, bicycle and landscape improvements on Fresh Pond Parkway.
- Upgrade utility infrastructure through ongoing sewer separation activities, storm drain improvements and replacement of drinking water distribution facilities.
- Coordinate private utility upgrades with public infrastructure project construction schedules.
- Plan replacement of the municipal water treatment plant with a new "state of the art" facility.

Future Recommendations:

- Advocate for continued state and federal funding of transportation and enhancement programs through support of the reauthorization of the Intermodal Surface Transportation Efficiency Act and reconfiguration of the Boston Metropolitan Planning Organization, which funds local projects through the state's transportation improvement plan.
- Plan the enhancement of transportation and landscaping amenities along Cambridge Street and construct improvements along Fresh Pond Parkway.
- Complete design and construct roadway and urban design improvements along Massachusetts Avenue from Lafayette Square to Memorial Drive and from Porter Square to Route 16.
- Design and implement a stormwater management program to ensure adequate capacity of stormwater facilities.
- Construct a new water treatment plant.

Goal 7: *Maintain Cambridge's high quality of life*

7.1 Promote understanding of the importance of public education in maintaining a strong economy and preparing residents for the careers of the future

- See initiatives in Goal 3.2

7.2 Promote understanding that the high quality of public safety, human services, parks and open space, cultural and recreation opportunities in Cambridge, maintains the City's competitive advantage as a location for business investment.

Current Initiatives:

- See marketing materials described in Goal 2.1.
- See City Budget for Fiscal 1997.

Future Recommendation:

- Organize a forum to educate the public about the City's competitive advantage.

APPENDIX 1: Supplementary Data



Institutional Employers 1996

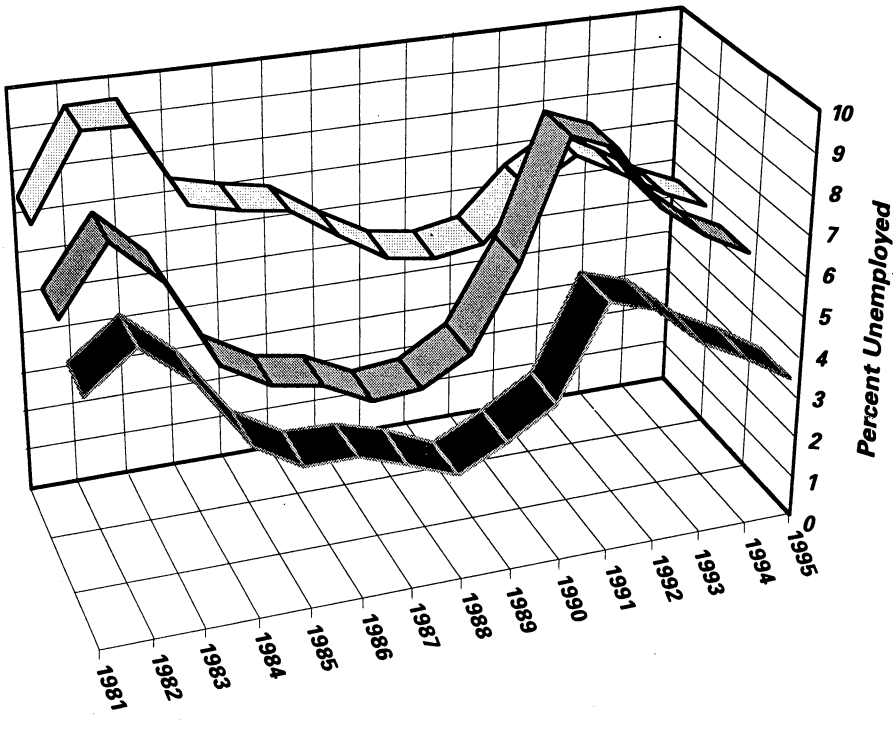
Employer	Number of Employees	Rank by Size
MIT	7,384	1
Harvard University	7,337	2
City of Cambridge*	4,090	3
Mount Auburn Hospital	1,900	4
Federal Government	1,466	7
Commonwealth of Massachusetts	610	13
Youville Hospital	604	14
Middlesex County	450	21
Lesley College	440	23
Cambridge College	130	NA
Neville Manor	250	NA

Source: Cambridge Community Development Department
Note: Includes full-time equivalents, where available
**City of Cambridge figure includes Cambridge Hospital employment*

Unemployment Rates - 1981-1995/data

	Cambridge	Massachusetts	United States
1981	5.80	6.40	7.60
1982	6.70	8.00	9.60
1983	5.70	6.90	9.60
1984	4.00	4.70	7.50
1985	3.30	4.00	7.20
1986	3.30	3.80	7.00
1987	2.90	3.20	6.20
1988	2.40	3.30	5.50
1989	3.00	4.00	5.30
1990	3.70	6.00	5.50
1991	6.00	9.00	6.70
1992	5.60	8.50	7.40
1993	4.60	6.90	6.80
1994	4.00	6.00	6.10
1995	3.30	5.40	5.60

Unemployment Rates - 1981-1995/data



■ Cambridge ▩ Massachusetts □ United States

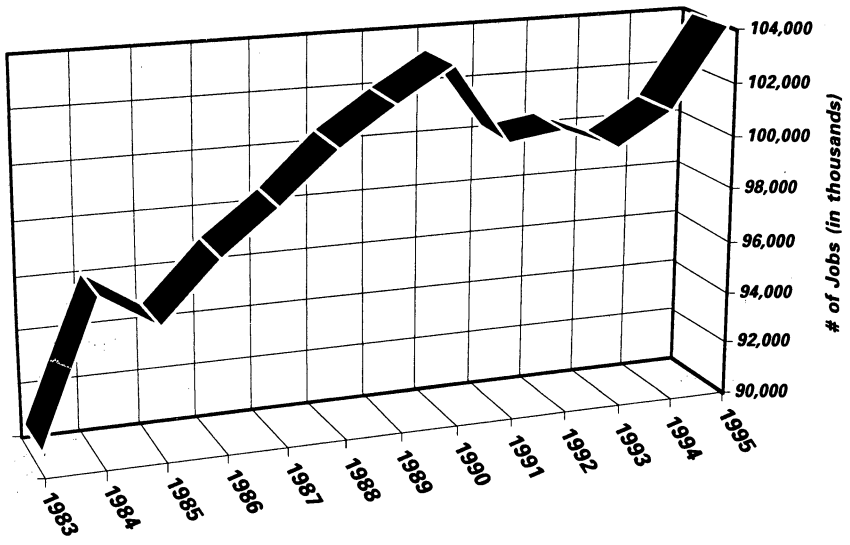
Source: MA Department of Employment & Training
Note: Current population survey methods for collecting unemployment data changed in January 1994; comparisons over time should be made with caution.

Employment by Year - Cambridge 1983-1995/data

Year	# of Jobs
1983	90,724
1984	96,192
1985	94,848
1986	97,073
1987	98,686
1988	100,621
1989	102,043
1990	103,278
1991	100,317
1992	100,631
1993	99,750
1994	100,977
1995	103,988

Source: Department of Employment & Training

Employment by Year - Cambridge 1983-1995/data



1995 Employment by SIC Code in Establishments Subject to the Unemployment Compensation Laws

Sector	Employment	Percent
Agriculture/Mining	170	.2
Construction	1,515	1.5
Manufacturing	6,407	6.6
Trans/Communications/Utilites	2,147	2.0
Wholesale and Retail Trade	15,843	15.2
Finance/Insurance/Real Estate	3,085	3.0
Services	67,204	64.6
Government	7,547	7.6
Total	**103,988**	**100.0**
Total Private Sector	**96,441**	**92.4**

Source: MA Department of Employment & Training

Commercial Real Estate Vacancy Rates

	Year End 1995	March 31, 1996	July 31, 1996	October 31, 1996	Dec. 31, 1996
Boston	10.1%	9.5%	9.2%	9.1%	
Cambridge	**6.0%**	**5.3%**	**5.6%**	**3.9%**	
Suburbs	10.9%	11.0%	10.0%	10.4%	

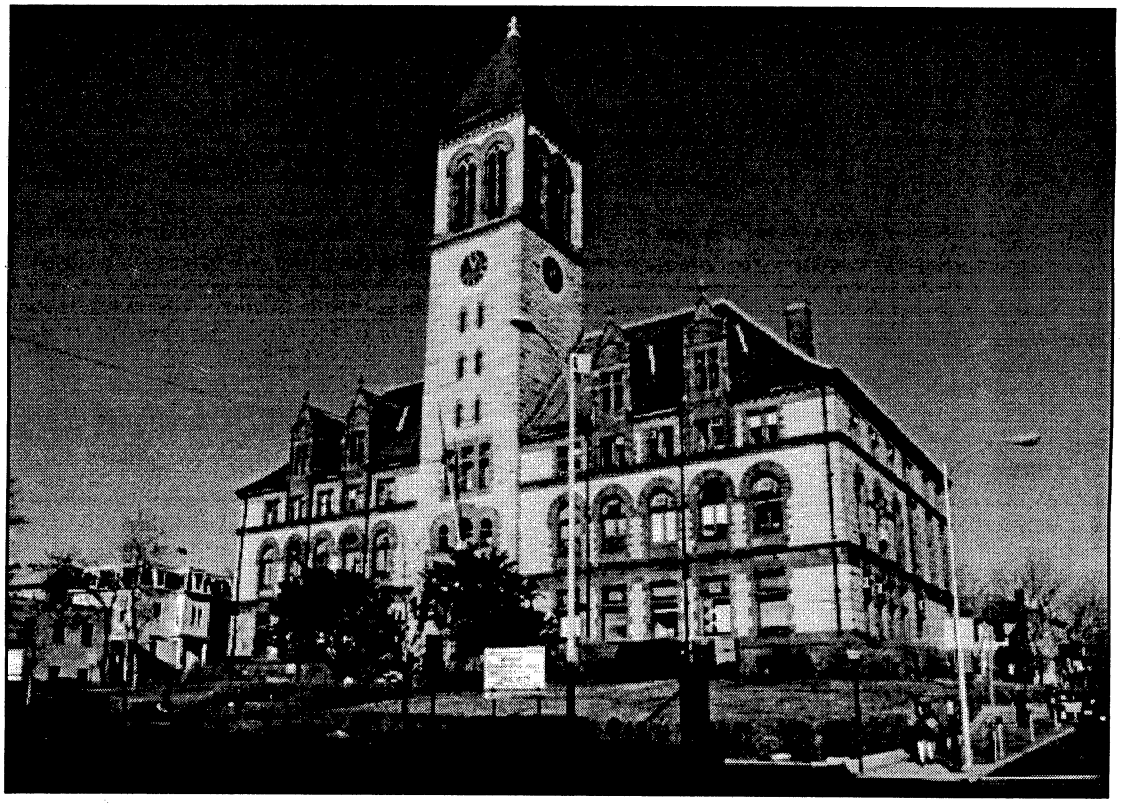
Source: Whittier Partners

Comparison of Residential and Commercial Property Taxes - 1996

Community	Residential	Commercial
Bedford	13.37	31.67
Boston	13.78	42.59
Burlington	12.00	31.60
Cambridge	**13.22**	**34.86**
Framingham	17.34	26.69
Lexington	14.01	26.52
Waltham	13.55	31.42
Watertown	15.30	24.78
Mean	13.93	30.95

Source: MA Department of Revenue

APPENDIX 2: First Source Hiring Agreement



First Source Recruitment Agreement

The nature of this Agreement is such that the _____ will use the Cambridge Employment Program as its first source for recruitment, referral, and interviewing of applicants for "covered positions", as hereinafter defined:

A. General Terms of the Agreement:

1. _____ agrees to use the Cambridge Employment Program as the first source for recruitment, referral and interviewing of applicants for "covered positions";

2. Entry into this Agreement is voluntary;

3. The Cambridge Employment Program will provide recruitment, referral and interview preparation services of applicants for "covered positions", subject to limitations outlined in this agreement;

4. This Agreement will take effect when signed by all parties below, and will be in force and effect for the period of _____;

5. _____ has been identified by the _____ as the individual responsible for _____ activities under the Agreement. He/She may be reached at _____ .

6. _____ has been identified by the Cambridge Employment Program as the individual responsible for Cambridge Employment Program activities under the Agreement. He/She may be reached at _____ .

B. Recruitment:

1. The _____ and Cambridge Employment Program agree that for the purposes of this Agreement, "covered positions" include the following jobs:

_____ _____

_____ _____

2. The _____ will notify the Cambridge Employment Program of its need for new employees for "covered positions" at least 10 days prior to the anticipated hiring date;

3. For "covered positions", _____ notification of the Cambridge

Employment Program will include but will not be limited to:

a. the number of employees needed, by job title
b. anticipated hiring dates, by job title
c. rate of pay, by job title
d. hours of work, by job title
e. anticipated duration of employment, by job title
f. description of work to be performed, by job title
g. name of immediate supervisor, by job title

4. "Covered positions" filled by internal promotion of the _____ 's local workforce need not be referred to the Cambridge Employment Program or its designated entity. The newly vacated position, made vacant by internal promotion, would be considered a covered position. The contractor may not consider the transfer of an employee from one job site to another job site within the region as "internal promotion", even if the transfer results in a change in job title, or higher pay.

C. Referral

1. The Cambridge Employment Program or its designated entity will refer qualified job applicants residing in the City of Cambridge and affiliated with the Men of Color Task Force to the _____ , in response to the _____ 's notification of need for new employees, within five days of receiving notification;

2. The Cambridge Employment Program will screen applicants according to the qualifications provided by the _____ , and with regard to: applicant's interest in the job and ability to commit to the job schedule.

D. Interviewing

1. The Cambridge Employment Program will notify the _____ no later than 14 days prior to the anticipated hiring date of the name(s) of the applicant(s) the Cambridge Employment Program or its designated entity will refer. The Cambridge Employment Program or its designated entity will schedule interview dates and time on behalf of the applicants;

2. The Cambridge Employment Program will make every reasonable effort to refer at least one qualified person for each job opening. The Cambridge Employment Program or its designated entity will notify the _____ if no applicants will be referred. In the event no applicants are referred, the _____ will make a Good Faith Effort to hire a City of Cambridge resident affiliated with the Men of Color Task Force (attachment 1);

3. The _____ will make all decisions on hiring new employees. Prior to interviewing others, the _____ will interview applicants referred by the Cambridge Employment Program, and notify the Cambridge Employment

Program of the result of the interview. After this time, the _____ will access other resources for applicants;

4. The Cambridge Employment Program will work with the _____ in any activities to ensure job retention on the part of employees placed under this Agreement, for a period of 120 days. The _____ agrees to help define and cooperate with these efforts;

5. After the _____ has selected its employees, neither the Cambridge Employment Program nor its designated entity will be responsible for the employee's actions, and the _____ hereby releases the City, the Cambridge Employment Program, and the Men of Color Task Force from any resulting liability.

E. Training

The Cambridge Employment Program and the _____ may agree to develop additional on-the-job training programs, the training specifications and cost for such training will be mutually agreed upon by the Cambridge Employment Program and the _____ in a separate Training Agreement.

F. Controlling Regulations and Laws

This Agreement will not conflict with any labor laws or other governmental regulations, these other agreements will prevail. The _____ will provide the Cambridge Employment Program documentation that a copy of the Agreement has been provided to the Collective Bargaining Representative, if any. The Collective Bargaining Representative will have the opportunity to comment on or object to the Agreement, 10 days prior to execution of the Agreement.

The _____ will not discriminate against any application for employment because of race, religion, age, disability, color, sex, national origin, citizenship, or political affiliation.

G. Assignment Modifications, Renewals, and Sanctions

1. If, during the term of this Agreement, the _____ should transfer possession of all or a portion of its business concerns affected by this Agreement to any other party by lease, sale, assignment or otherwise, the _____, as a condition of transfer, shall require the party taking possession to agree, in writing, to the terms of this Agreement. A new First Source Recruitment Agreement will be executed with the new party prior to the effective date of transaction.

2. The parties may mutually agree in writing to modify this Agreement in order to improve the working relationship described herein. Any such modification must be approved by the Assistant City Manager for the Department of Human Service Programs.

3. Correspondence and notices required under this Agreement will be delivered to the following:

For the Cambridge Employment Program:

_____ _____

_____ _____

_____ _____

For the _____ :

_____ _____

_____ _____

_____ _____

Approved as to Legal Form:

_____
Russell B. Higley, City Solicitor

Approved for the City of Cambridge:

_____
Robert B. Healy, City Manager

_____
Jill Herold, Asst. City Manager
Dept. of Human Services Programs

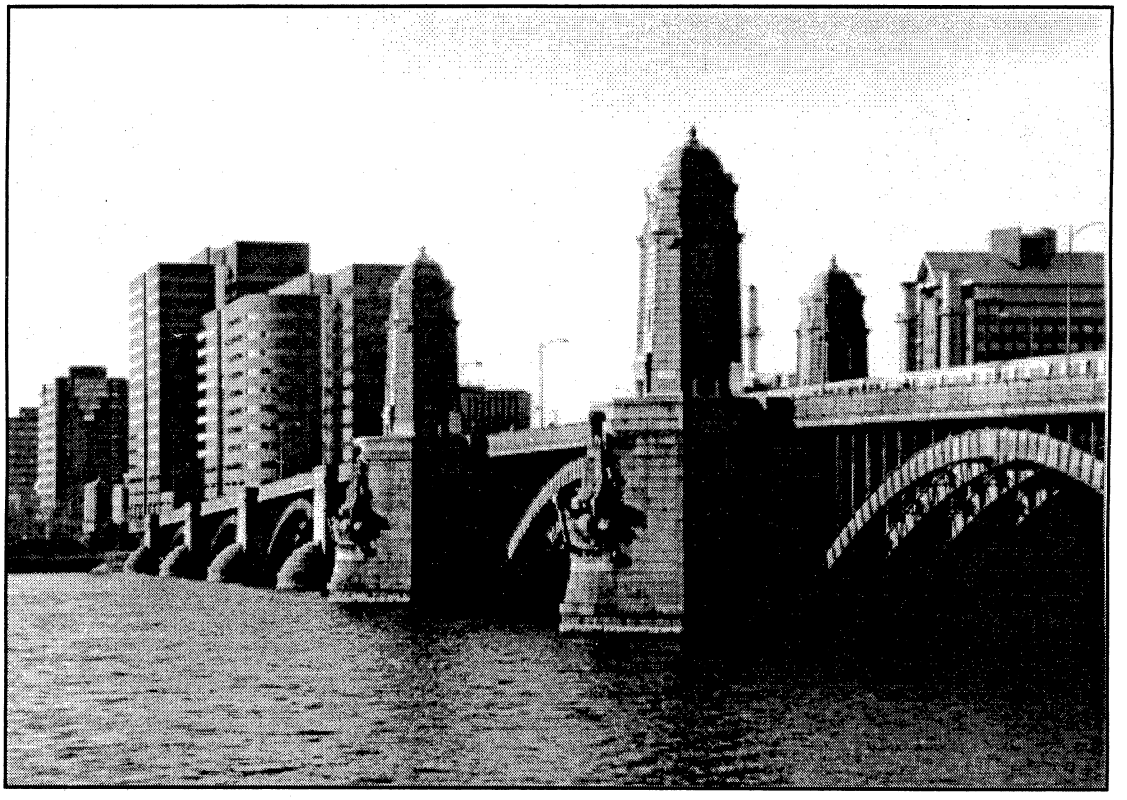
Approved for the Department:

_____
Saphira M. Baker
Office of Workforce Development

Approved for the _____ :

_____
X

APPENDIX 3: 121A Tax Abatement Policy



CITY OF CAMBRIDGE
CAMBRIDGE, MASSACHUSETTS 02139
TEL 349-4300
FAX 349-4307

EXECUTIVE DEPARTMENT
ROBERT W. HEALY
City Manager

RICHARD C. ROSSI
Deputy City Manager

TO: The Honorable, the City Council

FROM: Robert W. Healy, City Manager

DATE: April 15, 1994

SUBJECT: Response to Council Order 25 of April 4, 1994

The 121A tax agreement between the City of Cambridge and Biogen demonstrated that the City of Cambridge will agree to abate property taxes as part of a strategy to promote it's economic development goals. Council Order 25 highlights the need for Cambridge to develop a policy framework for evaluating requests for 121A tax agreements from companies in need of tax relief. This document responds to the Council Order by outlining criteria against which 121A requests can be evaluated.

Enhancement of the Tax Base

A primary criteria for granting 121A tax agreements is the enhancement of the tax base by bringing under-utilized property into productive, tax generating use. The 121A tax agreement is regarded by the City of Cambridge as an economic development tool which, over the term of the agreement, will stimulate a net increase in revenues. The net present value of total property taxes paid during the term of a 121A tax agreement will be expected to exceed the net present value of taxes that would have been paid if no 121A tax agreement had been granted. 121A tax agreements will be granted in conformity with the provisions of M.G. L. 121A. Therefore, a 121A tax agreement cannot be granted an existing business unless a new building is constructed or a substantial rehabilitation (representing greater than 50% of the most recent fair market appraisal value) of an existing building is undertaken.

Enhancement of the Job and Industrial Base

Cambridge's economy underwent a major transition from a declining industrial economy to a service economy centered on academic, governmental, and medical institutions, and business services derived from these institutions during the last 20 years. It is undergoing another transition as new technologies, such as genetic engineering, founded at academic centers are commercialized. These changes have had a profound impact on the structure of employment in Cambridge. From 1972-1992 Cambridge lost two thirds of its manufacturing base, some 12,000 jobs.

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During this period it also lost an additional 2,000 construction jobs. Although Cambridge added 10,000 jobs in the service sector during the eighties, these jobs tend to be concentrated in highly skilled occupations requiring a college degree, such as engineers, and jobs requiring very low levels of skill, such as janitors. Workers used to finding mid-level employment in manufacturing found their options restricted.

Cambridge's academic, medical and governmental institutions provide a stable core to our job base,representing 27% of total jobs, but employment growth in these sectors is expected to be flat in the next decade. Many of the companies that provided job growth in the last decade have actually reduced their labor forces. Polaroid, Lotus, and Bolt, Beranek, and Newman, are among them. In fact, Cambridge experienced a net decline of 2670 jobs between 1990 and 1992.

If Cambridge is to provide opportunities for displaced manufacturing workers, high school graduates entering the labor force, and the many immigrants making a home here, preservation and diversification of the job base is essential. 121A tax agreements should be used as part of Cambridge's long term strategy to promote the maturation of industries which can provide diversified job growth over time, such as biotechnology and other emerging technology industries. These agreements should also be used to attract and retain companies which can meet the objective of diversified job growth in the short term, such as manufacturing.

Community Benefits

Cambridge businesses have a tradition of corporate good citizenship which should be encouraged in granting 121A tax agreements. It is expected that companies entering into 121A tax agreements will enter into written agreements to participate in activities which directly benefit the Cambridge community. Examples of such activities are listed below. These examples are not exhaustive, nor is any company expected to provide all of them. It is anticipated that companies will develop individualized agreements which may include :

* Supporting the preparation of the Cambridge workforce for jobs within the local economy by providing scholarships to technical and academic institutions, offering internships to students in training, establishing mentoring relationships with high school students, donating supplies and equipment to training programs, and participating in the planning and execution of such efforts.

* Supporting other community needs. Companies may choose to meet other community needs by contributing to the City's stock of open space and providing ongoing maintenance of such space, participating in joint para-transportation efforts with other employers, and participating in joint child care programs with other employers.

Compatibility with Established Planning Goals

* Zoning. Projects receiving approval for 121A tax agreements will generally be expected to adhere to established planning and zoning policies. The Cambridgeport Light Industrial Zone already establishes 121A agreements as an economic development strategy to promote manufacturing employment.

* Growth Policy. The Growth Policy adopted by the Planning Board establishes a vision for the City's future and guidelines for sustainable growth and development in different areas of the City. 121A tax agreements should be compatible with these guidelines.

* Traffic Mitigation. Projects entering into 121A agreements should support the vehicle trip reduction policies established by the City and have approved transportation management plans.

* Economic Development. 121A tax agreements should be used as a tool for implementing the City's economic development policies. 121A tax agreements will be used to stimulate economic growth during downturns. The potential for job generation and retention will be a primary consideration in granting 121A tax agreements.

Development Characteristics

* Speculative office development should not be considered for 121A tax agreements. To be eligible for a 121A tax agreement, 60% of the gross leasable floor area, excluding parking, must be occupied by the owner or by a major tenant who shall posess and lease the space for a period of not less than 10 years.

* Predominantly retail uses will not be eligible.

* Build out of 100,000 square feet or greater will be considered.

* The development will ehance the overall character of the City and be consistent with good environmental practice.

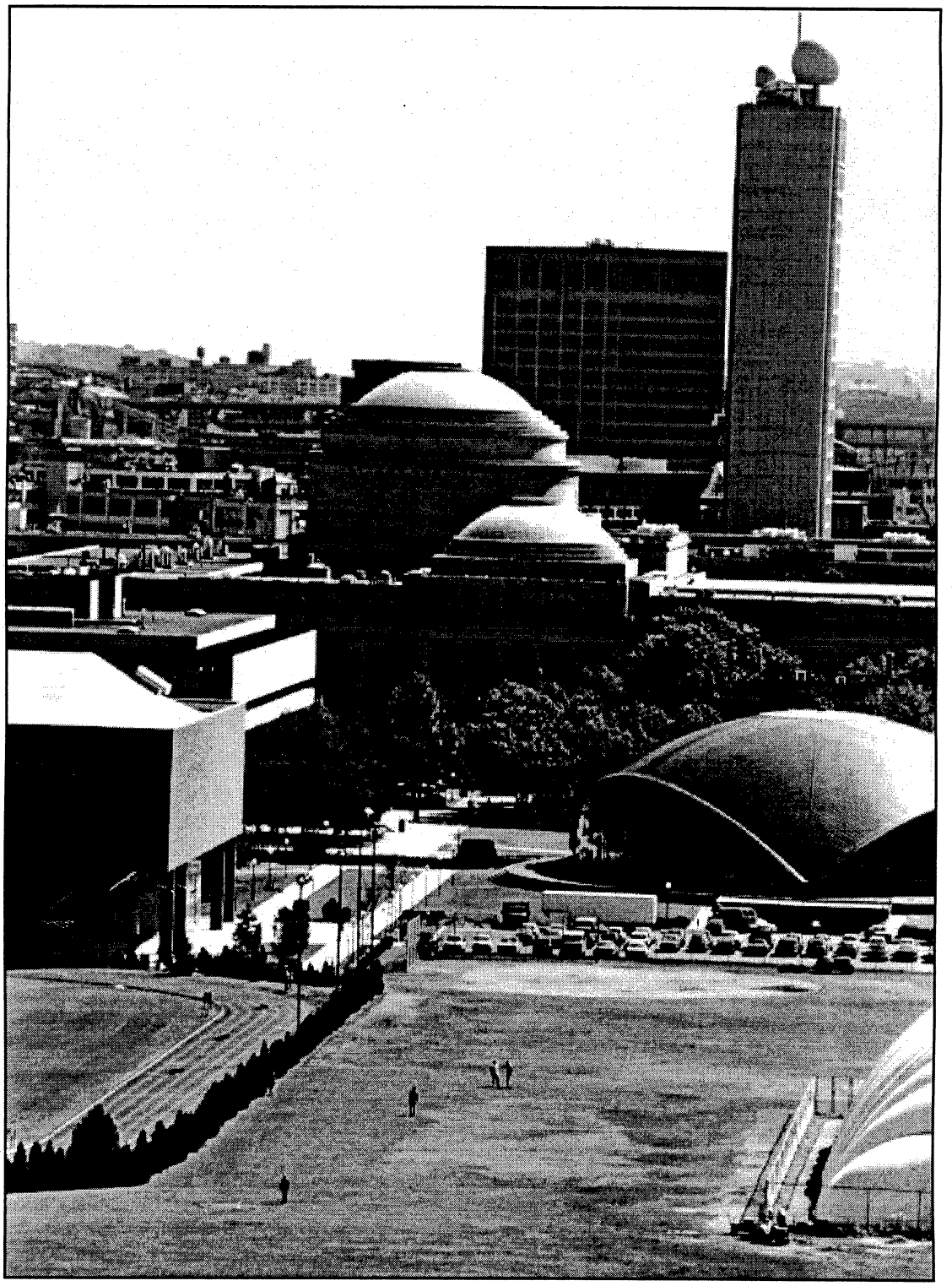
Terms

* Agreements shall be for no longer than 15 years, regardless of the build out schedule.

* Financial terms shall be in full agreement with the stipulations of M.G.L. Chapter 121A.

* Applicants for 121A agreements should be encouraged to enter into a 6A agreement that provides the City with a near market square foot rate in exchange for tax stability for the owner/tenant.

APPENDIX 4: Supplementary Articles



Technology Life Cycles and State Economic Development Strategies

Patricia M. Flynn

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States have become increasingly active in promoting industrial competitiveness and economic development in recent years. Some of these efforts involve the reorientation of existing institutions and programs that provide training, small business assistance, and recruitment incentives. In addition, states have undertaken a variety of new initiatives with respect to technology transfer, venture capital, and the modernization of established firms.

An extensive literature has emerged on state economic development efforts. The results, however, have not been of much help to states in terms of developing competitiveness strategies, for two major reasons. First, the materials are primarily descriptive, highlighting the actions of various communities, states, and regions. Little evidence is given on the success or failure of such experiences. Moreover, for many programs, not enough time has elapsed to evaluate effectiveness, at least over the long term.

Second, state experiments and initiatives have not been viewed in a larger analytical framework that would permit generalization and an understanding of the dynamic processes underlying these changes. Lacking this larger context, information about the experiences of other states, no matter how detailed or successful, is of limited value to states operating under different industrial and technological conditions.

This article adopts production life-cycle models as a framework in which to analyze systematically the interrelationships between industrial and technological change, human resource needs, and state economic development policies. This framework—in which products, production processes, and technologies are seen as dynamic phenomena whose locational, skill, and training requirements change as they evolve—provides a conceptual model useful for evaluating and designing state economic development policies.

The life-cycle framework suggests that states that incorporate the dynamics of industrial and technological change into their competitive-

ness strategies will reap employment and productivity benefits that technology can provide. In contrast, states that fail to address these issues increase their vulnerability to the negative impacts of technological change, including widespread unemployment and job loss.

I. Trends in State Economic Development Efforts

State economic development efforts revolve around three major strategies: the recruitment of firms to the state, the development of high-tech start-up firms, and the revitalization of established businesses. All state economic development strategies attempt to boost the local economy. States hope such steps will result in net increases in the private employment base (direct and indirect), in state and local tax revenues, and in long-term economic growth. The number of jobs created or maintained is not the only factor to consider. The quality and level of income associated with the jobs and the potential for spin-offs and other positive externalities play key roles in the long-term results.

State economic development efforts revolve around the recruitment of firms to the state, the development of high-tech start-up firms, and the revitalization of established businesses.

Recruitment of Firms

In the 1960s and 1970s, state economic development efforts focused on the recruitment of employers and jobs, either luring existing plants to relocate or attracting new plants. Seeking to differentiate themselves, states offered tax and financial incentives to encourage firms to relocate within their borders. A relatively low-wage work force and a good labor climate—which generally meant accommodating labor or no unions—were often highlighted in recruitment packages, particularly those offered by southern states.

Historically, North Carolina has been noted for its ability to attract manufacturing plants—a majority of the Fortune 500 companies have at least one plant located in this southern, right-to-work state. More recently, Tennessee, Kentucky, South Carolina, and Alabama have been successful industrial recruiters. A Nissan plant located in Tennessee in 1980, and in 1985 the state won its bid for the General Motors Saturn plant. Kentucky attracted a Toyota plant in 1985 and was first runner-up in the Saturn contest. South Carolina was successful in recruiting a BMW plant in 1992, and Alabama was the site selected in 1993 by Mercedes-Benz for its first North American plant.

More generally, states throughout the country sought to recruit high-tech industries during the late 1970s and early 1980s. These efforts included various tax and financial concessions and promises of work forces trained to accommodate the needs of individual employers.

Recruitment efforts continue to be an active component of many states' economic development plans. The competition for the Saturn plant, for example, included 38 states and 1,000 local communities. Further, state recruitment packages have become more complex as well as more expensive. In its winning proposal for the Saturn plant, Tennessee provided a significant property tax abatement and infrastructure improvements and promised to spend an extra $45 million on higher education, in order to offer a range of technical courses (such as robotics and automation) for upgrading General Motors employees. Michigan's recruitment of a Mazda plant in 1986 included $19 million to train new workers, and Illinois offered $64 million in 1988 in hiring and training assistance in its successful bid for a Mitsubishi/Chrysler plant (U.S. Congress, Office of Technology Assessment 1990b).

In the 1990s, the stakes escalated. South Carolina offered a $130 million incentive package in its successful bid in 1992 to lure a 2,000-job BMW assembly plant. South Carolina reportedly offered Mercedes Benz a similar package to that offered BMW but lost out to Alabama, which promised a record-setting incentives package worth over $300 million. In addition to the price, another unusual feature of the package was Alabama's agreement to pay the salaries of the 1,500 workers (at an estimated $45 million) while they were being trained during the first year or so on the job (Applebome 1993; Browning and Cooper 1993).

In recent years, recruitment efforts in many states have focused on attracting new plants of firms that are expanding, rather than trying to induce employers to relocate existing facilities. The trend has also been toward greater emphasis on international investors, as states hope to lure plants of Japanese and other foreign companies.

High-Tech Job Creation

In the 1970s and early 1980s, many states began supplementing industrial recruiting strategies with efforts to create jobs at home. The impetus behind this trend came partly from some states' disappointment with their lack of success in recruiting jobs from outside. It was also in response to growing evidence nationally that the key to employment growth and good jobs lay in "growing your own" (Grubb and Stern 1988).

The experiences of California's Silicon Valley and Massachusetts' Route 128 provided tempting examples of the high-tech job creation approach. Seeking to replicate the success of these areas, many states adopted a range of high-tech development initiatives that focused on research, development, and technology transfer.

Efforts to stimulate technological innovation have taken a variety of forms, including research centers, industry–university partnerships, matching grants, and research parks. Research centers, often operated in conjunction with universities, conduct applied research and allow firms to pool their resources for facilities and equipment. Research parks, which encompass concentrations of R&D firms, are designed to generate the exchange of new ideas and hasten their transfer to the market. By the mid 1980s, approximately 150 research parks were in operation in the United States, almost double the number a decade earlier (Eisinger 1988).

Programs to support high-tech start-up firms have also grown in recent years. All states now operate programs to assist small businesses and most have programs designed to stimulate new firm formation. Traditionally, small business assistance programs offered technical and managerial help; states are expanding these efforts to include more entrepreneurial and financial assistance. A few states have created small business "incubators," which provide shared services such as legal assistance, conference rooms, accounting services, and research facilities at relatively low rents to start-up firms.

Increasingly, state initiatives to create and develop new firms have influenced private investment practices and filled gaps in capital markets. By the mid 1980s, most states had funded venture capital programs to finance new and emerging businesses. These programs, some of which require matching funds from the firms, are generally quite small. They often seek to expand or change existing lending practices in the private sector. They may support firms that might not have approached traditional sources of seed money, or encourage private investments in potentially productive projects traditionally bypassed because they were considered too risky.

These entrepreneurial venture capital programs have brought states into relatively unfamiliar territory for public sector institutions. Traditionally, state industrial development loan programs worked with existing firms that backed their loans with collateral. In contrast, the new loan programs often focus on start-up operations and new product development, for which collateral is often not required (Eisinger 1988).

Revitalization of Established Businesses

Recent years have also witnessed a shift in emphasis in state economic development programs toward assistance to established businesses (Ganzglass and Heidkamp 1987; Osborne 1987; Rose and Kotlowitz 1991). Efforts to help established firms in the United States historically have focused on the prevention of job loss or on the reemployment of workers displaced from their firms. Measures to retain jobs in mature or declining industries, for example, have often included import quotas, domestic content rules, restrictions on outsourcing, and protection against unfair competition.

At the state level, cost-reduction incentives (for example, reductions in unemployment insurance, workers' compensation, or taxes and direct subsidies) have been used in attempts to offset cost disadvantages in an area and to keep employers in the state. States have also taken an active role in seeking to offset the adverse consequences of structural change. Many states have developed worker assistance centers or emergency teams to assist with plant closings and provide job search assistance, supplemental unemployment benefits, and assistance in moving.

Some states have created programs to assist existing firms before a shutdown becomes imminent. Michigan's Jobs Opportunity Bank, Delaware's Blue Collar Jobs Act, and the New Jersey Jobs Training Program specifically target resources to retrain current workers and possibly forestall plant closings.

Skills corporations, in which business and academic institutions work together and share training and retraining costs, emerged in the 1980s to assist established firms that were growing rapidly and facing skill shortages.

Increasingly, states have begun to take broader measures, which include programs for modernization and the development of new, foreign markets, in order to bolster the competitiveness of existing firms. Michigan's Modernization Services Program and Massachusetts' Center for Applied Technology, for example, seek to revitalize the states' traditional manufacturing sectors, such as auto parts, apparel, and cutting tools. These programs assist firms in the integration of new technologies by identifying both technological and training needs and by providing support and technical assistance.

In a multistate effort, the Southern Technology Council Consortium for Manufacturing Competitiveness was established in 1988 to utilize the states' vocational schools and community colleges to assist small and medium-sized enterprises with new technologies. Some states have begun experimenting with programs to stimulate exports by helping small and medium-sized enterprises market their products overseas.

Some state-financed training programs have shifted their efforts toward retraining the potentially unemployed and upgrading the skills of current workers. California's Employment Training Panel, the nation's largest state-financed training program, funded at approximately $55 million a year, was originally designed to assist firms moving into the state. It now focuses on helping existing businesses retool and reorganize in order to enhance productivity.

A few states have begun linking their training funds for established firms to capital investments. Indiana's Basic Industrial Training Program, for example, requires firms in mature industries (such as transportation, steel, and heavy machinery) that are expanding or modernizing to invest in capital equipment in order to be eligible for retraining assistance. The state covers between 10 percent and 50 percent of training costs, depending on the level of investment. Illinois' Industrial Training Program, which added a mature industry component to complement the traditional support of new and expanding companies, also makes training contingent on capital investment by the firms.

While the revitalization of established businesses has taken on increasing importance, the shift in this direction is still quite limited. Most states continue to focus their technology program funds on university R&D and on assisting start-up firms, rather than on the integration of new technologies into established firms. For instance, only about 10 percent of the $550 million spent on various kinds of technology programs in 1988 was spent on technology transfer and on technical and managerial assistance. As of 1990, only 10 states operated programs whose primary function was to assist manufacturers in technological adoptions. A mid 1980s survey by the Office of Technology Assessment (1990a) showed that only 2 percent of small and medium-sized enterprises had received industrial extension services from the state.

The recent Department of Defense "build-down" and growing defense conversion efforts will bring greater attention and funding to industrial modernization activities. The federal Advanced Research Projects Agency will be providing hundreds of millions of dollars nationwide for R&D and dual use (defense and commercial) technologies. In October 1993, for example, Massachusetts received $10.6 million in the Clinton Administration's first round of defense conversion grants. These funds will be used to create a statewide Manufacturing Modernization Partnership Program to help small and medium-sized firms diversify into commercial markets.

II. Technology Life Cycles, Competitiveness, and Economic Development[1]

Life-cycle models emphasize the evolutionary character of production and employment needs. The "industry life cycle" concept dates back to the 1930s, when industries were found to undergo a sequence of stages—experimentation, rapid growth, diminished growth, and stability or decline—as they developed. Separate "life cycles" have subsequently been delineated for products, for production processes, and for technologies.

Technology and Skill-Training Life Cycles

The technology life cycle, in particular, is a valuable tool in understanding the impact of industrial change on jobs and employment (Ford and Ryan 1981; Shanklin and Ryans 1984). Technologies—such as a numerical control technology, a microelectronics

[1] This section draws heavily upon Flynn (1991, 1993).

Table 1
Skill Training Life Cycle

	I Introduction: New and Emerging Skills	II Growth: Increased Demand for Skills	III Maturity: Slower Growth in Demand for Skills	IV Decline: Skill Obsolescence
Nature of Tasks	Complex	Increasingly routinized	Increasingly routinized	Narrowly defined
Type of Job Skills	Firm-specific	Increasingly general	General: transferable	General: transferable
Effects on Job Structure	Job enlargement: new positions created when significant change in skill needs occurs	Emergence of new occupations	Relatively rigid job hierarchy; occupations associated with formal education and related work experience requirements	Elimination of occupations
Skill Training Provider	Employer or equipment manufacturer	Market-sensitive schools and colleges	Schools and colleges, more generally	Declining number of schools and colleges; some skills provided by employer

Source: Adapted from Patricia M. Flynn, *Technology Life Cycles and Human Resources*, Lanham, MD: University Press of America, 1993, p. 19.

technology, or a data-processing technology—exhibit patterns of development in which they are introduced slowly at first, become more widely adopted as intensive research and development efforts lead to improved performance, and are then replaced by a new, superior technology.

A clear understanding of the technology cycle can provide signals of impending changes in products and production processes. Rapid product innovation accompanies the earliest phases of a technology's development, whereas process innovation peaks later in the technology's cycle as product design stabilizes. As a technology matures, uncertainty about its capabilities and limitations declines, and products and processes can become more standardized. Innovations in the later stages of development of a technology, if they occur at all, are primarily minor improvements in equipment rather than major, fundamental changes in either product or production processes.

Just as the production processes change over the life cycle of a product, so do the skill and training needs of industry over the life cycle of a technology (Table 1). The early stages of a technology, which are characterized by a high degree of product innovation, are relatively skill- and labor-intensive; professionals such as engineers and scientists perform most of the tasks later assumed by production and marketing managers, technicians, and skilled craftsworkers. The firm-specific nature of skills required by the new technologies also means that employers must provide their own training or rely on equipment vendors to do so.

As a technology becomes more widely adopted and equipment standardized, skills that were once firm-specific become general skills transferable among employers. Increased demand and standardization of skills permit their "production" on a larger scale and at locations away from the R&D sites. As a result, skill development tends to shift from the workplace to the formal education system as technologies mature. Computer programming, keypunching, and word processing are classic examples of this transfer.

As technologies become obsolete, training focuses on replacement needs and on the retraining of workers for other areas. A limited market for these skills and declining student enrollments result in the termination of school-based training programs in these fields. The responsibility for training to fill relatively short-term, skilled replacement needs, thus, shifts back to firms.

The Geographic Location of Jobs

In addition to altering production processes and skill needs, technology and production life cycles affect the geographic location of jobs. Patterns of

also suffer if the state subsidizes the entry of firms that are their direct competitors.

The external control inherent in branch plant economies, whereby major corporate decisions are made elsewhere, suggests that local employment and other community concerns may not be a top priority in discussions of firm location and restructuring. Further, given their mix of production activities and occupations, branch plants are less likely than indigenous new firms to act as a "seed bed" or "growth pole" in stimulating spin-offs and new employment opportunities in an area.

Recent anecdotal evidence does indicate, however, that several foreign auto assembly plants (for example, Toyota in Kentucky, Honda in Ohio, Nissan in Tennessee) have attracted supplier branch plants to the area. Moreover, if state recruitment strategies provide longer and more complex education and training programs than in the past, states may be able to attract better-quality jobs. More highly skilled and more broadly trained work forces are incentives that appeal to firms in innovative, non-standardized activities in earlier stages of development. Michigan, for example, one of the top three contenders for a Saturn plant in 1985, offered a recruitment package that encouraged development of "world-class" manufacturing and engineering talent. While it lost its bid for the manufacturing plant, it won the company headquarters and R&D facilities, and the relatively high-skilled jobs that accompany these functions (Fosler 1988).

High-Tech Job Creation Strategies

The life-cycle framework helps to clarify the role of new and emerging businesses in economic development. The creation and development of new entrepreneurial firms require strategies that focus on the characteristics and needs of products and technologies during their early stages.

In the high-tech success stories of the Silicon Valley and Route 128, growth was driven by local start-ups and spin-offs from companies already in the area. The technical infrastructure of both areas encompasses applied research and product development at universities, informal local communication networks, a scientific and technical labor force, and proximity to complementary and competitive firms and to distributors and markets. These examples accentuate the importance of innovation, research, product design, and non-routine production activities. Venture capital can provide the means to create and develop these new and emerging firms. Research on the location of technology-based entrepreneurial firms confirms these life-cycle hypotheses with regard to the importance of R&D, venture capital, and skilled labor in high-tech development strategies (Malecki 1990, 1991).

"High-tech" job creation strategies are not likely to be very effective for many states (Browne 1983; Gittell and Flynn 1994). Historically, small technology-based firms, and high-tech employment more generally, have accounted for a relatively small proportion of all employment. High-tech employment in the United States is geographically concentrated, with most found in New England, California, and Texas. R&D activities, in particular, remain geographically concentrated in a few areas of the country.

States with significant university R&D, venture capital, and highly skilled labor have the most potential for implementing a successful competitive strategy based on entrepreneurial new firms.

States with significant university R&D, venture capital, and highly skilled labor have the most potential for implementing a successful competitive strategy based on entrepreneurial new firms. In addition, an established base of high-tech employment provides an area with a competitive edge in the creation of new entrepreneurial firms. An existing agglomeration of firms in similar or related sectors is a principal determinant of both birth rates and the distribution of small technology-based firms. Concentration of these resources in one area enhances the firms' productivity by creating external economies of scale in production and marketing. A self-sustaining "critical mass" of employers can develop, as the concentration of entrepreneurial firms attracts additional firms and venture capital, strengthens the technological infrastructure, attracts and retains skilled professionals, further promotes informal communication networks, and encourages innovative activities (U.S. Congress, Office of Technology Assessment 1984; Malecki 1990, 1991).

The flow of venture capital further highlights the advantages of an established high-tech base and the presence of research universities in the formation of new firms. The availability of venture capital varies widely by state and region, with funds flowing from U.S. financial centers like New York and Chicago to centers of innovation and technology. California, Massachusetts, and Texas regularly attract venture capital, with California alone often accounting for one-third to one-half of all U.S. venture capital. In contrast, many states have virtually no venture capital funds.

While an established high-tech employment base gives an area a decided advantage in new firm formation, relatively little is known about the initial generation of local start-ups. The initial "confluence of technological opportunity," or the appearance of the first entrepreneurs, appears to be due to the availability of start-up financing and the existence of informal (noninstitutional) personal and local contacts supportive of new, unproven entrepreneurs (U.S. Congress, Office of Technology Assessment 1984). Small firms, that is, those with fewer than 100 employees, are the major source of entrepreneurs, although a significant number of founders do originate from large firms.

It is important to differentiate among small firms in fashioning a high-tech development strategy. Most small businesses create no jobs after the first few years and many, particularly in the service sector, generate lots of relatively low-paying, dead-end jobs conducive neither to innovation nor to entrepreneurship. Relatively few small firms have the potential for growth and expansion and act as "seed beds" for future jobs. Such firms are dominated by innovative, nonstandardized activities.

A high-tech job development strategy will be extremely difficult, if not impossible, for relatively small areas that lack universities, existing technology-based companies, and skilled labor. Areas dominated by relatively mature industrial bases and technologies are also unlikely to be able to implement an effective economic development strategy around technology-based entrepreneurial firms.

Empirical evidence confirms that most research parks fail (Eisinger 1988). Some are unable to attract tenants; others fail to generate spin-offs; almost all fail to stimulate technology transfer. With respect to venture capital, most state programs are quite small and probably will not prove effective in establishing the "critical mass" of high-tech firms needed to generate a self-sustained growth environment.

Business Revitalization Strategies

The life-cycle framework also sheds new light on strategies to revitalize traditional and established firms, whose activities are primarily beyond the initial stages of development. Some established firms involve "mature" production activities. Representing the extreme opposite of high-tech activities, mature activities are those in which technologies and products are relatively standardized, mass production predominates, skill requirements are relatively low, and little or no innovation is taking place. Competition is primarily a function of cost.

The potential across states for programs to enhance productivity and competitiveness through revitalization of established businesses is extensive.

Considerable diversity exists among traditional industries in terms of their organizational structures, occupations, wage rates, and skill requirements. Within industries and even firms, mature segments often coexist with high-tech segments, as well as with activities that involve products and technologies along the mid-range of the development spectrum. Effective revitalization strategies for these industries will take a variety of forms, including integration of new technologies, better utilization of mature technologies, development of specialized product niches, and reorganization of the workplace.

In contrast to the recruitment and high-tech job creation strategies, the potential across states for programs to enhance productivity and competitiveness through revitalization of established businesses is extensive. There are two main reasons for this. First, the dynamics of technological and industrial change accentuate the ongoing need for upgrading of human resources and facilities to maintain competitiveness. Second, states have only just begun to tap the opportunities available to them regarding business modernization strategies.

The introduction of new technologies across a variety of established industries can benefit states by

fostering product and process innovations that lead to new and improved products and new markets. States need not have high-tech firms located within their boundaries in order to benefit from such a strategy. While still a strong competitor in terms of R&D and innovation, the United States continues to fare poorly with respect to the transmission of "best practice" technologies throughout the industrial structure. U.S. rates of adoption of robotics, computerized numerical control devices, and other advanced technologies continue to fall behind those of our industrial competitors. Moreover, even when adoption rates are similar, U.S. firms have been found to be less efficient in their implementation (Osterman 1988; Dertouzos, Lester, and Solow 1989; U.S. Congress, Office of Technology Assessment 1990a, 1990b).

The failure of firms to remain technologically competitive contributes more to worker displacement and job loss than does the adoption of new technologies.

Some observers express concern that adoption of new technology causes permanent job loss. In fact, however, the failure of firms to remain technologically competitive contributes more to worker displacement and job loss than does the adoption of new technologies (U.S. Government Accounting Office 1986; Cyert and Mowery 1987; OECD 1988). Adoption of technologies in their relatively early phases of development has primarily positive impacts such as upgrading and job enlargement. In contrast, the preponderance of negative impacts such as mass layoffs, unemployment, and job downgrading relate to adoptions of relatively mature technologies or to the failure of firms to adapt at all.

An alternative to the technology-based approach for enhancing the competitiveness of established firms involves a shift toward customization and market niches. Flexible manufacturing systems that make shorter production runs economical and encourage product differentiation have promoted a trend toward greater use of small-batch production of relatively specialized products. More flexible production processes and highly skilled labor also facilitate adoption of more advanced technologies (Doeringer, Terkla, and Topakian 1987).

Organizational and managerial changes are often necessary to fully exploit the potential productivity gains of new technologies and corporate restructuring. U.S. managers have been criticized, however, for several shortcomings in this area: (1) failure to evaluate effectively both the short-term and the long-term costs and benefits of technological adoptions; (2) inadequate development of human resources to meet changing needs; (3) insufficient development of organizational structures that can fully exploit the productivity gains associated with new technologies; and (4) failure to establish fruitful cooperative relationships with workers (Hayes and Abernathy 1980; Cyert and Mowery 1987; Drucker 1988; Hayes and Jaikumar 1988).

Small firms, in particular, have difficulties with technological adoptions because of costs, skill and retraining requirements, and the need to keep up-to-date. State industrial extension and training efforts, however, reach relatively few small firms. State officials indicate that it is hard to find small companies, assess their needs, and spend enough time with them to make a difference.

The fact that industrial extension programs are rarely integrated with state training efforts highlights other missed opportunities. Neither technology nor training in isolation from systemwide support will effectively increase productivity and jobs. The recent trend, albeit small, to link training with capital investments is a good step in promoting industrial competitiveness.

The shift in some state-financed training programs away from recruitment and toward the more efficient use of existing state resources and firms also has the potential to enhance competitiveness and long-term economic growth. However, while modernization efforts generally require flexible and more broadly trained workers, most state-financed training programs continue to provide relatively short-term training for individual firms (Creticos and Sheets 1990). In-plant training provided by state-financed training programs has not been assessed on a sustained basis; skills corporations, too, have had few evaluations. Furthermore, the firms accepting public funds might have provided the training anyway. Matching requirements help to limit the degree of substitution taking place; questions remain, however, about the transferability of the skills being provided.

IV. Development of State Strategies

The life-cycle perspective on competitive strategies is useful to states for several reasons. First, states can use it to assess where their economies are in terms of emerging, evolving, and maturing employment opportunities, and thus what economic development needs might be. Second, states can use it to guide their determination of where they might want to be, the feasibility of their aspirations, and the economic development issues that must be addressed to move in that direction. Third, states can use it to determine the relevance of the experiences of other states to their own competitiveness strategies.

Tailoring Competitiveness Strategies to Individual States

Most states will select a mix of strategies (recruitment, job creation, retention) to promote competitiveness and long-term economic development. A state's economic development goals should reflect its competitive strengths and opportunities. In addition, the selection and design of strategies and particular programs should be linked to the state's employment base and resource mix.

States will differ with respect to composition of employers, characteristics of the work force, institutional capabilities, and other resources. Goals and strategies, therefore, are expected to vary from state to state. In tailoring their strategies, states should assess their existing employment base, the characteristics and potential of state resources, and the strengths on which they can build competitive advantage.

Initially, states should analyze the nature and mix of their employers and jobs. This analysis requires looking beyond industry aggregates and identifying the types of production activities (for example, R&D, standardized assembly), types of employers, occupational requirements, and skill needs. Business revitalization strategies, in particular, further accentuate the importance of understanding the existing employment base. While each state is likely to identify additional questions relevant to its particular circumstances, the first box provides guidelines for conducting this employment assessment.

States should then develop an inventory of labor and other resources available (educational and training institutions, R&D facilities, venture capital) that can influence competitiveness efforts. Does the state have the types of resources necessary to effectively implement a high-technology job creation strategy or to recruit good jobs? The characteristics (age distribution, education levels, occupations, wages) of the state's labor force should be compared with national averages to identify state strengths or potential problems. A state with a relatively old work force, for instance, will face more replacement needs than others. A state with relatively high proportions of engineering and technical talent can have an advantage over others in high-tech development possibilities. A state with relatively low production wages can attract manufacturing plant production jobs. The overall structure of a state's education and training

State Employment Assessment

- How does the state's industrial structure compare with the national economy? How has this been changing over time?
- How does the state's occupational mix in its major industries compare with the national averages in those industries?
- Describe the extent of various kinds of production activities located in the state (the mix of branch plants, headquarters, and R&D facilities). Is there a trend in recent years?
- Make a grid classifying the state's major industries and employers by development stage (emerging, growing, stabilizing, declining).
- What is the birth rate of new firms in the state? How does this compare with the national average?
- What are the characteristics (industries, firms, products, technologies) of the state's high-tech employment?
- What are the characteristics (industries, firms, products, technologies) of the state's major traditional employers?
- What is the extent of entrepreneurial small firms within the state? Identify potential high-growth areas.
- What industries have been the primary sources of plant closings, layoffs, and unemployment in the state in recent years? What were the reasons for these events?
- What are the needs (skills, technological, financial) of the state's traditional employers?

State Resource Inventory

- How does the state's work force compare with national statistics regarding demographic and educational factors? What are the implications in terms of education and training needs?
- What are the major R&D institutions in the state?
- What are the extent and sources of venture capital available to new firms?
- Describe the "business culture," labor climate, and status of labor relations in the state. Give examples.
- What major skill shortages and surpluses have occurred in recent years? How were these imbalances resolved?
- Describe the evolution and current status of the state's education and training network. What are the strengths and weaknesses of the various institutional components of this network?
- Which firms have used state-financed training programs? Describe the extent and types of skills provided.
- What relationships/partnerships exist between education and training institutions and employers (for example, co-op programs, apprenticeships, advisory boards)? Have these met expectations?

network should be identified. Further, the roles and track records of the institutional components of the education and training network should be assessed in terms of skill generation and responsiveness to changing labor market needs, in order to understand the capabilities of the system. The second box provides guidelines for the development and assessment of the state's resource inventory.

Lastly, competitiveness strategies and programs should be assessed in light of the state's employment and resource bases. In which activities is state policy likely to be most effective in generating good jobs and long-term economic development? In which industries? In which types of firms? Assessments should be made of various recruitment, job creation, and business revitalization programs previously implemented in the state. Such assessments should include both the short-term and the long-term impacts. In addition, potential barriers and constraints to implementing strategies and programs should be identified. When policy options have been identified as particularly appropriate for the state, the experiences of other states in that regard may then prove particularly useful. What were the impacts of those programs elsewhere, and what problems were encountered? The third box provides guidelines for thinking strategically about the state's economic development policies and employment and work force needs and opportunities.

"Defensive" and "Proactive" State Actions

The life-cycle framework highlights the importance of distinguishing between "defensive" and "proactive" actions in seeking to bolster a state's competitive advantage and long-term economic development. Defensive actions represent an expedient way of improving competitive position by lowering costs. They do not, however, address issues of work force quality and technological change that underlie business performance. In contrast, proactive or innovative adjustment mechanisms can lower costs by increasing labor productivity, motivating workers, improving efficiency, and increasing the quality of the work force (National Center on Education and the Economy 1990; Doeringer and others 1991).

Classifying state actions as defensive or proactive can be useful in understanding the impacts and trade-offs, both short-term and long-term, of various policy options. Defensive state actions such as tax abatements or other financial incentives can quickly lower costs to potential employers and perhaps attract relatively large numbers of jobs to some states in a short period of time. As discussed above, however, these mechanisms may undermine long-term economic growth, as the jobs recruited are often relatively low-skilled and vulnerable to further relocation to even lower-cost areas. Proactive strategies may increase costs initially and will take longer to reduce costs via productivity increases. However, the ultimate impacts on jobs and growth are likely to be more positive and longer-lasting.

The defensive/proactive dichotomy highlights the importance of having public policies focus on "good jobs" as opposed to "jobs" per se. Moreover, "output" should be viewed in addition to jobs in evaluating policy effectiveness, particularly with respect to relatively mature industries where increasing competitiveness and long-term viability are often achieved with lower employment levels.

Strategic Thinking about Economic Development Policy and Employment and Work Force Needs

- What are the areas in which the state has particular strengths, in light of the employment and resource inventory assessments?
- What firms have moved into the area in recent years? Did they relocate from another state (if so, which)? Are they foreign-owned? What are their major production activities and the nature and extent of their jobs?
- What incentives have been used by the state in recruiting firms? Did those firms that have moved in take advantages of these?
- To what extent have new, high-tech firms been created in the state in recent years? In what fields? What was the source of venture capital?
- What are examples of traditional industries and firms in the state that have modernized their workplaces in recent years? Were state-financed training programs involved? Were any education and training institutions directly involved?
- Has the state been able to leverage funds to provide for training? To what extent? With which employers?
- What types of coordination and cooperation of education and training institutions appear necessary to implement the programs that appear to meet best the state's current and future employment and training needs?
- What barriers and constraints may inhibit the implementation of strategies and programs that appear to meet best the needs of the state?

In recent years, state economic development strategies have begun to focus more on proactive options and less on defensive responses. The trend away from an almost exclusive focus on recruitment toward job creation and business revitalization, for instance, is indicative of this shift away from a pure cost orientation to one that emphasizes productivity and technological competitiveness. The policy options being used within these broader strategies have been evolving in a similar direction. More complex recruitment packages that include training grants for upgrading and for relatively skilled positions, for example, can reduce labor costs through productivity gains—in contrast to tax abatements and other financial incentives.

With respect to business revitalization, while efforts are still limited, states are experimenting with a range of options with the potential to enhance productivity at the workplace. These include helping older firms adopt new technologies or make more effective use of traditional technologies, and helping them develop new markets by customizing or exporting their products. This shift toward more proactive approaches promises more highly skilled jobs. Proactive approaches also should provide real cost savings over time, whereas defensive ones threaten to become increasingly expensive. With respect to recruitment strategies, for example, when the first few states began offering tax abatements and customized training, these incentives helped to differentiate one state from another as they sought to attract new employers. Over time, more and more states have found it necessary to follow suit or risk not being considered a serious contender. Now virtually all states offer tax and financial incentives and customized training, so states are incorporating additional features into recruitment packages in order to distinguish themselves from the others.

Proactive approaches have a further advantage: At the national level the likelihood is greater of real net employment gains, rather than just a reshuffling of jobs among states. Moreover, proactive approaches have the potential to lead the way to an economic development outcome with relatively high wages, high skills, and high living standards, effectively bypassing low-wage, low-skill alternatives.

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"Entrepreneurial Hotspots" 1994

WHY?

Why are entrepreneurs starting and growing companies in some places much more than in others? We do not have a definitive answer, because many of the reasons are subjective and are difficult to measure. But some pretty strong patterns emerge.

First, in today's economy, the traditional "factor cost" argument is largely irrelevant. These firms are not locating so as to minimize taxes, or costs associated with labor, energy, transportation, etc. In fact, if there is any pattern, it is a shift to higher, rather than lower, cost areas. Los Angeles is not a low cost place to live and work. Nor is Milwaukee or Las Vegas or Indianapolis.

The search appears to be for high quality, not low cost. The highly skilled worker in Milwaukee is apparently a better "labor value" (per dollar spent) than a less skilled worker elsewhere. Said another way, the premium paid for a worker in Milwaukee is more than justified by the extra skill and productivity offered by such a person.

Clearly no one locates in San Diego to minimize transportation costs, or in Honolulu to minimize energy costs. They might have avoided such places in an industrial era where bulky, heavy goods and materials were hauled from place to place and processed with large amounts of heat and electricity. But, for the most part, growing companies today ship or heat very little — even within the manufacturing sector. Many of those that do ship, ship light weights long distances, and are largely indifferent regarding the final destination. We are told, for example, that the average computer chip makes 5 international flights before it reaches its end user. Clearly it does not make much difference to the creator of the computer containing the chip where that creator lives and works.

If not factor costs, then what? Without pretending great precision we can identify two broad categories of things that make a difference, which we shall label "Hard" and "Soft." The "hard" things are, for the most part, observable, measurable things; the "soft" are far less tangible.

Hard Determinants

Four "hard determinants" are, in our experience and analysis, related to successful entrepreneurship. They are:

1. Universities,
2. Skilled Labor Pool
3. Airports,
4. A Nice Place to Live.

Universities

Universities are the feedstock for most Gazelles. Our calculations suggest that a high proportion of growing companies hire a workforce with above average skill levels. We discovered in *Who's Creating Jobs?* that these firms pay above average wages. University labs are frequently the source of the entrepreneur him or herself. In a study of growing companies in Seattle, it was discovered that 70 percent of the companies had a direct, active role in the operation of the University of Washington. At one point, the two-thirds

of a square mile next to MIT in Boston was creating more jobs than 13 states; it is still creating more jobs than 6 or 8 states, depending on the time period observed. New firm formation and growth around universities in San Francisco, Dallas, Austin, Atlanta and Chicago is legendary. The university is the source of new ideas, creative people and technology that many new and growing companies base their growth upon.

Skilled Labor Pool

A knowledge-value economy requires, as one of its key inputs, a skilled labor force. Strong backs and strong arms are not enough anymore. The worker of today must be facile with computers, databases, telecommunications technology, numerically controlled machines, etc. Truck drivers must operate in a world of computer-controlled scheduling and GPS (Global Positioning System -- a satellite-based network that knows the location of each truck within 10 feet every second). Machine tool operators and assembly workers increasingly monitor automatic production undertaken by robotically controlled machines. Office workers live in a world of PC's, databases, LANS, and WANS. Movie producers turn increasingly to very sophisticated graphics systems for their special effects -- note, in particular, the emergence of computer-based animation as a serious art form with *Lion King* and *Beauty and the Beast*. We even see the beginnings of virtual reality theme parks.

A community that cannot provide people who are thoroughly comfortable in this kind of a world will wither and die. Perhaps the best example of a community doing something about it is Louisville, Kentucky. Starting 12 years ago with one of the least prepared work forces in the country (and one of the worst economies), Louisville decided to build modern technology into its education system, starting with the first grade. At that point, Louisville had two computers in a school system with over 100,000 students. Today, Louisville students have access to 13,000 computers that permeate all aspects of the curriculum -- English, science, visual arts, history, and vocational programs of all kinds. This spring, Louisville graduated its first class with computer-based learning in every grade.

The business community has responded. UPS has located its US-wide air hub in Louisville. Capital Holding Corp. has built the tallest building in Kentucky in downtown Louisville. Among large metro areas, Louisville now ranks 21st; it would have been near the bottom 10 years ago had we been measuring it then. Perhaps more importantly, the Louisville CBD now ranks 58th out of 778 large-city communities on our hot-spot scale. When we first visited the Louisville CBD 12 years ago, it was sheathed in plywood, with hardly a sole in site. Today it is a beautiful city. It can be done, and Louisville has done it.

Airports

One of the striking features of the 1980's was the emergence of smaller firms as global players. As can be seen in Figure 8, 96 percent of exporters employ fewer than 500 people. The Gazelle often thinks of itself as a global, or at least a national, company from Day 1. It does not depend primarily on the local market for its revenue.

One consequence of this new trend is the importance of a major, preferably international, preferably hub airport. Clients and suppliers are rarely in the local area, and they must be visited often. Two or three flights per executive or sales person per week are common. Airline travel in the 1990's for the Gazelle is what rail travel was to the Gazelle in the 1890's. It is not an accident that nine of the top 10 most entrepreneurial, larger metro areas are hub airports. Birmingham is the only exception. A place without a major airport will have a much tougher time as the years pass.

A Nice Place to Live

"A nice place to live" is perhaps the most profound of the "hard determinants." It is, at least somewhat, measurable. It has to do with climate,

density of living (low being better), quality of education, recreational and cultural opportunities, etc.

Figure 8

Distribution of Exporters by Enterprise Size

Enterprise Size	Percent of Exporters
1-19	63%
20-99	24%
100-499	9%
500+	4%

Source: *A Profile of U.S. Exporters*. U.S. Commerce Department. 1993.

It's important because, perhaps for the first time in a long time, it can be acted upon freely. Workers in the 1990's can choose to live where they want, and demand that employers follow them. Why? Because they are in short supply.

A quick look at Figure 9 provides the first clue about the labor supply shortage. In this 100-year picture of U.S. population growth, we see the slowdown during the great depression and WW II, the Baby Boom after WW II, and the rather sharp return to the long-term trend — which is down.

Aging the population about 20 years to the workforce entry age produces a comparable chart for the workforce (see Figure 10). The so-called Baby Bust significantly affects the workforce in the 1990's. In fact, the labor force growth rate in the 1990's will be at the lowest level ever recorded.

We can already feel the effects of this upcoming labor force shortage. We have just been through a pretty bad recession, and the unemployment rate barely rose above 7 percent. Outside of New England and parts of the Midwest, it was not much above 6 percent in most places. Back in the early 1980's we defined full employment as 6 percent. By that definition, much of the U.S. was at or near full employment during the recession. The shortage is already upon us, even though it might not feel that way in some of the harder-hit communities.

Figure 9

U.S. Population Growth Rate

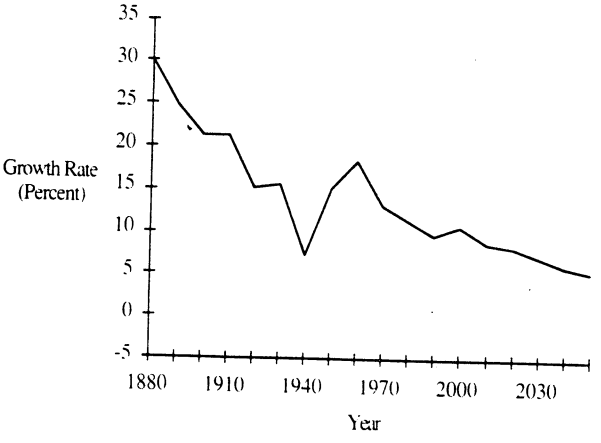
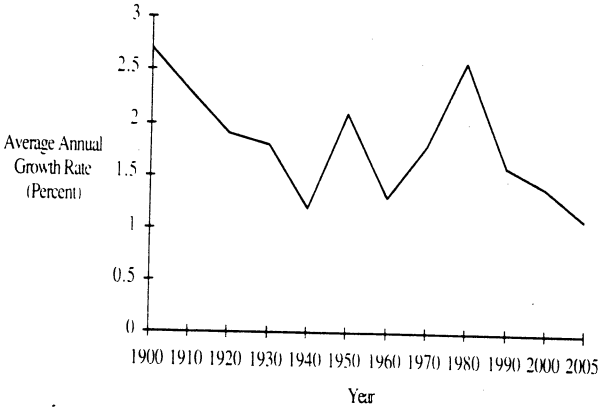


Figure 10

U.S. Labor Force Growth Rate



In a labor-scarce world people can move first and worry about a job later. And moving they are! Figure 11 shows the top 10 and bottom 10 states from a net migration perspective. Note the strong flows into California, Florida, and Texas. Note the flows out of most Northeastern and Midwestern states. People are moving quickly from the old to the new, from the cold to the warm, from the industrial centers to the information-age centers.

Figure 11

Net Population Migration by State, 1980-87 (In Thousands)

Biggest Gainers

California	2,169
Florida	2,005
Texas	1,243
Arizona	435
Georgia	423
Virginia	227
North Carolina	274
Colorado	160
Nevada	148
Washington	144

Biggest Losers

Michigan	-421
Ohio	-479
Illinois	-421
New York	-326
Indiana	-208
Pennsylvania	-202
Iowa	-194
Wisconsin	-134
West Virginia	-99
Kentucky	-84

In the 1980's, California grew twice as much as all Northeast and Midwest states combined; Florida grew one and a quarter times the Northeast and Midwest. People are acting on their residential dreams. Any Gazelle wanting to attract workers — particularly skilled ones — must now follow them. And they are.

Unlike universities and a workforce and airports, there is not much a community can do about being a "nice place to live." On this dimension, communities are creatures of their location and their history. No matter how hard it tries, Cleveland cannot become like Phoenix or Naples. Cleveland can, and is, moving as far in that direction as possible as it revitalizes its downtown, makes effective use of its waterfront, creates the Rock-and-Roll Hall of Fame, etc. But it cannot make Saguaro cactus grow, or produce 85 degree water temperatures. People are moving to find these things.

The Edge City[1] is part of the same phenomenon. Within metro areas, people are moving as quickly as they can in search of what they think is "nice," and away from what they think is not. "Nice" is low crime, low density, malls, good schools, single-family homes, malls, free parking, easy commutes, malls. "Not nice" is crime, crack cocaine, poor schools, dirty old buildings, expensive parking, dreadful commutes taking over an hour, and declining shopping areas. The Gazelle must follow (or lead) its workforce to the Edge. Bear in mind: most Gazelles are driven by one or two key people, who are, first and foremost, people. Their residential preferences are at least as important as the preferences of their employees, and those preferences are, in many cases, closer to the Edge.

Soft Determinants

If "Nice Place to Live" seems a little fuzzy to you, try "Soft." Soft has to do with the culture of a place. Entrepreneurs have egos a mile long. They are also a bit on the unconventional side — which may be the understatement of the year. Some would call them out-and-out crazy.

[1] Joel Garreau. *Edge City*. Doubleday: 1991.

Even more to the point, they are, almost by definition, challenging the existing order. They are attempting to find a better way to do something and steal market share from someone else that does it less well. In the process, they are bidding up wages for skilled people and stealing as many of them as they can from existing employers. They are also aggregating wealth relative to others in the community.

Not all communities welcome somewhat crazy upstarts that steal their customers and their labor force, and, in the process, become wealthier than anyone else in town — particularly if they let you know it.

Said another way, tolerance and recognition of new and different people doing new and different things is the hallmark of a place in which entrepreneurs will start and grow companies. Such wild and crazy people want to be wanted. They want to be recognized and respected for what they have done. They will gravitate to a place that reveres them and will avoid places that treat them badly.

Jack Karsarda at the University of North Carolina calls the latter set of places "Upus tree" cities. For those a little thin on botany (like your authors), the Upus tree spreads its heavily foliaged branches over a wide area and drops roots down from these branches into the soil below to draw out all the nutrients. Nothing grows under an Upus tree. Few entrepreneurs start and grow companies in an Upus tree place. They feel unwelcome. They can't get loans. They get no recognition in the press. No one invites them to join their clubs.

To judge your own community and its attractiveness to entrepreneurs, take the quiz provided in Figure 12. Put your boosterism aside and be honest about the answers. Give yourself 10 points for every question you answered "Yes." A score of 70 or better is passing. Anything less than 70 means you have Upus Tree elements to deal with before the people who start and grow companies will view you as an attractive place to do business.

Figure 12

Entrepreneurial Climate Test

1 When the mayor of the city meets with business leaders, are there as many chief executive officers of mid-size growth companies as bankers and corporate executives?

2 Are entrepreneurs invited to join the best athletic, social, and country clubs? Have they joined?

3 Does the local newspaper follow the fortunes of start-ups and mid-size growth companies with the same intensity and sophistication as it does large corporations?

4 Are innovative companies able to recruit nearly all of their professional work force from the local area?

5 Is there a sizable, visible venture capital community?

6 Does the local university encourage its faculty and its students to participate in entrepreneurial spin-offs, and do they?

7 Do growth-company CEOs and venture capitalists hold at least a quarter of the seats on the boards of the three largest banks?

8 Does the city's economic-development department spend more time helping local companies grow than it does chasing after branch facilities of out-of-state corporations?

9 Is there decent, affordable office and industrial space available for new businesses in the central business district?

10 Can you quickly think of 10 recent spin-offs -- growth companies started by entrepreneurs who have left large companies?

This soft, cultural dimension is at least as important as the hard factors mentioned earlier. It's something that you may be able to do something about if you want to. And it may be something that, under no circumstances, do you want to do anything about. Not all places welcome change and challenge to the existing order. It is not surprising, as you think about it, that most places don't. On the other hand, don't expect to attract growth in the future if you choose, as a community, to preserve and reinforce the existing social order and rebuff those who strive to change it.

IN SUMMARY

The settlement pattern of America is changing again. From 1760 to 1820 we experienced a first wave of entrepreneurship which was largely agricultural. Farmers, farm implement dealers, grain elevators, railroads and slaughter houses developed land (and the transportation to reach it) and largely determined where jobs were created and things got built.

A new crop of entrepreneurs emerged around 1820. They began making steel, carriages, shoes and textiles, and later automobiles, trains, and appliances. They needed large concentrations of low-skilled people, and our older cities were built — mostly in the North and East and along rivers in the South.

Starting around 1950, and accelerating in the middle 1970's yet a third crop of entrepreneurs has emerged. Their main product is not crops or bulk manufactured goods. It is what Taichi Sakaiya has aptly called "knowledge-value." This next generation of company builders is becoming the world's leading producer of goods and services that have a high knowledge content. They make heavy use of new technology, and knowledge that the technology is generating. They are in fields like computer software, communications, health, law, finance, electronics, and specialty products in old industries like steel, textiles, boots, and fish.

The knowledge-value entrepreneur is not principally concerned about land, transportation and energy costs, or large pools of unskilled labor. His and her primary need is for skilled, knowledgeable people, and his or her location preferences are the location preferences of such people — who can now live where they please.

Unlike modern agriculture and mass-production manufacturing, the economics of scale in knowledge-value are relatively low. In most cases, the equipment needs are few and equipment costs are dropping rapidly. PC's replace mainframes, telecommunications costs drop, and communications equipment is inexpensive. The average size of the players thus drops, the number of significant players rises, the speed with which new players replace older ones increases, and the number of location decisions increases and becomes more diverse.

The places that will do well during this third wave of entrepreneurship are places that are "nice" and "tolerant."

"Nice" we have defined at some length. It is where skilled, knowledgeable people want to live. Unlike the previous two waves, there is no strong physical imperative governing this third one. Some like Boston. Some like Sedona. Some like Park City. Some like Seattle. Many like San Francisco, Los Angeles, Phoenix, Dallas, Denver, Houston, Atlanta, Orlando and Ft. Meyers. "Nice" may be defined in the eyes of the beholder, but some places appear much nicer than others to many beholders.

Nice is not enough, though. A place must also welcome the sometimes unorthodox, often eccentric and usually threatening behavior of the entrepreneur. Established social orders that look down

their noses at these upstarts will have few of them to look at. There is nothing that requires an entrepreneur to put up with it. Their option, and one they are exercising with a vengeance, is to seek out more open societies in which "new" and "different" are applauded. America, after all, was originally settled by people who were rejected elsewhere. The next America will be settled by a set of foot-loose entrepreneurs that are being rejected in some places and welcomed in others. If you didn't do well on the Entrepreneurial Climate Test in the previous section, don't blame the President if your local economy isn't doing well. Look in the mirror.

There may not be much a place can do about "nice," although older cities like Cleveland and Pittsburgh have done a remarkable job of at least neutralizing a liability. But there is a great deal that can be done about attitude. It is not an accident that places in Wisconsin and Indiana show up over and over again — large metro, small metro, and rural — as entrepreneurial hot spots. Are they "nicer" than places in Illinois and Michigan and Ohio? Not really. They must offer something else. It's tough to define, but it's real and it works. Can you have more of it in your place? You could if you all really wanted to, but it is a decision you will all have to make.

The Next America is emerging quite quickly. Millions of Americans and tens of thousands of entrepreneurs are moving and establishing the knowledge-value economy. It is Cognetics' intention to monitor this evolution on an annual basis, and keep track of who is winning and losing as a consequence of it, as we have done in this second edition of *Entrepreneurial Hot Spots*.

Before giving away the state, remember region's strengths

N.E. business sense

Lester C. Thurow

LIVING IN NEW ENGLAND, ONE GETS used to studies purporting to show that other areas of the country are better places to do business – usually on the basis of lower taxes – and that we should do something to improve our business climate.

But the ultimate measure of economic success is per capita personal income. Using this measure of success, New England, and the Northeast more generally, do very well. Regionally, New England's per capita personal income was the nation's highest in 1995 – $26,508 per person or 16 percent above the national average. The rest of the Northeast held the No. 2 position, only slightly behind.

The nation's top four states in personal income were all in the Northeast: Connecticut, New Jersey, Massachusetts and New York. New Hampshire was sixth.

Two of the nine fastest-growing states were in New England (New Hampshire and Rhode Island) and none of the nine slowest-growing states were in New England.

Looking at disposable personal income per capita, a measure that subtracts taxes, the facts remain unchanged. New England is still the No. 1 region, with disposable per capita income 14 percent above the national average.

Just to put things in comparison, in 1995 the golden state of California ranked 12th in per capita personal income while booming Florida ranked 20th. Both are losing ground when it comes to per capita disposable income. In 1990, California ranked No. 8 and Florida No. 18. Persuading a lot of low-wage employers to move into your state is simply counterproductive. Higher taxes are needed to provide public services for those new workers, but with average wages going down, the per capita tax base to pay for those services declines. A boom in low-wage jobs simply isn't a boom.

The bottom line is simple. Someone must be doing something right in New England and somehow those "high" taxes must not be the handicap that "experts" on business location make them out to be.

One answer is that state and local business taxes are a very small part of the total costs of doing business. Other location factors always dominate. But state and local taxes are easy to calculate and are hence overweighted in studies of business climate. The big location determinate is always the cost and quality of the labor force that must be hired. State and local taxes are third-order effects, with other factors such as energy costs and transportation costs in second position.

In New England, for example, cutting energy costs is far more important than cutting state and local taxes.

Taxes, depending upon how they are spent, can actually be a positive factor in location decisions. A good education system that turns out a good top-to-bottom work force is worth paying for. A good work force lowers business costs far more than any state or local tax cut and a good education system helps persuade well-educated workers in the rest of the country that they should move into an area and get good education for their children.

None of this means that the New England states should be unconcerned about their competitive position. But it does mean that this concern has to be a sophisticated concern and not the simple "slash and burn" cut-the-government remedy so often suggested.

Persuading a lot of low-wage employers to move into your state is simply counterproductive.

A sophisticated concern means going through each of the costs of doing business and seeing where public actions might reduce those costs. Are there ways to reduce workers' compensation costs that don't cut the benefits to those genuinely injured on the job? Are there ways to restructure energy markets to lower costs? Does our infrastructure give us the lowest possible transportation costs? Where lies the biggest bang for the buck in new infrastructure investments? What factors would lead New England to be seen as the best place for knowledgeable workers to develop their careers? What would make this an even better place to start up high-tech companies. Are there public services that we don't need or cheaper ways to provide those services we do need?

In each of these areas, there are things that could be done to make New England a better place to do business. But as we do so, we should also remember that based on outcomes – the only thing that ultimately counts – New England is already the country's best place to do business.

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State Business Tax Climate: How Should It Be Measured and How Important Is It?

Robert Tannenwald

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States are more concerned than ever before about their business tax climate. Over the past two decades, profound technological and political changes have enhanced employers' geographic mobility and extended their geographic range, thereby intensifying economic competition both within the United States and throughout the world. Yet, while fierce interjurisdictional rivalry is inducing states to cut taxes, demand is rising for state and local services such as education, health care, and law enforcement. Substantial impending reductions in federal aid will compound the states' fiscal dilemma.

Caught between conflicting long-run fiscal pressures, state policymakers have sought advice on how to evaluate their state's tax competitiveness and the relative cost-effectiveness of alternative competitive tactics. The advice that they have received has often been confusing and contradictory. Economists disagree on the best indicators of tax competitiveness and the best models of locational choice. Many state tax regimes are competitive according to some measures but uncompetitive according to others. Some studies find that interstate tax differences significantly influence business location; other studies find just the opposite. Studies analyzing the same tax characteristic draw opposite conclusions about whether it is a significant locational determinant.[1]

This lack of consensus may partially reflect the inaccuracy of the most closely monitored measures of tax competitiveness. With few exceptions, such measures, although easily computed, fail to focus on those tax characteristics that should matter most to profit-maximizing firms. This article attempts to correct this flaw. With an analytic framework used by two Massachusetts tax study commissions (for which the author served as director), it evaluates the tax competitiveness in 1991 of 22 states through the eyes of a rational, profit-maximizing business executive weighing alternative sites for a new facility. All six New England states and most of their principal economic rivals are included in the sample. The article then estimates the impact of interstate differences

Table 1

Frequently Cited Indicators of State Tax Competitiveness

Rank	Highest Statutory Corp. Income Tax Rate as of Sept. 1995 (%)	Rank	State and Local Corp. Income Taxes per $1000 Personal Income, Fiscal Year 1990 ($)	Rank	S. & L. Corp. Income Taxes and Property Taxes Paid by Businesses per $1000 Personal Income, FY 1990 ($)
1 Iowa	12	1 Michigan[a]	12.63	1 Wyoming	53.14
2 Connecticut	**11.25**	2 Kentucky	12.13	2 Montana	47.78
3 North Dakota	10.5	3 West Virginia	9.67	3 Alaska	35.34
4 Pennsylvania	9.99	4 Delaware	9.47	4 New York	31.35
5 Minnesota	9.8	5 New York	9.15	5 Michigan[a]	29.80
6 New York	9.675	6 California	8.51	6 Kansas	27.76
7 Massachusetts	**9.5**	**7 Connecticut**	**8.50**	7 Arizona	24.80
8 Alaska	9.4	8 Montana	7.08	8 West Virginia	24.23
9 California	9.3	9 Louisiana	6.96	**9 New Hampshire**	**22.47**
10 Arizona	9	**10 Massachusetts**	**6.64**	10 Louisiana	22.34
10 West Virginia	9	11 Minnesota	6.27	11 Texas	21.89
10 New Jersey	9	12 North Carolina	6.13	11 Oregon	21.89
10 Rhode Island	**9**	13 New Jersey	6.11	**13 Connecticut**	**20.83**
14 Maine	**8.93**	**14 New Hampshire**	**5.64**	14 Utah	20.69
15 Ohio	8.9	15 Wisconsin	5.45	15 South Carolina	20.29
16 Delaware	8.7	16 Pennsylvania	5.27	16 Colorado	20.18
17 Wisconsin	8.335	17 Idaho	5.23	17 California	19.87
18 Kentucky	8.25	18 North Dakota	5.22	18 Mississippi	18.81
18 Vermont	**8.25**	19 Kansas	5.08	19 Indiana	18.78
20 Louisiana	8	20 Ohio	4.69	20 Minnesota	18.72
20 Idaho	8	21 Georgia	4.63	21 Kentucky	18.63
20 New Hampshire	**8**	22 Hawaii	4.61	22 Illinois	18.46
23 Indiana	7.9	23 Tennessee	4.57	**23 Maine**	**18.36**
24 Nebraska	7.81	24 Iowa	4.54	24 New Jersey	18.20
25 North Carolina	7.75	25 Illinois	4.28	25 Ohio	18.20
26 New Mexico	7.6	26 Utah	4.22	26 Georgia	16.98
27 Kansas	7.375	27 Arkansas	4.20	27 North Carolina	16.65
28 Illinois	7.3	28 Mississippi	3.90	28 Idaho	16.26
29 Montana	7.25	29 Indiana	3.86	**29 Vermont**	**16.20**
30 Maryland	7	**30 Rhode Island**	**3.84**	30 Florida	15.47
31 Oregon	6.6	31 Oregon	3.29	**31 Massachusetts**	**15.17**
32 Arkansas	6.5	32 Alabama	3.20	32 Wisconsin	14.75
33 Hawaii	6.4	32 Arizona	3.20	33 Delaware	14.50
34 Missouri	6.25	34 South Carolina	3.15	**34 Rhode Island**	**14.47**
35 Virginia	6	35 South Dakota	3.14	35 Iowa	14.37
35 Georgia	6	36 Florida	3.13	36 Tennessee	14.22
35 Oklahoma	6	37 New Mexico	3.07	37 Nebraska	14.20
35 Tennessee	6	38 Maryland	2.97	38 Missouri	14.07
39 Florida	5.5	**39 Vermont**	**2.92**	39 Virginia	13.24
40 Colorado	5	**40 Maine**	**2.90**	40 North Dakota	12.82
40 Alabama	5	41 Nebraska	2.89	41 Pennsylvania	12.66
40 Mississippi	5	42 Virginia	2.65	42 Maryland	12.59
40 South Carolina	5	43 Missouri	2.63	43 Arkansas	11.45
40 Utah	5	44 Colorado	2.12	44 Oklahoma	11.38
45 Texas	n.a.	45 Oklahoma	2.10	45 South Dakota	10.68
45 South Dakota	n.a.	46 Alaska	1.62	46 Washington	10.40
45 Nevada	n.a.	47 Washington	0	47 Hawaii	10.30
45 Washington	n.a.	47 Texas	0	48 Nevada	10.26
45 Wyoming	n.a.	47 Wyoming	0	49 New Mexico	9.49
45 Michigan	n.a.	47 Nevada	0	50 Alabama	9.24

[a] The U.S. Bureau of the Census treats Michigan's Single Business Tax as an income tax, even though it is really a form of value-added tax.

n.a. = not applicable.

Source: Author's calculations; Commerce Clearing House, *State Tax Guides*; U.S. Bureau of the Census, *State Government Finances—1992*; Tannenwald (1993, Appendix D-1, Table A-2).

in tax competitiveness on the geographic allocation of manufacturers' capital spending.

The article finds that business tax climate exerts only a small, highly uncertain effect on capital spending. States may be more likely to stimulate their economy by enhancing public services valued by businesses. These findings are consistent with those of the most recent studies examining the impact of state and local tax characteristics on economic performance (summarized in Lynch 1995).

States may be more likely to stimulate their economy by enhancing public services valued by business than by altering their business tax climate.

For 1991, the article finds considerable disparity among the New England states in business tax competitiveness. New Hampshire and Massachusetts had the best business tax climates in the region, ranking sixth and ninth, respectively, in the 22-state sample. Rhode Island's and Maine's business tax climates were average, while those of Connecticut and Vermont were relatively unattractive.

I. A Little Background

Previous studies (Pomp 1987; Tannenwald 1987, 1993, 1994) have set forth the attributes of a good indicator of tax competitiveness and critiqued many indicators frequently cited in public debate. A brief summary of this critique is provided here.

Since businesses are primarily interested in making profits, indicators of tax competitiveness should focus on those taxes that most directly affect a firm's bottom line. They should also measure such taxes' impact on the profitability of marginal business investment projects. Businesses rarely move their entire operations from one site to another just to lower their taxes. When deciding where to locate a marginal facility, however, like a new plant, taxes are more likely to be a factor.

Measures of tax competitiveness should evaluate the tax burden that a marginal facility will bear over its entire lifetime, not just during the first years of its existence. They should take into account taxes paid to all levels of government and how these taxes interact to affect a firm's rate of profit. For example, they should take into account the deductibility of taxes paid by a firm to one state from its taxable income in another state, as well as the deductibility of state and local taxes from federal taxable income. Firms do not care to whom they pay taxes; they care how much total tax they pay relative to the profits they earn.

The most frequently used indicators of state tax competitiveness generally lack these qualities. Consider, for example, three indicators cited in recent debate over business tax policy in Massachusetts: 1) the statutory corporate income tax rate, 2) state and local corporate income taxes as a percentage of statewide personal income, and 3) the sum of state and local taxes on corporate income and nonresidential property as a percentage of statewide personal income.[2] The 50 states are ranked according to each of these statistics in Table 1.

The statutory tax rate on corporate income (col. 1) fails to take into account most taxes and fees paid by businesses, such as taxes on net worth, property, payroll, and purchases of intermediate inputs. The income tax rate also fails to take into account differences across states in the definition of taxable corporate income. Some states with a high statutory rate define taxable profits narrowly, allowing relatively generous deductions and exclusions. Others permit corporations to use favorable apportionment formulas or claim generous credits against tax.

Like the statutory corporate income tax rate, the measure of corporate income tax collections as a percentage of personal income (col. 2) focuses on only a small portion (about one-tenth) of state and local taxes paid by businesses (Tannenwald 1993, Appendix Table D-2). In addition, it bears little, if any, relation to the ratio of business taxes paid to profits earned. In recent years, corporations have boosted profits by cutting costs, including payroll. Wage cuts and layoffs depress personal income. Under such conditions, corporate taxes as a percentage of personal income could

[1] For recent surveys of the literature on the impact of interstate tax differentials on economic growth, see Bartik (1991), Wasylenko (1991), Tannenwald (1993), and Lynch (1995).

[2] See Lester, Bernard, Levy, and Tripathi (1995); Massachusetts Taxpayers Foundation (1995); and DRI/McGraw Hill (1995).

be high, even if corporate taxes as a percentage of profits is average or low.[3]

The last indicator (col. 3), unlike the other two, takes into account property taxes paid by businesses (both incorporated and unincorporated). This is a significant improvement, given that property taxes account for the largest fraction (approximately one-fourth) of all state and local business taxes in the United States (Tannenwald 1993, Appendix Table D-2). Taking into account nonresidential property taxes dramatically changes the ranking of some states.

Indicators of tax competitiveness should focus on those taxes that most directly affect a firm's bottom line and measure their impact on the profitability of marginal business investment projects.

For example, in columns 1 and 2, Massachusetts ranks 7th and 10th in the nation, respectively, in business tax burden. In column 3, the Commonwealth ranks 31st.[4]

II. The Representative Firm Approach to Evaluating Business Tax Climate

Given the difficulty of evaluating states' business tax climate with available data, some economists have explored an alternative strategy—the "representative firm" approach.[5]

How the Approach Works

Hypothetical firms representative of selected industries are assumed to be located at a variety of sites around the nation. It is assumed that the firms' pre-tax rate of return, asset mix, capital/labor ratio, and non-tax costs are identical at all sites. The only differences across sites, therefore, are state and local tax characteristics. At every site, each firm's local, state, and federal tax liabilities and net after-tax cash flow are computed some years into the future, typically between 20 and 60 years. The analysis is not limited to taxes on corporate profits and net worth. Property taxes and, in some cases, sales taxes and unemployment insurance taxes are also taken into account.

It is then assumed that each firm builds a new facility at each site, including the firm's current site. This expansion requires the firm to invest in new equipment, structures, inventories, and financial assets and to hire more workers. As a result of the expansion, each firm makes more profits and pays more taxes. By comparing after-tax cash flows before and after expansion, one can calculate the long-run, after-tax rate of return (AFTAX) to the new facility at each site for each firm.[6]

Previous Results Generated by the Representative Firm Approach

The Commonwealth of Massachusetts used this approach to evaluate its business tax climate in 1986 and 1993. The 1986 study (Commonwealth of Massachusetts 1987) was undertaken by the Massachusetts Special Commission on Tax Reform. The 1993 study (Tannenwald 1993) was commissioned by the Massachusetts Special Commission on Business Tax Policy, chaired by Richard Syron, then president of the Federal Reserve Bank of Boston. The author served as director for both commissions. Both evaluations compared the after-tax rate of return to marginal business investment at five Massachusetts sites, 10 sites in rival states, and a fictitious site at which no state or local taxes are imposed ("Empty Site"). The evaluations were conducted for five hypothetical firms, each representative of a different manufacturing industry with a significant presence in Massachusetts. In both studies, the five industries were men's and boys' clothing, fabricated metals, computers, electronics, and scien-

[3] For example, over the course of 1992 nationwide personal income grew by 8 percent, while corporate profits grew by 22 percent. Over the course of 1993 the rate of growth in personal income slowed to 2.8 percent, while corporate profits again expanded by 22 percent. From 1985 through 1994, the annual rate of growth in personal income was negatively correlated with the annual growth rate in corporate profits.

[4] However, the denominator of the ratio, personal income, is still irrelevant to the measurement of business tax burden. Furthermore, as noted above, most states do not break down their property tax collections into residential and nonresidential components. Consequently, business property taxes by state must be estimated.

[5] Studies utilizing this approach include S. H. Brooks Co., Inc. (1993); Commonwealth of Massachusetts (1987); L. Papke (1987, 1991); Papke and Papke (1984, 1986); Connecticut Task Force on State Tax Revenue (1991); KPMG Peat Marwick (1994); and DeSeve and Vasquez (1977).

[6] A complete explanation of the method and its use in this study is provided in a detailed methodological appendix, available from the author on request.

Table 2

Indicators of Business Tax Competitiveness for Selected Manufacturing Industries (AFTAX), 1993 and 1986

Site	(1) 5-Industry Average				(2) Men's and Boys' Clothing				(3) Fabricated Metals			
	1993	Rank	1986	Rank	1993	Rank	1986	Rank	1993	Rank	1986	Rank
"Empty Site"	18.9	1	16.4	1	18.6	1	15.4	1	19.0	1	17.0	1
El Paso, TX	18.2	2	15.7	2	17.5	2	14.7	2	18.4	2	16.3	2
Hagerstown, MD	17.7	3	15.1	3	16.9	3	14.1	4	18.0	3	15.8	3
Poughkeepsie, NY	17.6	4	15.1	3	16.7	4	14.0	7	17.9	4	15.7	5
Chelmsford, MA	**17.5**	**5**	**15.0**	**8**	**16.6**	**7**	**14.0**	**7**	**17.7**	**5**	**15.6**	**8**
Foxboro, MA	**17.4**	**6**	**15.0**	**8**	**16.5**	**8**	**14.0**	**7**	**17.6**	**6**	**15.6**	**8**
Greenfield, MA	**17.4**	**6**	**15.0**	**8**	**16.5**	**8**	**14.0**	**7**	**17.6**	**6**	**15.6**	**8**
Bedford, MA	**17.3**	**8**	**15.0**	**8**	**16.4**	**12**	**14.0**	**7**	**17.5**	**8**	**15.6**	**8**
Rockford, IL	17.3	9	15.0	8	16.5	8	13.9	13	17.5	8	15.6	8
Memphis, TN	17.3	9	15.1	3	16.7	4	14.1	4	17.4	10	15.7	5
Nashua, NH	**17.2**	**11**	**15.1**	**3**	**16.7**	**4**	**14.2**	**3**	**17.4**	**10**	**15.7**	**5**
Waltham, MA	**17.2**	**11**	**14.9**	**14**	**16.3**	**15**	**13.9**	**13**	**17.4**	**10**	**15.5**	**14**
Los Angeles, CA	17.1	13	14.9	14	16.5	8	13.8	15	17.3	13	15.5	14
Stamford, CT	**17.0**	**14**	**15.0**	**8**	**16.4**	**12**	**14.0**	**7**	**17.2**	**14**	**15.6**	**8**
Greenville, NC	17.0	14	15.1	3	16.4	12	14.1	4	17.2	14	15.8	3
Bala Cynwyd, PA[a]	16.5	16	14.8	16	15.8	16	13.7	16	16.7	16	15.4	16

Site	(4) Computers				(5) Electronic Components				(6) Scientific Instruments			
	1993	Rank	1986	Rank	1993	Rank	1986	Rank	1993	Rank	1986	Rank
"Empty Site"	19.2	1	16.8	1	18.9	1	16.4	1	18.8	1	16.2	1
El Paso, TX	18.5	2	16.1	2	18.4	2	15.8	2	18.0	2	15.5	2
Hagerstown, MD	18.1	3	15.6	3	17.9	3	15.3	3	17.7	3	14.9	3
Poughkeepsie, NY	18.0	4	15.5	5	17.8	4	15.3	3	17.5	4	14.8	5
Chelmsford, MA	**17.9**	**5**	**15.4**	**8**	**17.7**	**5**	**15.1**	**9**	**17.4**	**5**	**14.8**	**5**
Foxboro, MA	**17.8**	**6**	**15.4**	**8**	**17.7**	**5**	**15.1**	**9**	**17.4**	**5**	**14.8**	**5**
Greenfield, MA	**17.8**	**6**	**15.4**	**8**	**17.6**	**7**	**15.1**	**9**	**17.3**	**7**	**14.7**	**11**
Bedford, MA	**17.7**	**8**	**15.4**	**8**	**17.6**	**7**	**15.1**	**9**	**17.2**	**8**	**14.8**	**5**
Rockford, IL	17.6	9	15.4	8	17.6	7	15.2	6	17.2	8	14.7	11
Memphis, TN	17.6	9	15.5	5	17.5	10	15.2	6	17.2	8	14.8	5
Nashua, NH	**17.5**	**12**	**15.5**	**5**	**17.4**	**12**	**15.2**	**6**	**17.1**	**11**	**14.8**	**5**
Waltham, MA	**17.6**	**9**	**15.3**	**14**	**17.5**	**10**	**15.1**	**9**	**17.1**	**11**	**14.7**	**11**
Los Angeles, CA	17.4	13	15.3	14	17.3	13	15.0	15	17.1	11	14.7	11
Stamford, CT	**17.3**	**14**	**15.4**	**8**	**17.2**	**14**	**15.1**	**9**	**16.9**	**14**	**14.7**	**11**
Greenville, NC	17.2	15	15.6	3	17.2	14	15.3	3	16.9	14	14.9	3
Bala Cynwyd, PA[a]	16.8	16	15.2	16	16.8	16	15.0	15	16.5	16	14.6	16

[a]Replaced by Lancaster, PA in the 1993 sample.

Note: See text and detailed technical appendix (available from author on request) for methodological details.

Source: Commonwealth of Massachusetts (1987); and S. H. Brooks Co., Inc. (1993).

tific instruments. With one exception, the sites used in both studies were also identical. Two of the sites outside of Massachusetts were also located in New England states: Stamford, CT and Nashua, NH.[7] The business taxes taken into account in the studies were taxes on profits, capital stock, net worth, and real estate, and unemployment compensation taxes.

One set of indicators of business tax climate generated by both studies is shown in Table 2. The hypothetical firms used in computing this set were prototypical "export-oriented" firms, those that con-

[7] In 1993, Lancaster, PA replaced Bala Cynwyd, PA because in 1993 the latter town was no longer a distinct, taxing jurisdiction.

The hypothetical investment undertaken by each representative firm was assumed to have a 60-year useful lifetime and to earn a pre-tax rate of return on working assets of 25 percent. Working assets consist of land, structures, equipment, cash, and inventories. An inflation rate of 0 percent was assumed. Within an industry,

centrate their facilities in one or two locations and sell most of their goods in either nationwide or international markets. Before expansion, each firm was assumed to produce solely at its home site and to sell 90 percent of its product in other states.

Each row in the table summarizes the results of a set of simulations in which each of the cities was assumed to be considered both a headquarters site and a potential site for expansion. For example, firms headquartered in Rockford, IL, evaluate Nashua, NH as potential expansion site. Then firms headquartered in Stamford, CT; Los Angeles, CA; Poughkeepsie, NY;

Local property taxes vary widely within a state, making it difficult to draw conclusions about a state's overall business tax climate from the tax burden imposed at only one site.

and each of the other sites (including Nashua) also evaluate Nashua as a potential expansion site. As a result, for each industry-specific firm, 16 after-tax rates of return (AFTAXs) were calculated at each expansion site, one for each possible pre-expansion site. A 16-by-16 matrix of AFTAXs was thereby generated.

Each entry in sections 2 through 6 of Table 2 represents the mean of the 16 AFTAXs computed at the expansion site for each of the five industry-specific hypothetical firms. For example, in section 2 the 1993 value for "Empty Site" (18.6) is the average of the 16 AFTAXs computed for the hypothetical manufacturer of men's and boys' clothing, assuming that "Empty Site" is the sole expansion site and each of the 16 cities is an alternative headquarters site. The higher the AFTAX, the lower the tax burden on the new facility. Section 1, which provides the average for each site of the five AFTAXs reported in sections 2 though 6, is a summary measure of tax competitiveness.

The AFTAXs for 1993 were all higher than their 1986 counterparts because in 1987 the statutory federal tax rate on corporate income was reduced from 46 percent to 34 percent. In 1993, the dispersion in AFTAX across sites for a given industry was larger than in 1986 because, after the Federal Tax Reform Act of 1986, state and local taxes became a larger component of businesses' total tax liability.[8] At each site in each year, differences across industries in AFTAX reflect primarily differences in labor intensity. For example, the AFTAXs of the representative manufacturer of men's and boys' apparel are low because the industry is relatively labor-intensive. As a result, the firm's unemployment insurance taxes are high, and the benefits of capital-oriented tax incentives, such as investment tax credits, are relatively low.

In 1986, the AFTAXs at the seven New England sites were virtually identical and near the median. In 1993, Chelmsford, MA ranked 5th, Foxboro, MA and Greenfield, MA tied for 6th, Nashua, NH fell into a tie with Waltham, MA for 11th, and Stamford, CT slumped to a tie for 14th, trailed only by Lancaster, PA. Sites whose competitive standing changed markedly between the two years experienced large changes in property tax burden. Property tax burdens in Chelmsford, Foxboro, and Greenfield fell sharply, while those in Stamford and Nashua rose. The competitiveness of the Massachusetts sites also benefited from a tripling of the Commonwealth's investment tax credit in 1993. Even in 1993, however, differences among the New England sites in AFTAX were small.

Criticisms of the Analysis of Tax Competitiveness Performed by the Two Massachusetts Tax Study Commissions

The methodology used to obtain the results displayed in Table 2 is vulnerable to at least three criticisms: 1) the sample is small and biased, 2) important business tax features are not taken into account, and 3) the atypical geographic characteristics of the hypothetical firms trigger burdensome tax rules that do not apply to most businesses.

Small, biased sample. Three New England states—Maine, Rhode Island, and Vermont—are not represented in the sample. Nor are several of New England's other economic rivals, such as Alabama, Florida, Georgia, New Jersey, and South Carolina. Moreover, a majority of the sites in the sample are located in states that impose a relatively high statutory tax rate on corporate income.[9] As a result, the

differences across sites in AFTAX were found to be insensitive to the inflation assumption.

[8] Recall that, by assumption, state and local taxation is the only source of difference across sites in each representative firm's AFTAX.

[9] In 1993, the average marginal statutory corporate income tax

sample allegedly makes the AFTAXs at the three New England sites look higher than they really are relative to those at rival locations.[10]

The representativeness and accuracy of the property taxes modeled in the analysis are also open to question. Local property taxes vary widely within a state, making it difficult to draw conclusions about a state's overall business tax climate from the tax burden imposed at only one site located within its borders.[11] The analysis also assumes that only land and structures are subject to property taxation, even though many states permit their cities and towns to tax personal property, inventories, and even intangible property. As will be shown in the next section, failure to include these types of assets in the general property tax base creates significant measurement error.

Omission of important business taxes. The analysis fails to take into account, among other tax features, differences across sites in license taxes, fees and charges, sales taxes on purchases of intermediate goods, and tax credits designed to subsidize such narrowly defined expenses as training, research and development, pollution control, the provision of day care, and the wages of workers from disadvantaged backgrounds. These features are not taken into account because the data needed to do so are not readily available. Their omission biases the results against states with relatively low sales taxes on purchases of intermediate goods and generous, narrowly defined tax credits.

The potential bias from these omissions is evident from a study conducted in 1994 by KPMG Peat Marwick designed to evaluate the tax competitiveness of 10 states and two Canadian provinces (KPMG Peat Marwick 1994). The study, which used the representative firm approach, took into account sales taxes on business purchases and research and development tax credits. It found that Massachusetts had the second most attractive business tax climate among the 10 U.S. states examined. KPMG Peat Marwick attributed the Commonwealth's competitiveness to the fact that it has "kept all three of the major state-local business taxes—corporate income, property, and sales—in line with competitor states."[12] A similar study conducted by KPMG Peat Marwick for the state of North Carolina (Vlaisavljevich and Pollock 1995), which compared the marginal business tax burdens of 21 states, also found the Massachusetts business tax structure to be relatively attractive.

Atypical geographic allocation of payroll, property, and sales. Corporations with customers in several states typically have facilities located in most of those states, such as branch plants, warehouses, sales offices, and service centers. By contrast, the hypothetical firms used in the analysis locate all of their facilities and employees in one or two states but realize most of their sales elsewhere. In some states, firms with such uncommon geographic characteristics bear unusually heavy tax burdens that are not faced by typical multistate firms. Consequently, these assumed characteristics may bias the results of the analysis.

These special tax burdens arise from certain states' attempts to ensure that most of the nationwide income earned by their multistate corporate taxpayers is taxed by some state. These states identify which of their corporate taxpayers have generated out-of-state income that has escaped taxation by any state. They then determine the reason why this income has escaped taxation. There are two possible reasons. First, the state in which the income was earned does not tax corporate income. (Texas is the only state in the tax study commissions' sample that does not.) Second, the corporation lacks a physical presence within the state. Federal law prohibits a state from taxing the income of a producer or distributor of goods that has no physical presence (facilities or employees) within its territory, even if the firm sells goods to customers located there.[13] For example, Massachusetts may not tax any of the income earned by a manufacturer of scientific instruments that lacks property or employees in the Commonwealth, even if the manufacturer sells millions of dollars' worth of goods

rate for all 50 states and the District of Columbia was 7.09. The average for the 11-state sample was 8.32 (U.S. Advisory Commission on Intergovernmental Relations 1994).

[10] This allegation was made by Michael Widmer, President of the Massachusetts Taxpayers Foundation, in a letter, dated September 8, 1995, to The Honorable James Brett, House Co-Chair of the Joint Committee on Taxation of the Massachusetts legislature.

As noted in Section I, states with high statutory tax rates on corporate income do not necessarily impose high corporate income tax burdens. Many offset their high rates with investment and employment tax credits. Moreover, several states with low corporate income tax rates, or no tax on corporate income, impose alternative business taxes not found in most other states. Two prime examples are Washington's business occupation tax and Texas's net worth tax.

[11] On the other hand, statewide estimates of average business property tax burden are not available for many states.

[12] However, the KPMG Peat Marwick study did not take into account unemployment insurance taxes, which are relatively high in Massachusetts.

[13] U.S. P.L. 86-272. The law does not extend the same protection to providers of services.

The Troublesome Issue of Throwback in Modeling State and Local Corporate Income Taxes

Every state that taxes corporate income uses a formula to determine its fair share of the taxable income of a multistate corporation. In most states, the formula is based on the state's shares of the firm's total payroll, property, and sales. (These three variables are usually referred to as "apportionment factors.") For example, Vermont's formula is

$$\text{Taxable income} = \frac{\frac{\text{payroll}_{VT}}{\text{payroll}_{TOTAL}} + \frac{\text{property}_{VT}}{\text{property}_{TOTAL}} + \frac{\text{sales}_{VT}}{\text{sales}_{TOTAL}}}{3}$$

Massachusetts now double-weights sales in order to lighten the tax on firms that produce most of their goods in-state but sell them elsewhere:

$$\text{Taxable income}_{MA} = \frac{\frac{\text{payroll}_{MA}}{\text{payroll}_{TOTAL}} + \frac{\text{property}_{MA}}{\text{property}_{TOTAL}} + \frac{2 \times \text{sales}_{MA}}{\text{sales}_{TOTAL}}}{4}$$

In 1995 the Commonwealth changed its apportionment formula for manufacturers to one based exclusively on sales. This change is effective immediately for defense contractors and will be phased in over several years for other manufacturers (*General Laws of Massachusetts 1995*, Chapter 281).

As an illustration of Vermont's formula, consider the scenario in which one of the hypothetical firms used in the analysis is headquartered in Vermont and also expands within Vermont. By assumption, 10 percent of the firm's sales and 100 percent of its payroll and property are sited in-state. According to the state's apportionment formula, 0.70 of the firm's total taxable income [(1.0 + 1.0 + 0.10)/3] is taxable in Vermont. The other 0.30 of taxable income is allocated among the states where the firm has customers but no property or payroll. If the firm were based in Massachusetts and expanded within the Commonwealth, then 0.55 [(1.0 + 1.0 + 2 x 0.10)/4] of the firm's income would be taxable by the Commonwealth and 0.45 apportioned to other states.

Under Massachusetts' throwback rule, the firm's sales realized in other states would be sited for tax purposes in the Commonwealth and double-weighted. As a result, throwback would raise the fraction of the firm's nationwide income taxable in Massachusetts from 0.55 to 1.0 [(1.0 + 1.0 + 2 × 1.0)/4 = 1.0]. If, like Vermont, Massachusetts only single-weighted sales, throwback would raise this fraction from 0.70 to 1.0 [(1.0 + 1.0 + 1.0)/3 = 1.0]. Throwback has especially dramatic tax effects in states that both have throwback requirements and weight sales disproportionately. Two states represented in the 1986 and 1993 sample, Massachusetts and Illinois, fit this description.

These examples illustrate how the assumed geographic dispersion of the hypothetical firms' apportionment factors, in combination with throwback requirements, exaggerates differences in business tax burdens among states. Yet, if the hypothetical firms had payroll and property in most or all of the states in which they did business (a more typical pattern), the results of the simulations would be difficult to interpret. The computed AFTAXs would reflect a complicated amalgam of the tax burdens at all the sites where the firm were taxable. The impact of differences across sites in tax burdens would be obscured.

The two Massachusetts tax study commissions resolved this dilemma by assuming in their baseline scenarios that throwback provisions are inoperative in all states. The assumption can be further justified by the relative ease with which many throwback provisions can, and are, avoided. For example, a Massachusetts-based corporation can avoid Massachusetts' throwback rules by billing customers from an office, no matter how small, located in a state that does not practice throwback.[14]

to the Commonwealth's businesses and residents every year.

If any of the corporation's out-of-state income has escaped taxation for lack of a physical presence, some states will tax this income themselves, even though it was earned outside of their territory. For example,

[14] Massachusetts' throwback provisions are easier to avoid than those of other states. In order to avoid other states' throwback rules, a company must *ship* goods from a point located outside of the state to customers located in states where the company has no payroll or property. In Massachusetts, the company need only *bill* sales to such customers from a point located outside the Commonwealth.

consider a Massachusetts-based corporation that ships products from a Massachusetts facility to customers in Connecticut. If Connecticut does not tax the income realized on these sales, Massachusetts will. This practice is known as "throwback" because the income is "thrown back" to and taxed by a state other than the one in which the income is earned.

By assumption, the income earned by the hypothetical firms in the analysis is taxable only at their home and expansion sites. Yet 90 percent of their sales are realized in states where their income is not taxable. Consequently, the firms' corporate income tax burdens are unusually high when they are based or expand in a state that imposes throwback requirements. Five of the 11 states represented in the 1986 and 1993 samples practice some form of throwback.

Thus, the unusual geographic allocation of the hypothetical firms' payroll, property, and sales has significant tax consequences not experienced by the typical firm that vary dramatically across states depending on whether they practice throwback. The resulting biases, and the manner in which the two Massachusetts' Tax Commissions dealt with them, are discussed in the box.

New Results for 1991

Mindful of the criticisms outlined above, the author modified the earlier approach to evaluate the business tax climates of 22 states in 1991. The same five industries examined by the two tax study commissions were used in the analysis. The year 1991 was chosen because the author wanted to investigate the impact of business tax climate on levels of business fixed investment. In order to perform such an analysis, one must control for factors other than taxation that affect the location of business fixed investment, such as wages, energy costs, the quality of public services, and labor productivity. Values for many of these non-tax factors are not available for years later than 1991.

Differences between the 1991 analysis and commission studies. Unlike the studies of the tax reform commissions, the 1991 analysis 1) makes the more realistic assumption that the hypothetical firms have some property and/or employees operating in all the states in which they do business (and, therefore, are not subject to throwback); 2) takes into account differences across states in the general property tax treatment of inventories, machinery and equipment, and intangible property; and 3) compares the marginal tax burdens of states rather than particular cities, in order to provide an indicator of states' "overall" manufacturing tax climate. This statewide focus required a measure of a state's average property tax burden. Details on the differences between the 1991 analysis and the commission studies are provided in Table 3 and in a detailed appendix, available from the author on request.

Criteria used in selecting sample of states. The following partially conflicting criteria were used in determining whether a given state should be included in the sample. 1) Is the state represented in the tax commissions' sample? 2) Is the state in New England? 3) If not in New England, is the state widely considered to be an economic rival of New England states? 4) Can an estimate of statewide property tax burden be obtained from the state's revenue officials or from U.S. Census Bureau data? 5) Is at least one of the five industries analyzed in the tax commissions' studies an important component of its manufacturing sector? and 6) Does the state have a relatively low statutory tax rate on corporate income? (to counter criticism that the commissions' samples were dominated by states with high tax rates).[15]

Results. The industry-specific average AFTAXs for the selected states are presented in Table 4, patterned after Table 2. The AFTAXs for each industry were lower in 1991 than in 1993 primarily because in the 1991 analysis local property tax bases are more broadly defined and all firms are subject to income taxation in every state in which they do business (except Washington or Texas, neither of which taxes corporate income).[16]

According to the 1991 analysis, the five states with the most attractive business tax climate were Alabama, Maryland, South Carolina, Florida, and New York. (As noted above, sites in Maryland and New York, the two also in the "original eleven," had relatively attractive business tax climates in the 1986 and 1993 analyses as well.) Alabama headed the list in part because it is the only state in the sample that allows its corporations to deduct their federal tax

[15] The 11 states included in the sample other than the "original 11" had an average marginal statutory income tax rate of 7.03 in 1983, 0.06 percentage point below the national average. These newly added states included those with some of the lowest statutory corporate income tax rates in the nation.

[16] By contrast, in the 1993 analysis firms are taxable only in states where they have payroll or property, and throwback provisions are assumed to be inoperative. As explained in the box, a significant portion of their income therefore escapes state taxation.

The absence in the 1991 sample of a fictitious firm with no state and local taxes also raised average AFTAXs relative to those computed in the 1993 analysis.

Table 3
Key Differences in Methodology Between Massachusetts Special Commissions' Analyses and 1991 Analysis of Tax Competitiveness

	Massachusetts Special Commissions' Analyses	1991 Analysis
State and local taxes modeled	• State taxes on corporate profits, capital stock, net worth, and gross receipts • State unemployment insurance taxes • State and local taxes on real estate	• State taxes on corporate profits, capital stock, net worth, and gross receipts • State unemployment insurance taxes • State and local taxes on all property, including real estate, inventories, and both tangible and intangible personal property
Measure of property tax burden	Property tax on land and structures as a percentage of value of land and structures of hypothetical firms, as estimated by assessor's office in each city	Property tax collections as a percentage of the fair market value of statewide taxable property, reported by state officials or the U.S. Census Bureau
Percentage of each apportionment factor in home state in pre-expansion phase	• 100 percent of property • 100 percent of payroll • 10 percent of sales	• 90 percent of property • 90 percent of payroll • 10 percent of sales
Treatment of throwback requirements	Assumed to be avoided	Not applicable because hypothetical firms are assumed to be taxable in every state in which they do business

See methodological appendix for further details, available from author on request.

payments from state taxable income.[17] All five states imposed relatively low average property taxes and unemployment insurance taxes. None had separate taxes on net worth, capital stock, or intangible property that applied to the firms.[18] All but New York also had relatively low average corporate income taxes. Although New York's average corporate income tax burden was somewhat high, the state's generous investment tax credit significantly lowered its marginal income tax burden, thereby boosting its AFTAXs.

According to the 1991 analysis, the three states with the least attractive business tax climate were Connecticut, Pennsylvania, and Washington. (Sites in Connecticut and Pennsylvania, also represented in the "original eleven," fared poorly in the 1993 rankings as well.) Connecticut and Pennsylvania had the highest 1991 average income tax burdens among the 22 states. Connecticut also suffered from higher-than-average property taxes, while Pennsylvania's competitive standing was adversely affected by its high unemployment insurance taxes. Washington's lack of tax competitiveness, even though it had no corporate income tax, was attributable to its unique gross receipts tax and high unemployment insurance tax.[19]

Among the New England states, New Hampshire and Massachusetts generally had the highest AFTAXs in 1991, followed, in order of decreasing tax competitiveness, by Maine, Rhode Island, Vermont, and Connecticut. In most industries, Massachusetts and New Hampshire ranked among the top third within the whole sample. As in 1993, Massachusetts' most

[17] Modeling this deduction required the construction of an iterative loop because state income taxes are deductible from federal taxable income. The methodological details are provided in a detailed appendix, available from the author on request.

[18] New York imposes a net worth tax, but corporations pay it as an alternative to the income tax. They pay the net worth tax if their net worth tax liability exceeds their income tax liability.

[19] For manufacturing firms based in Washington, the base of this tax consists of the firm's gross receipts from the sale of all products wherever sold. In the analysis, hypothetical firms based in Washington therefore pay tax on 100 percent of their gross receipts, including those from the sale of products manufactured at the expansion site. Firms based in another state pay the tax on gross receipts earned from sales to customers located in Washington (*Laws of Washington*, Section 82.04).

Table 4

Indicators of Business Tax Competitiveness for Selected Manufacturing Industries (AFTAX), 1991

	(1)		(2)		(3)		(4)		(5)		(6)	
State	5-Industry Average	Rank	Men's and Boys' Clothing	Rank	Fabricated Metals	Rank	Computers	Rank	Electronic Components	Rank	Scientific Instruments	Rank
AL	**16.0**	**1**	**15.5**	**1**	**16.0**	**1**	**16.1**	**1**	**16.1**	**1**	**16.0**	**1**
MD	15.7	2	15.4	2	15.7	2	15.7	2	15.7	2	15.7	2
SC	**15.5**	**3**	**15.3**	**3**	**15.6**	**3**	**15.5**	**5**	**15.7**	**2**	**15.6**	**3**
FL	**15.5**	**3**	**15.2**	**4**	**15.6**	**3**	**15.6**	**3**	**15.7**	**2**	**15.6**	**3**
NY	15.4	5	15.0	5	15.5	5	15.6	3	15.6	5	15.4	5
IL	15.3	6	14.9	7	15.4	6	15.4	6	15.5	6	15.3	6
NH	15.3	6	15.0	5	15.3	7	15.3	7	15.4	8	15.3	6
TN	15.3	6	14.9	7	15.3	7	15.2	9	15.5	6	15.3	6
MA	15.2	9	14.8	10	15.3	7	15.3	7	15.4	8	15.3	6
TX	15.2	9	14.6	13	15.2	10	15.2	9	15.4	8	15.3	6
ME	**15.1**	**11**	**14.9**	**7**	**15.2**	**10**	**15.1**	**12**	**15.3**	**11**	**15.2**	**11**
RI	**15.1**	**11**	**14.5**	**16**	**15.2**	**10**	**15.2**	**9**	**15.3**	**11**	**15.1**	**13**
GA	**15.0**	**13**	**14.6**	**13**	**15.1**	**13**	**15.1**	**12**	**15.2**	**15**	**15.2**	**11**
NC	15.0	13	14.6	13	15.1	13	15.1	12	15.2	15	15.1	13
CA	15.0	13	14.7	11	15.0	17	15.0	18	15.2	15	15.1	13
NJ	**15.0**	**13**	**14.3**	**18**	**15.1**	**13**	**15.1**	**12**	**15.3**	**11**	**15.1**	**13**
WI	**15.0**	**13**	**14.3**	**18**	**15.1**	**13**	**15.1**	**12**	**15.3**	**11**	**15.0**	**18**
VT	**14.9**	**18**	**14.7**	**11**	**15.0**	**17**	**14.9**	**19**	**15.1**	**19**	**15.0**	**18**
OH	**14.9**	**18**	**14.3**	**18**	**15.0**	**17**	**15.1**	**12**	**15.1**	**19**	**15.0**	**18**
WA	**14.8**	**20**	**14.0**	**22**	**14.7**	**20**	**14.9**	**19**	**15.2**	**15**	**15.1**	**13**
PA	14.6	21	14.2	21	14.7	20	14.7	21	14.9	21	14.7	21
CT	14.5	22	14.5	16	14.5	22	14.5	22	14.7	22	14.6	22

Note: States in bold were not in the original 1986 and 1993 sample. See text and detailed technical appendix (available from author on request) for methodological details.

competitive tax characteristics were its low property taxes and investment tax credit. New Hampshire's competitive edge could be traced to its low unemployment insurance taxes. High property tax burdens tarnished the competitive standing of Maine and Vermont.[20]

Among the original 11 states, Texas exhibited the greatest difference in rank between 1993 and 1991. While the state ranked first in 1993, it tied for 6th place with Massachusetts in 1991. Among the full 22-state sample for 1991, it ranked only slightly above the median in most industries and tied for 9th place with Massachusetts in the overall rankings. The analysis for 1993 (as well as that for 1986) exaggerated Texas' tax competitiveness by assuming away the taxation of inventories and machinery and equipment under general property tax regimes. Texas cities and towns generally subject both categories of assets to general property taxation.[21]

AFTAX rankings could have changed again since 1993, because a wide variety of extensive business tax reductions have been enacted both within New England and throughout the country. For example, within New England, Connecticut is gradually reduc-

[20] In the 1993 analysis, Massachusetts generally ranked higher than New Hampshire because it offered a 3 percent investment tax credit. In 1991, the Commonwealth's investment tax credit was only 1 percent. Connecticut's competitive standing was especially depressed in 1991 because it imposed a surtax on corporate income. The surtax raised the corporate income tax rate from 11.5 percent to 13.8 percent, by far the highest in the nation.

[21] The assumption that inventories are exempt from general property taxation is accurate for firms located in El Paso, but not for Texas manufacturers as a whole. Many of El Paso's manufacturers have "sister" plants in Mexico, known as "macquiladoras," that assemble products for them. The products are then shipped to El Paso facilities, stored there for less than 175 days, and then shipped to other states and abroad. Texas' "free port" exemption applies to inventories shipped to Texas from another location and staying in Texas for such a short period of time.

ing its statutory corporate income tax rate to 7.5 percent by the year 2000. Massachusetts' unemployment insurance taxes rose sharply after 1991, but the Commonwealth has recently adopted an apportionment formula for manufacturers that will reduce corporate income taxes for companies that sell most of their output out-of-state.[22] Maine has enacted a generous jobs tax credit for large firms. Furthermore, it is increasingly difficult to compute a single, state-specific AFTAX for a given industry because more and more states are granting large tax incentives to specific firms in order to induce them to locate within their borders.

III. Does Business Tax Climate Affect Levels of Capital Spending?

Empirical evidence bearing on this issue is inconclusive. The vast bulk of studies conducted between 1950 and 1980 examining the impact of interstate tax differences on economic performance detected little or no effect. The results of more recent studies have been mixed; while some have found the impact of tax differences to be insignificant, others have found their impact to be substantial. Some follow-up studies, reestimating models used in earlier analyses with more recent data, have produced results that contradict previous findings (for example, see Carroll and Wasylenko 1994).

Papke's Estimates

Only one economist, Leslie Papke (1991), has evaluated the impact of business tax climate on capital spending using measures of tax climate derived from the representative firm approach.[23] Papke used the approach to evaluate the business tax climates of 20 states for 10 industries in 1978, creating 200 state/industry observations.[24] From the assumption that a firm's sole goal is to maximize profits, she derived and estimated the following linear model of a firm's level of capital spending:

$$NK_{ij} = B_0 + B_1LPROD_{ij} + B_2AFTAX_{ij} + B_3AVGWG_{ij} + B_4ECOST_j + B_5FIREPC_j + \Sigma B_iD_i + E_{ij}$$

where:

NK = new capital expenditures per production worker[25]
LPROD = average productivity of labor
AFTAX = the after-tax rate of return to marginal investment, as estimated by the AFTAX approach
AVGWG= average wage of production workers
ECOST = statewide average cost of a million BTUs of fossil fuels and electric energy[26]
FIREPC = statewide average per capita expenditures on fire and police protection at the local level[26]
D = industry dummy variable
i = ith industry
j = jth state
E = error term

Labor productivity was included as an explanatory variable in part to control for differences across industries in technological processes. Spending on fire and police protection is a proxy for the quality of public services of most concern to businesses. One would expect the coefficient on both of these variables to be positive.[27] Since energy is usually complementary to capital in production, one would expect the coefficient on energy costs to be negative. Since AFTAX is inversely related to tax burden, one would expect the coefficient on this variable to be positive.

The expected sign of the coefficient on the wage variable is ambiguous. On the one hand, high wages might deter businesses from building a new plant, depressing both employment and capital spending.

[22] Specifically, Massachusetts adopted single-factor apportionment based on sales for manufacturers.

[23] The author (Tannenwald 1995) presented preliminary results of the analysis reported in this article at the Eighty-Seventh Annual Meetings of the National Tax Association in Charleston, South Carolina in November 1994. In those preliminary results, only the original 11 states were used, observations from both 1986 and 1991 were pooled, each state's tax characteristics other than property taxes were assumed to be the same in 1991 as in 1993, assumptions about the allocation of apportionment factors were identical to those used in the commissions' studies, and no attempt was made to model the general property taxation of inventories, machinery and equipment, and intangibles. In that analysis the author found very large, positive, statistically significant coefficients on AFTAX.

[24] L. Papke (1991) also used the representative firm approach to estimate the impact of interstate differences in marginal business tax burdens on interstate differences in the rate of business formation.

[25] Capital expenditures are divided by the number of production workers in order to scale for the size of the industry in the state. As Papke points out, this variable should not be interpreted as an indicator of the industry/state's capital intensity. Such a measure would have capital stock, not capital spending, in the numerator.

[26] Only statewide values, not industry-specific values, exist for these variables.

[27] Indeed, one would expect an estimate of the relationship between the dependent variable, capital spending per production worker, and labor productivity, defined as value added per production worker, to be simultaneously determined.

On the other hand, high wages should induce the substitution of capital for labor.[28]

Papke estimated her model in both linear and log-log form.[29] When the model is estimated in log-log form, the coefficients can be interpreted as elasticities. Elasticities indicate the percentage change in one variable that results from a 1 percent change in another variable, other things equal. Thus, the coefficient on AFTAX indicates the percentage change in capital spending per worker that would result from a 1 percent change in AFTAX, controlling for the impact of other explanatory variables.

Papke's log-log results are shown in column 5 of Table 5. The AFTAX coefficient is positive and statistically significant. It implies that a 1 percent increase in AFTAX results in approximately a 1.8 percent increase in capital spending per capita. This tax variable had by far the largest coefficient of any of her explanatory variables. She also found, as expected, positive, statistically significant coefficients on labor productivity and on outlays for fire and police protection. The coefficient on the average wage variable was negative (although statistically insignificant), suggesting that high wages at a location deter expansion. The coefficient on energy costs was virtually zero, suggesting that interstate differences in energy costs had no impact on differences in levels of capital spending in 1978.

Reestimation of Papke's Model Using 1991 Sample

The author reestimated Papke's model using the AFTAX estimates from the 22-state sample and 1991 data on nontax variables. The data used in the reestimation are more current than Papke's. However, the sample is smaller because it includes fewer industries. The only departure from her model was the definition of energy cost. Papke used average cost per million BTUs of fossil fuels and electric energy for both residences and businesses. This measure was replaced by average cost per million BTUs from all forms of fuel for the industrial sector only. This was considered to be a more appropriate measure since the sample is limited to firms representative of manufacturing industries. The model was also estimated using an energy cost measure almost identical to Papke's.[30]

The results of the reestimations are presented in Columns 1 and 2 of Table 5. Like Papke's, they show a positive tax effect, but smaller and not statistically significant. The estimated elasticities of capital spending with respect to AFTAX are 0.36 and 0.72, depending on which measure of energy cost is used, between 20 percent and 40 percent of Papke's 1.8.

The elasticity with respect to the average wage variable is very close to zero, much smaller than Papke's estimate and statistically insignificant. The elasticities with respect to labor productivity and spending on police and fire protection, approximately 1.1 and 0.6, respectively, are much larger than Papke's and statistically significant. The latter estimate suggests that, in choosing where to expand, businesses care about the level of certain public services. The estimated elasticity with respect to public service levels is roughly the same size as the estimated AFTAX elasticities, but statistically significant. Finally, unlike Papke's finding, the elasticity with respect to energy costs is large, negative, and statistically significant.

This study finds that business tax climate exerts only a small, highly uncertain effect on capital spending.

Accounting for Differences between the 1991 Results and Papke's 1978 Results

The 1991 results might be different because they are based on a model that takes into account a wider array of business taxes and assumes a more realistic geographic allocation of apportionment factors.[31] Furthermore, unlike the two Massachusetts tax study commissions, Papke assumes that throwback is oper-

[28] One would also expect an upward simultaneity bias, in that capital spending per capita raises worker productivity, which in turn raises their wages.

[29] A log-log form suggests that the relationship between capital spending per production worker and its determinants is multiplicative.

[30] This measure was the average cost per million BTUs from all forms of fuel for both residences and businesses, not from just electricity and fossil fuels.

[31] Papke's AFTAX estimates do not take into account unemployment insurance taxes. Furthermore, she assumes, as did the two Massachusetts tax commissions, that all representative firms confine their payroll and property to either their home or expansion site, even though they sell most of their output at other sites throughout the nation.

Table 5

Estimates of Log-Log Equations Explaining Capital Spending Per Production Worker, 1991

Explanatory Variable	(1)	(2)	(3)	(4)	Papke's 1978 Results (5)
Average wage ln (AVGWG)	.030 (.142)	−.018 (.132)	.084 (.148)	.046 (.139)	−.203 (.335)
Energy cost—industrial sector ln(ECOSTIND)	—	−.758 (.263)**	—	−.561 (.317)*	−.001 (.143)
Energy cost—statewide ln(ENRGY4)	−1.152 (.393)***	—	−.791 (.480)	—	—
Police and fire spending per capita ln(POLFIRE)	.647 (.221)***	.552 (.218)**	.677 (.220)***	.632 (.214)***	.208 (.096)**
Labor productivity ln(LPROD)	1.093 (.149)***	1.122 (.150)***	1.179 (.140)***	1.204 (.138)***	.566 (.126)***
Index of change in number of production workers from 1987 to 1991[a] ln(PWINDEX)	—	—	.341 (.278)	.318 (.273)	—
AFTAX ln(AFTAX)	.355 (1.828)	.723 (1.771)	1.124 (1.727)	1.352 (1.669)	1.831 (.843)**
Industry dummy SIC 232	−1.013 (.201)***	−.994 (.204)***	−.846 (.196)***	−.820 (.184)***	N/R
Industry dummy SIC 342	−.187 (.150)	−.166 (.150)	−.230 (.146)	−.208 (.147)	N/R
Industry dummy SIC 357	−.112 (.204)	−.118 (.208)	−.173 (.200)	−.180 (.205)	N/R
Industry dummy SIC 367	.585 (.138)***	.594 (.132)***	.513 (.129)***	.527 (.126)***	N/R
Constant	−4.996 (5.198)	−6.586 (4.979)	−9.845 (5.291)*	−10.830 (4.830)**	−4.760 (2.224)**
R-Squared	87.8%	88.0%	88.7%	88.9%	N/R
Number of observations	65	65	63	63	200

[a] This index was constructed by setting the index equal to 100 for the number of production workers in 1987. Thus an index value of 90 would indicate that employment declined by 10 percent between 1987 and 1991.

Note: Numbers in parentheses are heteroskedastic-consistent standard errors (White 1984). N/R: Not reported.

*Significant at the .01 level, two-tail test.

**Significant at the 0.05 level, two-tail test.

***Significant at the 0.005 level, two-tail test.

Source: U.S. Bureau of the Census, *Annual Survey of Manufactures, 1991*; U.S. Bureau of the Census, *Census of Manufactures, 1987*; U.S. Bureau of the Census, *Government Finances, 1985–86* and *1990–91*; unpublished data from various state tax equalization boards; Commonwealth of Massachusetts (1987); S. H. Brooks Co., Inc. (1993); and L. Papke (1991).

ative. This assumption significantly affects her AFTAX estimates.

The discrepancy in results of the two studies may also be partially attributable to the difference in the general condition of the national economy between 1978 and 1991 and the mix of states and industries represented in each sample. Both sets of results may also be biased by a failure to control for differences in economic conditions across states and industries.

The general condition of the national economy. While the national economy was expanding in 1978, it

was contracting in 1991. Capital spending per production worker may be more sensitive to marginal business tax burdens during economic expansions than during recessions. In recessions, business income is depressed, reducing or eliminating many firms' liability for profits taxes. The types of investment projects most likely to be undertaken during a recession may be less influenced by interstate tax differences than those most likely to be undertaken during an expansion.[32]

Mix of industries. Papke used a broader array of industries than those represented in the 1991 sample, as well as a lower level of disaggregation. The industries represented in her sample but absent from the 1991 sample may be more footloose and, therefore, more sensitive to interstate differences in tax burdens.[33]

Mix of states. So many differences across states may affect interstate variation in levels of capital spending per production worker that it is difficult to control for all of them. Consequently, Papke's results may diverge from those obtained from the 1991 sample because she examined a different set of states.[34]

Failure to control for differences in business conditions across states and industries. Since the severity of a recession varies by state and industry, so does the magnitude of cuts in employment. However, there might be much less interstate and interindustry variation in the severity of reductions in capital spending because depreciated plant and equipment require continual maintenance and renovation. Consequently, in 1991 the relative severity of the economic contraction experienced by a state or industry may have influenced its capital spending per worker. Failure to control for interstate and interindustry differences in general business conditions might therefore have biased estimates of the AFTAX coefficients.

In order to control for this possible bias, the author included a measure of employment growth between 1987 and 1991 (PWINDEX) as an additional explanatory variable and reestimated the model (Table 5, columns 3 and 4). The reestimated AFTAX elasticities, although larger and more precise than those reported in columns 1 and 2, are still statistically insignificant.

IV. Conclusion

This study of the impact of state and local tax burden on business's capital spending in 1991 found a small effect that was statistically insignificant. This finding buttresses existing empirical evidence that the effectiveness of state and local tax policy as an instrument of economic development is uncertain. While tax characteristics may affect a state's competitiveness, policymakers should view with caution claims that changes in tax policy will dramatically improve their state's economy. Enhancing public services valued by firms may be a more effective economic development strategy.

Regardless of their views on the extent to which state and local taxes "matter," policymakers need better indicators of their state's tax competitiveness. Too often, the measures used, although simple to calculate, are inaccurate. The indicator developed and reported in this article, although difficult to compute, provides a more accurate, comprehensive evaluation of a jurisdiction's tax climate from the perspective of a rational, well-informed, profit-maximizing business executive.

Many states with a relatively attractive business tax climate according to this measure rate poorly according to those indicators most frequently cited in public debate. In New England, the most dramatic example is Massachusetts, still called "Taxachusetts" by many observers. The analysis presented in this article affirms the conclusion of tax reform commissions that have evaluated the Commonwealth's tax competitiveness in recent years: Taxachusetts is a vestigial nickname that does the Commonwealth an injustice.

[32] Cooper and Haltiwanger (1993) argure that, during recessions, businesses tend to undertake acutely needed "retooling" of obsolete facilities because factor productivity is low and, therefore, the opportunity costs of reducing production during renovation and modernization are thereby minimized. These investment projects may be less influenced by tax considerations because their profitability is relatively clear-cut.

[33] Evidence presented by L. Papke (1987) casts doubt on this hypothesis. She estimated separate AFTAX elasticities for the industries represented in her sample. Four of these industries—apparel (SIC23), computers (SIC357), electronic components and accessories (SIC367), and instruments of measurement and control (SIC382) are similar or identical to those represented in the 1991 sample. In Papke's sample the AFTAX elasticities of these four industries ranked 1st, 17th, 10th, and 3rd, respectively.

[34] In fact, when the states represented in the 1991 sample are limited to those also represented in Papke's, the estimated AFTAX elasticity rises to 1.0 or 1.3, depending on the measure of energy cost used. However, in both cases, the standard error is more than three times the estimate. Ideally, the difference between the two studies in the representation of each state in the sample should also be taken into account. Papke weighted each state equally. The 1991 sample weights some states more than others. However, since some states in the 1991 sample have only one observation, equal weighting would reduce the sample size to 22, the number of states. With so few degrees of freedom, estimated elasticities would be prohibitively imprecise.

Vigorous interstate tax competition will probably continue into the foreseeable future. The analysis presented in this article suggests that other competitive tactics may be more effective and highlights the need for further research into the measurement and economic significance of tax competitiveness.

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DOWNTOWN REVITALIZATION

By Dolores P. Palma

Since the first suburban shopping malls opened their doors, communities all across the country have been concerned with revitalizing their Downtowns. Today, a large body of knowledge has been developed—the "do's and don't's" of the trade—that can be used to guide local Downtown revitalization efforts.

This body of knowledge includes myths about Downtown revitalization as well as "secrets of success." The eight most common Downtown revitalization myths ... and the ten secrets of Downtown success ... are discussed in this article.

DOWNTOWN REVITALIZATION MYTHS

Myth #1: If We Build It, They Will Come

This has become known as the "Field of Dreams Approach" to Downtown enhancement. It centers on the belief that a community only needs to undertake physical improvements for customers and investors to flock to Downtown.

Over the last 20 to 30 years, many communities have proven this to be a myth. They have done so by implementing massive physical improvement projects that often include new sidewalks, landscaping, street trees, planters, benches, facade improvements, etc. Thinking that their work was done, community leaders then sat back and waited for customers and investors to return to Downtown. Unfortunately, these communities learned that physical improvements, made on a grand scale and made in isolation, do not result in renewed Downtown vitality.

Myth #2: If We Demolish It, They Will Come

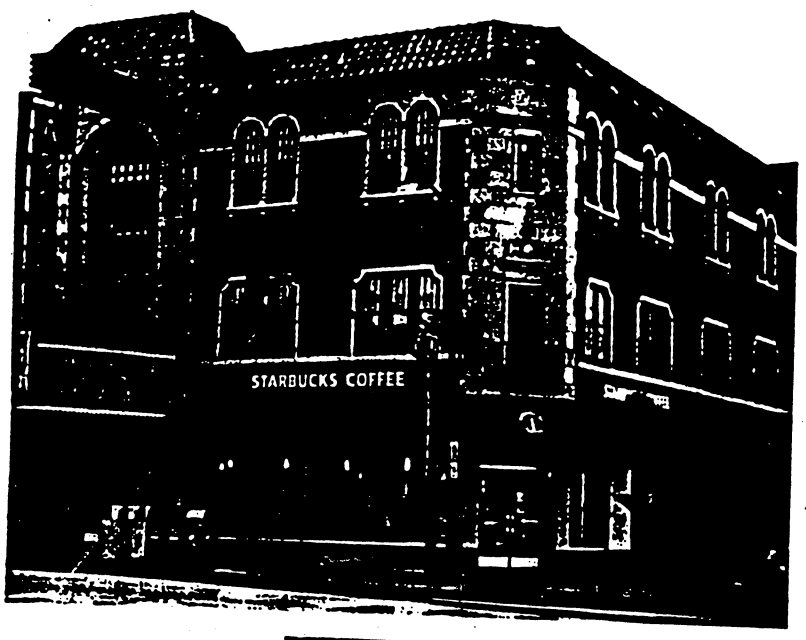
This is the flip side of Myth #1 and is known as the "Urban Renewal Approach" to Downtown revitalization. This myth holds that, if old buildings are torn down and land is cleared, developers will flock to Downtown. And, unfortunately, there are communities all across the country that still have vacant Downtown land which was cleared in the 1960s and 1970s as part of this revitalization approach.

Since the days of the federal Urban Renewal program, community leaders have learned that clearance does not attract developers to a Downtown whose market is weak. Since that time, communities also have learned that structurally sound old buildings—no matter how run-down they might look at the time—can often become a tremendous draw if they are renovated and their architectural character is preserved. It must be noted that the costs of rehabbing an

Myths and Secrets of Success

"Evolve or die" must be the motto of Downtowns in our country today—if they are going to survive and thrive. Community leaders have known for years that their Downtowns had to change in order to succeed. However, until recently, Downtown revitalization was a new field being championed by pioneers forced to operate on a trial and error basis. Today, Downtown revitalization is no longer new. Those in the field can rely on a body of knowledge amassed from the experiences and successes of others. This body of knowledge includes myths which must be dispelled, and secrets of success that can be used, to recreate successful futures for America's Downtowns.

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Myth #2. The Arcada Theater in St. Charles, IL, was restored and now draws approximately 5,000 people to Downtown each week. The new Starbucks, in the building's corner retail space, attracts movie goers and adds to Downtown's nightlife (top). Myth #4. New Anchors—The farmer's market in Old Town, Alexandria, VA, acts as a major Downtown anchor, drawing thousands of people each Saturday morning.

old structure are often times uncertain. However, older restored structures constitute some of the most valuable commercial real estate in this country today.

Myth #3: If We Complete One Major Project, They Will Come

This is the "Silver Bullet Approach" to Downtown revitalization. It holds that if a community identifies and implements one key, major project then "everything else will take care of itself." Examples of communities that pursued the Silver Bullet Approach are those that built Downtown convention centers, festival marketplaces, parking structures, or pedestrian malls—*in isolation*. Unfortunately, these communities learned the hard way that there is no silver bullet. Instead, successful Downtown revitalization requires a multi-faceted effort that addresses all of a Downtown's key issues.

Myth #4: If We Can't Get a Department Store to Come Back to Downtown, Downtown Will Never Be Healthy Again

This is known as the "Traditional Anchor Approach" to Downtown revitalization. It is true that—except for tremendously healthy Downtowns—the chances of attracting a major, national department store to Downtown are very slim. However, this fact does not dictate that a Downtown can no longer be healthy. Instead, the most successful Downtowns today are those that have redefined the concept of "Downtown anchors."

All across the country, Downtowns are embracing new anchors. These include cultural facilities, government complexes, entertainment facilities, tourist draws, housing units, professional office buildings, and specialty retail shops. And, communities are finding that by promoting and leveraging these anchors, their Downtowns can experience renewed vitality, without a traditional department store anchor.

Myth #5: We Can't Get a Department Store to Locate Downtown, So Downtown Can No Longer Support Any Kind of Retail Trade

This is the "Big Retail or No Retail Approach" to Downtown revitalization. Again, it is true that the chances of recruiting a major, national department store to most Downtowns today are slim. It is also true that few Downtowns today can be considered to be *primarily* retail centers. However, these truths alone do not prove that a Downtown cannot support a degree of retail trade.

In fact, many Downtown professionals would argue that, by definition, a healthy Downtown is one that contains some degree of retail activity. This belief holds that it is retail trade that brings pedestrians to Downtown's sidewalks and, therefore, gives Downtown a look of activity and health. Therefore, no matter how healthy a Downtown's economy actually is, without some degree of retail trade a Downtown will *look* dead. That is why most, if not all, Downtown revitalization programs operating in this country today contain a retail retention component. And, many of these Downtown programs have been successful in strengthening, and increasing, their Downtown's retail base.

Myth #6: Competition Is Bad for Business

This is the "Head-In-The-Sand Approach" to revitalization. The commercial districts—both old and new—that are the most successful in this country today are those in which similar and compatible businesses are located side by side in convenient groupings. There is example after example in this country of commercial districts which have proven that the clustering of compatible businesses is actually very good for business.

Rather than providing dangerous competition, the clustering of businesses expands and magnifies the market that the cluster—and each of the businesses in it—can hope to draw. This multiplier effect occurs because a cluster of businesses is more appealing to a customer—in terms of convenience and variety—than is a single, stand-alone business. Therefore, customers have a tendency to come to the clustered businesses in larger numbers, and to spend more dollars once in these clusters, than they would at a single, destination business.

Progressive small business owners in Old Town Alexandria, Virginia, have proven this myth is false by taking the

initiative themselves to create several business clusters. One of these clusters, which is about three blocks long, includes a variety of home furnishing businesses—where customers can find everything from traditional rug and lamp stores to shops that offer creative home accessories, design services, and "art *f/x*"—furnishings that create special effects for the home.

Another business cluster which is budding in Old Town is a French cluster. Within one block, four businesses have opened that all offer Gallic products. These are a French linens shop, a French pottery shop, a French home furnishings shop, and a French restaurant.

Myth #7: For Downtown to Be Successful, Downtown's Retail Businesses Must Keep Uniform Business Hours

During the last several years, many Downtowns across the country have included, as part of their revitalization efforts, attempts to standardize the hours of operation kept by Downtown retailers. This is known as the "Let's Pretend We're a Mall Approach" to Downtown revitalization. Given the independent nature of Downtown business owners, and the large number of business owners in any Downtown, this approach has failed dismally.

Recognizing that a single set of uniform business hours is difficult to achieve in a Downtown, and *possibly not advantageous to the district's retailers* as a whole, the most successful Downtown enhancement programs today are promoting "market-driven business hours." With this approach, retail businesses keep hours that best meet the needs of their targeted customers. By doing this, and by coordinating their hours of operation with each other, these businesses are able to accommodate and share customers.

In addition, many Downtown small business owners are finding that keeping hours that are convenient for customers often means shifting to *smarter* hours rather than keeping *longer hours*.

Myth #8: If We Had More Parking, They Would Come!

This is the "Let's Find a Scapegoat Approach" to Downtown revitalization. This myth holds that all of Downtown's ills stem from a lack of parking. Those who believe in this myth claim that customers have left Downtown for shopping malls because malls offer customers seas and seas of parking which is often (but not always) free. Therefore, the reasoning goes, "we need more parking"—this change will make Downtown's businesses competitive with the malls and will make customers return to Downtown.

Unfortunately, communities that have gone to great expense in creating Downtown parking lots and decks, *without making other needed improvements* in their Downtowns, have learned the fallacy of this myth. Their new parking facilities remain as empty as their Downtown stores. In fact, many of the more progressive Downtown leaders across the country now say "we *need to create* a parking problem in our Downtown" because this will mean that Downtown stores are busy.

In fact, in the vast majority of Downtowns where there is a parking problem, it is one of parking management rather than one of parking supply. This means that the number of parking spaces available is adequate. However, customers are having difficulty finding a parking spot because:

- Downtown employees and business owners are parking in spaces nearest to businesses; and
- Downtown's public parking facilities are often not clearly marked with signs.

This problem can be resolved through better management of the parking supply—and often does not warrant creating additional parking spaces.

THE TEN SECRETS OF DOWNTOWN SUCCESS

Secret #1: Form Partnerships

Over the last 20 years, many communities have formed public-private partnerships whose mission was to enhance Downtown. In these partnerships, the public sector and the





Myth #6. ART F/X—a key anchor and pioneer of the home furnishings cluster in Old Town Alexandria. (left). The owner of Le Gaulois, in Old Town Alexandria's French cluster, cross markets with other French businesses in the area. (Credit: Jim Kirby.)

business sector joined together, made decisions together, and each sector carried its weight to reinvest in and reinvent their Downtown.

Going beyond that, the most successful Downtown revitalization programs today are being spearheaded by *private*-public partnerships. Two facets of these partnerships are new: First, they are spearheaded by the *private*, rather than by the public, sector. And, second, they are often the vehicle for bringing together all the major constituents which exist and operate in Downtown. This includes not only the business sector and the public sector, but also civic organizations, existing organizations involved in Downtown, and community residents. Therefore, the new breed of Downtown partnerships are often private sector-driven umbrella organizations.

In North Carolina, Downtown Monroe, Inc., is a perfect example of a private-public partnership that has united Downtown's diverse constituents from both the private and public sectors. And, as a result of this unified effort, Downtown Monroe, Inc., was able to stimulate $1.6 million of private reinvestment in a 12-month period from 1993 to 1994.

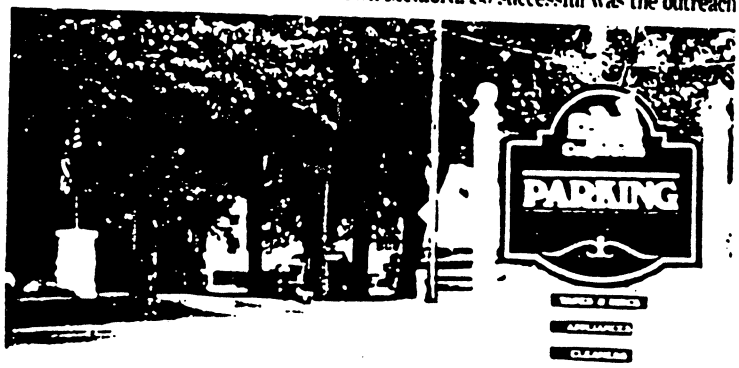
Secret #2: Know Your Vision

The pro-active and successful way of revitalizing Downtown is to define a clear, community-driven vision of where you want your Downtown to go. The defined vision must be realistic and must be shared by the business community, the civic community, the local government, and citizens of the community.

This shared community vision should define success—"what is the very best our Downtown can be five years from now?" The next two secrets of success—a Downtown market analysis and business plan—are essential in ensuring that the vision is realistic and aggressively pursued.

In Medford, Oregon, the business community and the City government together spearheaded an inclusive visioning process. This involved reaching out to business owners, property owners, City employees, local residents, and local organizations to get them involved in defining their preferred Downtown Medford. So successful was the outreach effort, that the Medford Urban Renewal Agency—which spearheaded the visioning—moved directly into implementing the "vision plan" which resulted.

Myth #8. The city of Coopersville, MI. improved Downtown parking with highly visible and attractive signs that identify public parking areas.



Secret #3: Be Market-Driven

Conducting a Downtown market analysis is THE critical first step for success in revitalizing Downtown. A realistic market analysis is an economic tool that Downtown cannot succeed without. It is a tool that developers of shopping malls, retail centers, outlet malls, etc., would not do business without. And, to compete on a level playing field, Downtown's investors—which include business owners, property owners, real estate developers, and City Hall—must have the same information at their disposal.

The Field of Dreams Approach to Downtown revitalization mentioned previously—"If we build it they will come"—has proven not to work. Instead, the successful approach to Downtown revitalization is much more bottom line oriented and business-like. Taking a business-like approach to Downtown's future means:

- Knowing who Downtown's customers are;
- Knowing who Downtown's POTENTIAL customers are;
- Determining the goods and services these customers and potential customers want today;
- Anticipating what they will want tomorrow; and
- Providing those things in a quality and dependable manner.

In Oscoda, Michigan, a comprehensive market analysis was completed to determine Downtown's economic opportunities. And, an action-oriented business plan—described in Secret #4—was crafted for Downtown Oscoda, using the market analysis as its foundation. In an interesting twist, Oscoda's leaders decided to take this step as a part of determining how closure of Wurtsmith Airforce Base would affect the overall economic health of the community.

Secret #4: Use a Business Plan

Businesses that operate according to a business plan are more successful than those that don't ... and the same is true for business districts. The most pro-active Downtown partnerships are starting their programs by defining a clear course of action that is aggressively implemented in a timely manner. The Downtown business plan spells out a course of action that will enable Downtown to attain the defined community vision of Downtown success and capture the economic opportunities revealed in the Downtown market analysis.

The Downtown business plan should *program these actions* by detailing when each action will be started; when each action will be completed; who will be responsible for each action; how much each action will cost; and the sources of necessary funds.

The business plan for Downtown Oscoda lays out a course of action to address business retention, business recruitment, physical improvements, Downtown investment, marketing, and management. And, the business plan includes a detailed Action Agenda which programs steps that will be taken to improve Downtown over a 12-month period.

Secret #5: Dare to Be Different

To succeed economically, Downtown must create, carve out, and become known for a particular niche in the marketplace. Downtown cannot compete head-on with the malls or with the discounters and expect to win. Instead, Downtown must pursue an economic niche that will allow it to successfully co-exist with the malls and the discounters—by being different and unique.

More and more, this has come to mean that Downtown must create its own "economic themes." The goal of Downtown's economic themes is to make Downtown distinct so that it will stand out in the mind of the customer.

Downtown's economic themes are created by clustering together businesses—such as apparel or antiques or restaurants or home furnishings, etc.—that appeal to particular customer groups. By clustering similar businesses near each other, these businesses become more convenient for customers and Downtown becomes known for those businesses. In this way, Downtown takes on an economic theme—or focus—that makes it distinct and distinctive.

Secret #6: Focus!

In all but the smallest of communities, the Downtown area is physically too large to revitalize in one bite and Downtown's issues are too numerous to tackle all at one time. And, in every community, Downtown advocates and skeptics alike want to see visible improvements occur in Downtown immediately.

Because of this situation, the most successful Downtown enhancement programs are those where limited resources—time, energy, money, staff, volunteers, etc.—have been focussed in well-defined target areas. Concentrating resources in target areas breeds success because it makes revitalization of the entire Downtown seem manageable over time; it makes Downtown's issues seem less overwhelming when they are resolved one at a time; and it allows tangible results to be clustered so that they become more visible more quickly than if they were scattered throughout Downtown.

Secret #7: Be Self-Sufficient

The days of first looking *outside* your community for a Downtown savior—whether that be a new business, anchor, investor, or funder—are over. Instead, to be successful, Downtown leaders must learn to become self-reliant and resourceful. This means that Downtown organizations, Downtown professionals, and local government officials must become adept at spotting and nurturing local entrepreneurs — getting them to locate Downtown. In addition, these same Downtown constituents must also "put their money where their mouth is" when it comes to financing their Downtown enhancement effort—rather than expecting others from outside the community to bankroll their Downtown's future.

Secret #8: Return to Old-Fashioned Values

The most successful Downtowns in America are—and will continue to be—those that have realized that their strength lies in doing business the old-fashioned way. This means a return to personalized customer attention; providing value for money; standing behind your products; promoting the special, historic appearance of Downtown; promoting Downtown as the community's social, cultural, entertainment, residential, professional office, and family center; and stressing the community pride that results from a healthy Downtown.



Secret #2. Citizens participate in defining a Center City vision, with the help of the Medford Urban Renewal Agency in Medford, OR. (Credit: Gregory N. Leiber, PhotoQuest)

Secret #9: Be Pro-Business AND Pro-Quality

Within any given community, business owners and real estate developers have many options when looking for a location in which to invest. For Downtown to be the investment location of choice, the local government must be pro-business. This means revising regulations that make it hard to operate a business or invest in property in Downtown. Being pro-business also means streamlining government processes (codes, planning, licensing, etc.) so that investors can go into business as quickly as possible in Downtown.

While being pro-business is essential to Downtown's success, it must go hand-in-hand with being *pro-quality*. This means that local government should not—and must not be pressured to—forego quality in order to attract investors to Downtown. Instead, City Hall and the Downtown business community must jointly convey the clear message that Downtown welcomes quality business owners, property owners, and real estate developers—those who will operate quality businesses, maintain quality properties, and reinvest in these investments. And, that the local government is ready and able to be aggressively pro-business for such investors.

In Miamisburg, Ohio, Mayor Dick Church has furthered Downtown's enhancement by creating a "one-stop-shop" in City Hall. This involves having the City's employees who deal with planning, development, building codes, and fire codes work together as a team. The City's "one-stop-shop team" means a business owner, property owner, or real

Downtown Myths

1. If we build it, they will come.
2. If we demolish it, they will come.
3. If we complete one major project, they will come.
4. If we can't get a department store to come back to Downtown, Downtown will never be healthy again.
5. We can't get a department store to locate Downtown, so Downtown can no longer support any kind of retail trade.
6. Competition is bad for business.
7. For Downtown to be successful, Downtown's retail businesses must keep uniform business hours.
8. If we had more parking, they would come!

Downtown Secrets of Success

1. Form partnerships.
2. Know your vision.
3. Be market-driven.
4. Use a business plan.
5. Dare to be different.
6. Focus!
7. Be self-sufficient.
8. Return to old-fashioned values.
9. Be pro-business *and* pro-quality.
10. Know the indispensable "Five M's."

estate investor need only go to one location in order to obtain all required City permits and approvals. This pro-business stand by City Hall has sent a clear message that Miamisburg welcomes quality investors with open arms.

Secret #10: Know the Indispensable "Five M's"

While our Downtowns should not try to—and are not able to—compete head-on with malls and win, the most successful Downtowns are those that have learned and borrowed the best management techniques from the malls. These include the Five M's described here.

- *Management*—The Downtown partnership should function much as a shopping mall management company does.
- *Market Knowledge*—The Downtown enhancement program should be based on a market analysis that identifies Downtown's niche and targeted customers.
- *Marketing*—The Downtown enhancement program should include a multi-faceted marketing campaign that allows Downtown and its businesses to communicate with the targeted customers.
- *Maintenance*—Downtown must be appealing by keeping high standards of maintenance for both private and public property.
- *Money*—A goal of the Downtown enhancement program should be to create a financing mechanism that ensures adequate, predictable, and reliable funds with which to implement the Downtown revitalization effort.

THE TOP SECRET OF SUCCESS—DOWNTOWN PARTNERSHIPS

What makes some Downtown enhancement programs succeed in reaching their goals and others fail? Communities that are successfully implementing Downtown enhancement programs have found a key to this question: there must be a special kind of management entity in place that is responsible for spearheading the Downtown enhancement program in a business-like manner.

These communities have formed private-public partnerships whose mission is to enhance Downtown. In these partnerships, the public sector, the business sector, the civic sector, and the community-at-large join together, make decisions together, and each carry their weight to reinvest in—and reinvent—their Downtown. And, as mentioned previously, the most successful Downtown enhancement programs today are those where the partnership is driven by the *private sector* rather than by the public sector. These partnerships allow Downtown's key constituents to plan together, make decisions together, and work together to make their enhanced Downtown a reality.

The Downtown Partnership's Role—Typically, Downtown partnerships are formed to fill the following role:

- Act as the umbrella Downtown organization that unites all of Downtown's key partners in planning and acting for the betterment of Downtown as a whole;
- Spearhead implementation of an action-oriented Downtown business plan;
- Provide and cultivate the leadership necessary to implement the Downtown business plan;
- Garner an adequate level of resources—staff, volunteers, funds—to successfully implement the Downtown business plan;
- Reach out to and include Downtown's key constituents and the community as a whole in the enhancement effort;
- Inform and communicate with Downtown's key constituents, with the community-at-large, and with Downtown's users;
- Set a high standard of quality for others to follow;
- Act and stimulate action by others; and
- Be the primary advocate for Downtown and its importance to the entire community.

The Partnership's Structure—The Downtown partnership should bring together, coordinate and leverage the work of Downtown's key constituents. To accomplish this, Downtown partnerships are often incorporated as non-profit organizations that are structured to have the following elements:

- A board of directors, comprised of representatives from the private and public sectors, to manage, oversee, and implement the Downtown enhancement program;
- Standing programmatic committees, comprised of volunteers and responsible for implementing the various parts of the Downtown business plan;

- If necessary, temporary task forces created to resolve special issues facing Downtown which are then disbanded when their work is complete; and
- Professional staff to provide the technical and management expertise necessary so that the board, committees, task forces, and volunteers of the partnership can successfully implement the Downtown business plan.

The Partnership's Tool Kit—To successfully enhance Downtown, the Downtown partnership will have to unite a wide variety of Downtown constituents (both individuals and organizations) and move these constituents toward common goals. This will be a challenge—given the large number of Downtown constituents which exist in any community. To meet this challenge, the Downtown partnership must have an adequate "tool kit." The tools that the partnership will need are described further:

- **Downtown Vision**—One of the Partnership's first jobs will be to unite Downtown's constituents around a set of commonly shared goals. To accomplish this, the Downtown partnership should invite Downtown's constituents to define a clear and shared vision of Downtown's future, as was mentioned previously.
- **Market-Driven Actions**—To succeed, the Downtown enhancement program must be business-oriented. Therefore, the market analysis is essential. And, the findings of the market analysis *must drive all Downtown improvement actions*—including all of the private sector's business decisions and the public sector's governance decisions. How to market Downtown, which business hours to keep, which types of streetscape improvements to make, what types of businesses to recruit, etc., must all be based on the results of the market analysis. In other words, Downtown must be treated like a business—since it is an economic entity that will succeed or fail based on how well it serves its market.
- **Marketing Campaign**—Downtown's customers and potential customers are sophisticated and smart consumers who have many shopping options. And, they are constantly being bombarded with sophisticated marketing messages. The most progressive Downtown partnerships in the country today have realized the need for a marketing campaign that is every bit as professional and comprehensive as the competition's. For greatest success, the campaign must be of high quality, be based on the market analysis findings, and must stress Downtown's economic themes and overall image.
- **Financing**—Garnering an adequate level of funding—that is, a level that allows the partnership to implement the business plan in a timely and quality manner—is critical for program success. Therefore, immediate and aggressive fundraising is often a high priority of the Downtown partnership. In the most successful Downtown partnerships, funding is sought *community-wide* and from both the private and public sectors—with private sector contributions out-weighing those from the public sector.



Secret #9. Miamisburg, Ohio. Miamisburg's Mayor Dick Church created a "one stop shop" at City Hall to make it as easy as possible for quality businesses to open and expand in Downtown.

How to Form a Downtown Partnership—How is a Downtown partnership typically formed? While the scenarios vary from one community to another, the following steps are typically involved.

1. Often, a handful of progressive leaders—from both the private and public sectors—comes together. These are individuals who believe that their Downtown's current state is unacceptable, who believe positive changes can be made in their Downtown, and who are committed to working together to make those changes occur.

2. This group of leaders approaches entities involved in Downtown—such as the local Chamber of Commerce, the Downtown Merchants Association, the local government, etc.—and asks for their endorsement and participation in forming the partnership.

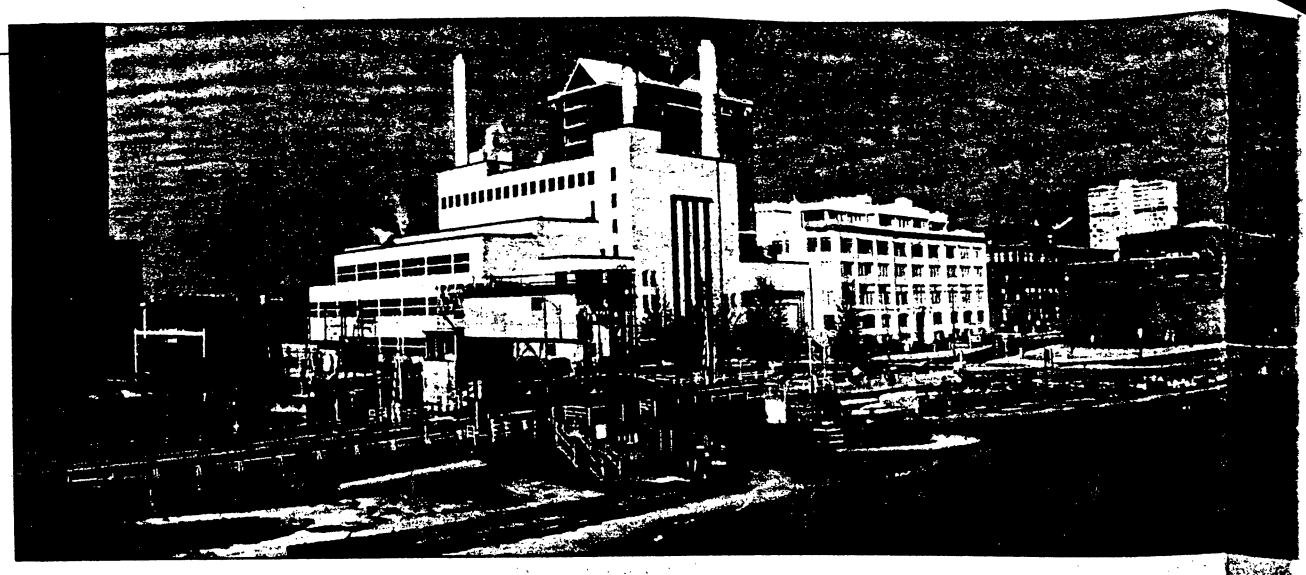
3. The leaders and participating entities come together as a group to discuss how best to form the partnership.

4. Sometimes acting as a steering committee, this group identifies Downtown's key constituents from the private sector, public sector, civic sector, and community-at-large. These key constituents often include Downtown business owners, Downtown property owners, bankers, utility execs, corporate and industrial leaders, management of local media, and local government elected officials.

5. The steering committee asks representatives of the key constituencies to serve on the partnership's board of directors.

6. The board of directors commits to developing Downtown's necessary "tool kit"—a shared vision for Downtown, a realistic Downtown market analysis, an action-oriented business plan, and adequate financing—and to spearheading the enhancement effort.

It is not uncommon for steps 5 and 6 to be reversed—with the partnership's board of directors formally being created after Downtown's "tool kit" has been developed. This approach entails the steering committee staying in place until the tool kit is developed and then creating the partnership board. This scenario is sometimes used to ensure that the partnership will be structured in a way that allows for successful implementation of the enhancement program.



'THE MOST ENTREPRENEURIAL PLACE ON EARTH'

What it's like to build a business in East Cambridge, Mass.

BY LIZ ROMAN GALLESE

I think you get hooked on the adrenaline. And terror is part of what makes the adrenaline flow."

The speaker is C. David Seuss, chief executive officer of Spinnaker Software Corp., a producer of inexpensive office and education programs for personal computers. Adrenaline? Terror? Founded in 1982, Spinnaker blossomed through 1984, contracted by more than half, expanded again this year. All of which is normal for any ambitious fledgling except for one factor: the company is based in East Cambridge, Mass., a tiny neighborhood that is perhaps the most entrepreneurial place on earth. And that, say the people who build businesses there, makes the highs higher—and the lows more devastating.

Bordered by the Massachusetts Institute of Technology, just across the Charles River from Boston, East Cambridge covers less than a square mile. A decade ago it was a wasteland, its streets crowded with gargantuan old factories, some still reeking of the soap once manufactured there. The industrial canal on the neighborhood's northwest corner was a storage area for highway salt.

Today those same streets are brushed clean and lined with sidewalk cafés and trendy shops, many of them renovated to look smartly old-fashioned; the canal has become a focal point for a polished new office-and-condo development. But the change may be even more dramatic behind the facades.

■ Roughly 10% of Massachusetts's software companies make their home in East Cambridge. Nearly one-quarter of the state's 140 biotechnology companies do too. In all, says David L. Birch of Cognetics Inc., some 17,000 new jobs have been created in East Cambridge over the past eight years.

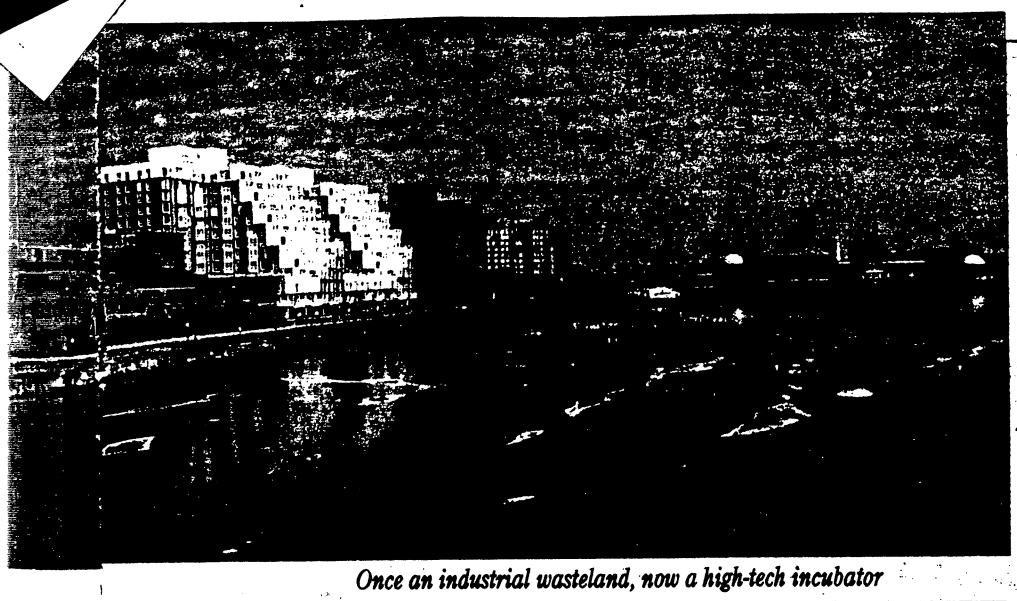
■ Roughly 3.5 million square feet of new office space have been added to a base of 2.2 million square feet over that same eight-year period, according to the real-estate firm of Spaulding & Slye. Metropolitan Boston may be suffering from cutbacks in the defense and computer industries. East Cambridge has scarcely noticed.

■ At the American Twine Office Park, in the middle of East Cambridge, developers had expected to lure law firms attracted by the nearby courthouse and big companies desperate for presentable office space. What they got instead were tiny businesses such as Inscribe Inc. (which computerized Ronald Reagan's signature) and Funk Software Inc. (which turned the unwieldy Lotus 1-2-3 spreadsheet right side up).

"The building wasn't intended to be a high-tech incubator," says Mitchell Roberts, marketing and leasing manager for the developers. "That came as a surprise." Some 50 to 60 young companies have been based at American Twine since it opened in 1983.

And what is it like for an entrepreneur to do business in a place so jam-packed with compatriots? At Spinnaker, what Seuss calls the adrenaline and the terror coexist with more pedestrian factors. Spinnaker's proximity to MIT makes it easy to recruit programmers, and to take advantage of the pool of students seeking part-time work. The company has also been able to expand and contract without difficulty; with so many fast-growing companies looking for space, says Seuss, you can sublet yours when you're on a downward spiral and rent someone else's when you begin growing again.

Then there's the onslaught of professional-service firms: Big Eight accountants; slick public-relations outfits; tony consultants like Alliance Consulting Group, spun off from Boston Consulting

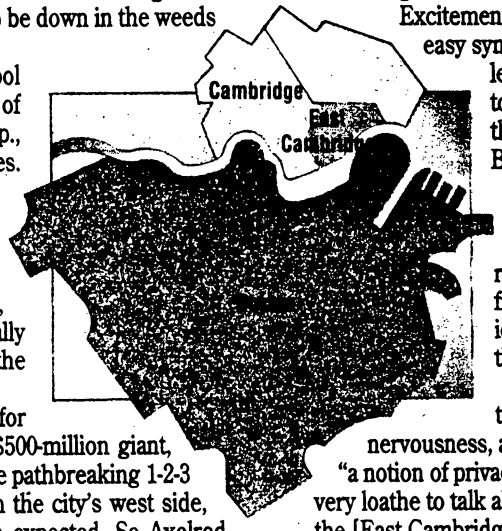


Once an industrial wasteland, now a high-tech incubator



Group—even a day-care center, Bright Horizons. All offer help, albeit at a price. "That phone will ring, and you'll have no idea what question will come over the line," says Joseph S. Tibbetts Jr., the Price Waterhouse partner who founded the firm's Entrepreneurial Service Center three years ago. "A guy will say, 'I want to fire my chief financial officer—how do I do it?' " Robert Johnson, a venture capitalist, launched Founders Capital Partners two years ago to bridge the gap between good idea and start-up; he helps entrepreneurial hopefuls get their acts together. "East Cambridge is sort of a primordial soup," he says. "You have to be down in the weeds to catch something new."

The company that stands as a symbol of all this—a focus of envy as much as of admiration—is Lotus Development Corp., which in 1981 had but three employees. Two years later, when it shipped the software package that changed the way American business did its numbers, Lotus became the ultimate all-American success story. "You know, tremendously quick success, with a really good product," says Janet Axelrod, the company's first hired employee.



Axelrod was in part responsible for bringing the company, now a nearly $500-million giant, to East Cambridge. Having shipped the pathbreaking 1-2-3 program from its old headquarters on the city's west side, Lotus had to grow more rapidly than expected. So Axelrod found a decaying glue factory on First Street in East Cambridge.

That decision, along with the closeness of MIT, has made the area what it is today. Lotus's eight East Cambridge locations constitute a campus of sorts, connected by a line of ubiquitous white vans with the company's name prominently displayed on their sides. And Lotus, some say, provides the inspiration for the area's other entrepreneurs. "You can't look up to IBM and say, 'I'm going to get there some day,' " says Noubar B. Afeyan, 27, founder and executive vice-president of Perseptive Biosystems Inc. "But Lotus—that isn't so far away." Indirectly, Lotus even symbolizes the downside of entrepreneurship: founder Mitchell Kapor left Lotus in 1986 for another start-up, this one called ON Technology. And since ON hasn't yet lived up to expectations, Kapor is now in the same maybe-we-won't-make-it boat as everyone else.

Indeed, failure may be the real terror of doing business in an environment so crammed with hopefuls. At The Office, a facility where the newest entrepreneurs can rent a room or two with a desk and phone, 25% of the tenants don't survive. Neither do a lot of better-established companies. When Afeyan moved into new quarters on the edge of East Cambridge, the first thing he stumbled on were the business cards of the former tenant, a company that had gone under. For Charles Digate, a former Lotus senior vice-president now launching a software company called Beyond Inc., seeing the tenant across the hall fold was a moment of truth. "I was happy when they took the name off the door," he says, unwilling to see so flagrant a reminder of failure.

Excitement and fear—adrenaline and terror—exist in uneasy symbiosis. At the headquarters of booming Interleaf Inc., CEO David Boucher points admiringly to the spiral staircase winding like a spine through the center of the facility. The building, Boucher explains, "fosters a sense of oneness—that we're all in this together." Other entrepreneurs in the area echo Boucher's sentiments. Asked about doing business in such an environment, they talk about the easy flow of ideas from campus to company, about the sharing of ideas and facilities among start-ups, even those in the same industry.

But the ever-present specter of failure appears to have produced exactly the opposite effect: a nervousness, a recoiling from one another. Digate, in fact, says "a notion of privacy" is really what pervades the area. "People are very loathe to talk about what they are doing. I think that's part of the [East Cambridge] mystique. People know there's so much going on, and they don't know what it is. There's this underlying anticipation that some day, somebody will come up with something brand-new."

As East Cambridge matures, many believe that rising rents will put an end to the freewheeling entrepreneurial culture. But as Spinnaker's Seuss says, more than a few company founders may already be hooked. Late last spring I talked with The Saddlebrook Corp.'s founder, Mike Kinkead, in his spectacular office, the Charles River a sparkling ribbon of blue under the Boston skyline. At the end of June Kinkead was out, fired by the company's venture capitalists. A month later the business itself was padlocked.

Launching a new company right away, Kinkead found space fast in suburban Wellesley. But he dreams of finding space in the environment he knows best.

"There's real magic in East Cambridge," says Kinkead. ❑

Liz Roman Gallese is a free-lance writer based in Wellesley, Mass.

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SPECIAL GLOBAL EXPANSION ISSUE

Growth Strategies for Companies on the Move

EXPANSION MANAGEMENT

September-October 1996

Guaranteed Graduates!

1996 Education Quotient

Which public schools are adequately preparing your future work force ... and which ones aren't
PAGE 67

Texas targets industry ... All of them
PAGE 104

U.S. food industry spends $19 billion annually on new facilities and equipment
PAGE 14

The "Do's and Don'ts" of international site location
PAGE 27



Paige Harris, a senior at Gold Medal-rated Franklin High School in Franklin, TN, is No. 1 in her class of 400 students.

What's new with Germany's flourishing medical technology industry? — PAGE 49

EQ '96 Guaranteed Graduates

Hire a graduate, get a warranty!

By Ladene Morton, EQ Research Director
and Jack R. Wimer, Editor

Guaranteed Graduates.

It's more than just a term that trips lightly off the tongue. It's a new attitude in public education, bucking the popular trends in education circles while fitting right in with manufacturing and service industry trends.

The attitude goes like this: "If we don't get it right the first time, we'll do it over."

As far as *Expansion Management* can discern, the term Guaranteed Graduates was first used officially in the small community of Plainfield, Ind. Since then the term, the process and the attitude have begun to spread. Cities and states, and their politicians are talking about making students who are making the grade.

If you hire a graduate of the Plainfield Community School Corp., the district guarantees that the student:

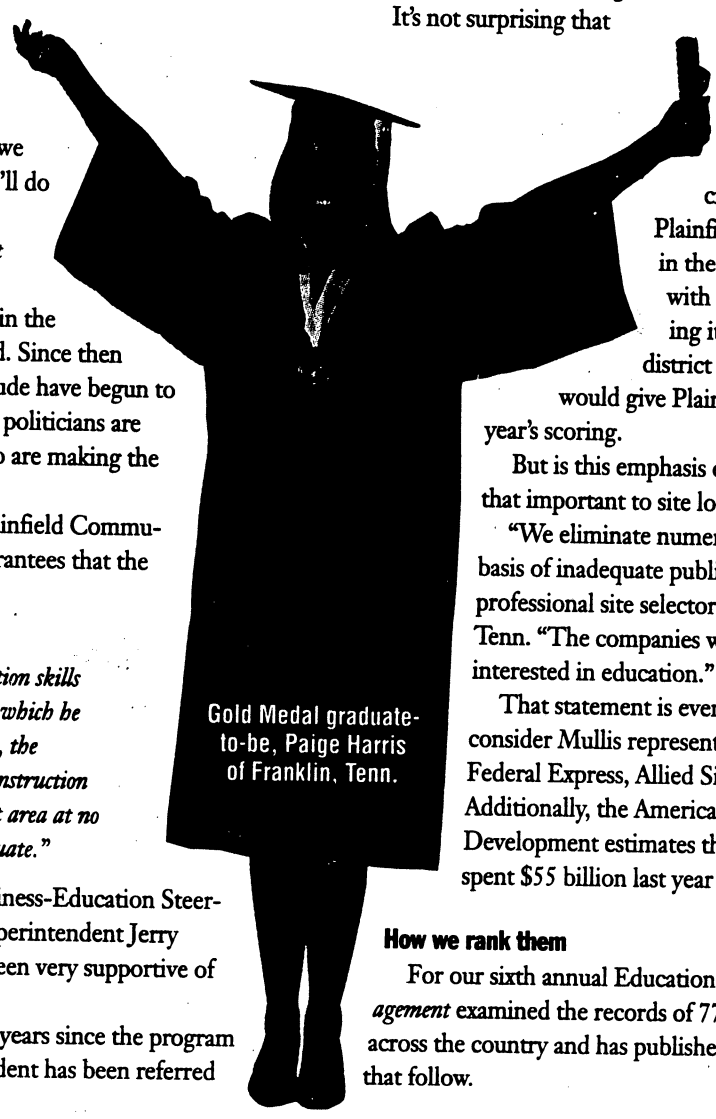
> *"... will possess the appropriate math, reading and communication skills necessary to perform the job for which he or she has been employed. If not, the school corporation will provide instruction and remediation in the deficient area at no cost to the employer or the graduate."*

"This need came out of our Business-Education Steering Committee," said Plainfield Superintendent Jerry Holifield. "Local businesses have been very supportive of this initiative."

Holifield reports that in the five years since the program was first conceived, not a single student has been referred back to the school for additional training.

"I wish we did have some come back," Holifield said. "It would send a good message to the other students."

It's not surprising that Plainfield isn't getting any warranty returns. When we evaluated the school system a year ago in a special project for PSI Energy, Plainfield scored an impressive 130 in the graduate outcome score, with an overall EQ of 115.4, making it the fifth highest scoring district in Indiana. Those scores would give Plainfield a Blue Ribbon in this year's scoring.



Gold Medal graduate-to-be, Paige Harris of Franklin, Tenn.

But is this emphasis on education quality really that important to site locators?

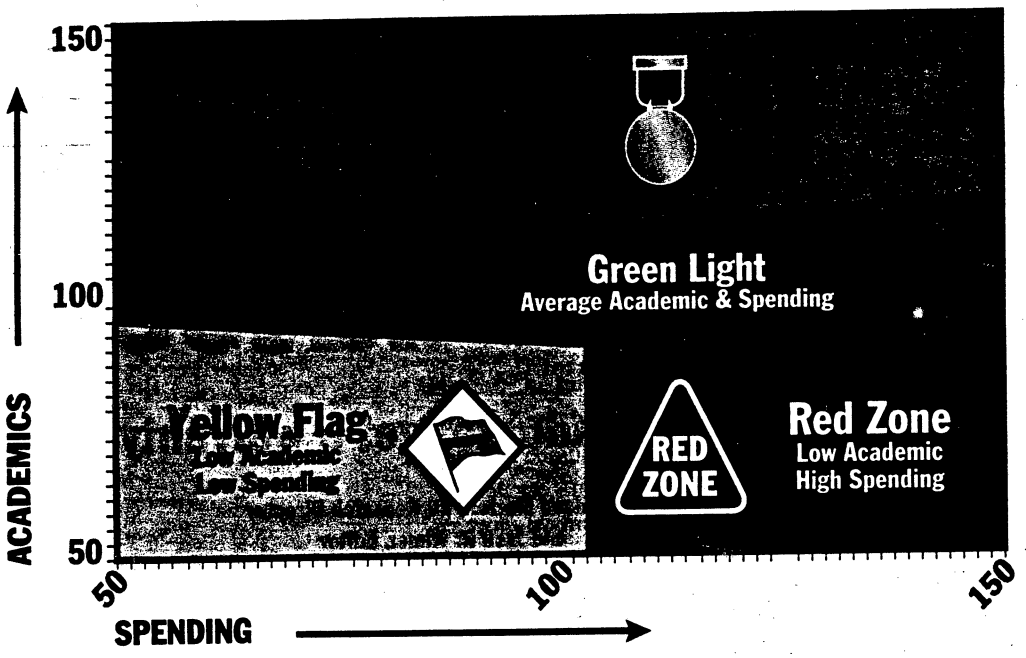
"We eliminate numerous communities on the basis of inadequate public education systems," says professional site selector J.M. Mullis of Collierville, Tenn. "The companies we represent are extremely interested in education."

That statement is even more potent when you consider Mullis represents such giants as Boeing, Federal Express, Allied Signal and Harley-Davidson. Additionally, the American Society for Training and Development estimates that businesses in the U.S. spent $55 billion last year on training.

How we rank them

For our sixth annual Education Quotient, *Expansion Management* examined the records of 770 school districts from across the country and has published the ratings in the tables that follow.

The EQ Price-Performance Chart



What we found were school districts that score academically far beyond their financial means, districts that spend a great deal of money and achieve very poor results, and, mostly, those that fall in the middle ground.

This year, continuing a popular feature we started in 1995, we have simplified the interp tation of our scoring syste by assigning color-coded descriptors to districts ba on where they fall on our price-performance chart. graphic on this page.)

Gold Medal districts those that score well abo the national average in ac mics and community edu tional attainment, and wh spending is also well abo national average. Much li an expensive car, these ar tricts that one would exp be competent and comfo able due to their price.

Blue Ribbon district those that score just as w and sometimes better — the Gold Medal districts do so while spending at or below the national average on a pupil basis, adjusted for regional cost of living differences, o course. These districts are much like a "Consumer Reports Buy " offering superior performance at an attractive price.

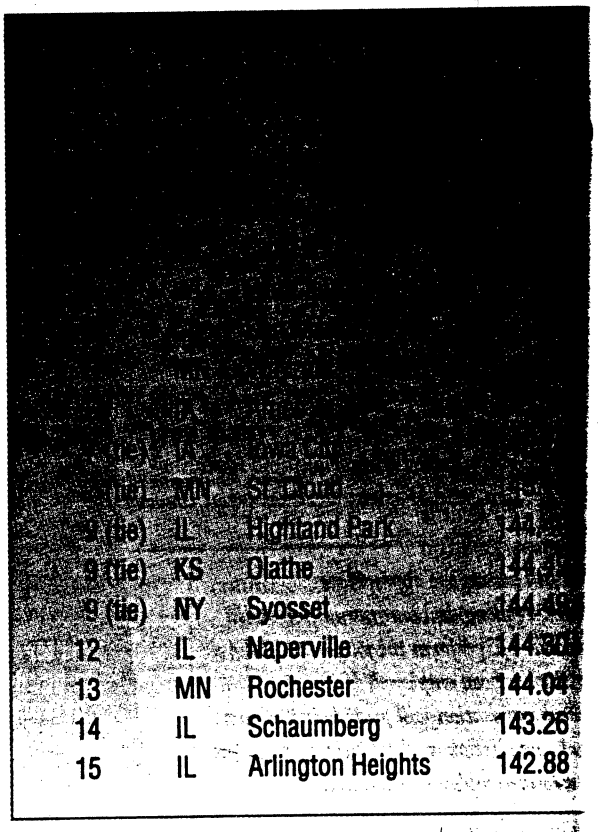
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Indicate information number 28



8 (tie)	IL	Highland Park	144.
8 (tie)	KS	Olathe	144.
8 (tie)	NY	Syosset	144.4
12	IL	Naperville	144.3
13	MN	Rochester	144.04
14	IL	Schaumberg	143.26
15	IL	Arlington Heights	142.88

Green Light districts (our "average" category, which w known last year as "in the black") are districts that fall in t middle of the price-performance matrix, excelling neither spectacular test scores nor in spending on salaries and instr tion. Also, these are schools where no performance measur falls far enough to knock them into the less-desirable corn

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our performance box. True to form, over half of the schools we researched ended up in the Green Light category.

Yellow Flag districts are those that do not achieve much in the way of academic performance. Generally, these districts would not be expected to achieve much, since their spending is also well below the national norm. Their community scores (this category measures how much school the general population finished and how affluent local families are) are also usually on the mid to low end of the spectrum. To continue the automotive metaphor, these districts constitute the Volkswagen Beetle group: Not much performance, but you didn't pay much for it.

Red Zone districts are those that spend a lot of money, yet get poor academic results. It seems that each of these districts has its own special story of why things are just not working as well as in other districts. The common thread in these stories seems to be a combination o politics and demographics. Most of them are in cities and often fall within areas tha have low community scores.

Out of the 770 districts we examined, we found 81 Districts that earned a Gold Medal designation, 152 that earned a Blu Ribbon, 388 Green Light districts, 102 Yellow Flag districts and 43 that fell into the Red Zone.



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Indicate information number 92

Overall EQ Performance

RANK	STATE	DISTRICT	EQ RATING
1	NY	Syosset	143.8
2	NY	Garden City	143.4
3	IL	Schaumburg	140.3
4	IL	Arlington Hts	139.4
5	CT	Greenwich	139.3
6	WI	Madison	137.9
7	IL	Evanston	137.2
8	CT	Westport	136.9
9	PA	Mt. Lebanon	136.7
10	CT	Ridgefield	136.5
11	MI	Birmingham	136.2
12	PA	Upper St. Clair	135.9
13	TN	Oak Ridge	135.6
14	PA	Ft. Leboyne	135.4
15	MI	Novi	135.2

The EQ is a scanning device a site selector can use to assess the public education infrastructure in a community. On a 50 to 150 scale, with 100 being average, it provides a capsule summary of how a school district stands on a continuum of all U.S. school districts of 450 students or more.

The Indexes

The EQ score itself is an average of the other scores, and thus is of limited value unless you also know the three scores that are used to produce this average. These are the Community Index, the Resource Index and the Graduate Outcome Index. Each index works just like the EQ itself, with possible scores ranging from 50 to 150. A score of 100 is designed to fall right at the median or national norm.

The Community Index. This test (composed of community education attainment and income levels) measures

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the level of education and level of affluence found in the district. It is designed to provide some insight into the environment offered to students for learning.

The Resource Index. This test (composed of per pupil expenditures, teacher salaries and student-teacher ratios) measures the relative investment being made by the patrons of the district. In manufacturing terms, it can been seen as the input or "value added" designed to produce higher quality and more useful students.

The Graduate Outcome Index. This index (composed of graduation rates and college board scores) measures the relative performance of the graduates of a district. While not a perfect measurement, it is how our society tends to gauge the final product of the education process. ■

Work Keys Works!

Omaha, Neb., has begun an innovative program that bridges school and work to connect real life job skills with public education.

The program is called Work Keys. It began in April 1994 as a three-year collaboration between Omaha World-Herald Foundation, Omaha Public Schools, the Chamber of Commerce (OMAHA 2000), and American College Testing (ACT).

Work Keys, developed by ACT — one of the nation's leading developers of standardized assessment tools — presents a unique structure that identifies generic workplace skills, as well as a means of documenting and improving individuals' proficiency in those areas.

Essentially, Work Keys does for employers what the ACT does for colleges: it provides a snapshot of a person's proficiency in a specific job. It gives employers a guide for hiring and training their employees.

Jack Trindle, Director of Human Resources of Airlite Plastics in Omaha, believes that Work Keys is the "sensible way to develop workers and prepare students."

Susan Ogborn, the manager of education initiative for the Omaha Chamber of Commerce, says that Work Keys also becomes a diagnostic tool for students. It allows them to identify their strengths and weaknesses, and to revise class and study plans before, rather than after, graduation.

Employers and community colleges in Tennessee, Ohio, Mississippi and other states have used the Work Keys assessment to screen and place workers in jobs, but Omaha was first to use Work Keys in public high schools.

Hattiesburg, Miss., for example, used the Work Keys program to screen over 1,200 potential employees for the recently located Sunbeam/Oster appliance plant, and reports good success.

"We found that Work Keys actually performed quite well," said David Rumbarger, president of the Hattiesburg Area Development Council. "We were excited about it and Sunbeam was pleased as well."

—Linda Kostner

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District	EQ 96	🎓	🏠	$	Group
ALASKA					
■ Anchorage	110.9	101	136	96	GREEN
■ Juneau	108.4	86	135	104	GREEN
ALABAMA					
■ Andalusia City	86.3	107	62	90	GREEN
■ Anniston City	76.7	65	75	90	YELLOW
■ Birmingham City	70.0	63	70	77	YELLOW
■ Clarke County	65.8	66	65	66	YELLOW
■ Cullman City	90.5	123	74	75	BLUE
■ Decatur City	107.1	107	111	104	GREEN
■ Dothan City	93.1	92	99	88	GREEN
■ Florence City	104.3	109	95	110	GREEN
■ Gadsden City	79.7	79	65	95	YELLOW
■ Huntsville City	109.9	106	129	95	GREEN
■ Mobile County	73.8	78	78	65	YELLOW
■ Montgomery	92.4	95	104	78	GREEN
■ Opelika City	86.2	97	88	74	GREEN
■ Tuscaloosa City	88.3	91	91	83	GREEN
ARIZONA					
■ Avondale	68.7	90	55	61	YELLOW
■ Benson	72.6	91	63	64	GREEN
■ Bullhead City	73.7	89	74	58	GREEN
■ Chandler	100.2	111	125	65	BLUE
■ Flagstaff	96.4	104	123	62	GREEN
■ Gilbert	111.8	142	125	68	BLUE
■ Glendale No. 40	94.5	99	115	69	GREEN
■ Mesa	104.2	118	122	73	BLUE
■ Paradise Valley	93.3	96	108	76	GREEN
■ Payson	74.4	93	74	56	GREEN
■ Peoria	92.6	97	109	71	GREEN
■ Phoenix Unified High	82.3	61	109	77	YELLOW
■ Prescott	85.8	102	97	58	GREEN
■ Scottsdale	108.9	116	143	67	BLUE
■ Tempe	96.1	99	117	72	GREEN
■ Tucson	78.0	76	93	65	YELLOW
■ Yuma No. 1	85.0	101	87	67	GREEN

District	EQ 96	🎓	🏠	$	Group
ARKANSAS					
■ Benton	104.0	127	79	106	BLUE
★ Conway	110.4	131	90	110	GOLD
★ Fayetteville	115.0	114	122	109	GOLD
■ Fort Smith	110.6	117	99	116	GREEN
■ Harrison	90.7	127	67	79	BLUE
■ Helena	87.0	87.0	56	118	GREEN
■ Hope	91.7	108	52	115	GREEN
■ Hot Springs	85.2	90	62	104	GREEN
★ Jonesboro	117.1	129	101	122	GOLD
■ Little Rock	119.2	100	123	134	GREEN
■ Pine Bluff	89.2	103	69	96	GREEN
■ Rogers	112.7	136	97	105	BLUE
■ Texarkana	95.7	106	71	110	GREEN
■ West Memphis	82.6	88	60	101	GREEN
CALIFORNIA					
■ Anaheim	93.1	99	111	69	GREEN
■ Apple Valley Unified	85.4	86	97	73	GREEN
■ Bakersfield City	84.0	78	94	79	GREEN
■ Barstow Unified	76.8	88	75	68	GREEN
■ Brea-Olinda Unified	101.2	108	139	56	BLUE
■ Burbank Unified	86.4	87	109	63	GREEN
■ Carlsbad Unified	99.7	93	137	69	GREEN
■ Chico Unified	92.9	104	103	71	GREEN
■ Coachella Valley Unified	56.8	54	52	64	YELLOW
■ Conejo Valley Unified	113.1	121	143	76	BLUE
■ Corona-Norca Unified	88.2	79	112	74	GREEN
■ El Centro/Central Union	76.0	99	60	69	GREEN
■ El Monte Union High	60.2	62	54	64	YELLOW
■ El Segundo Unified	101.2	97	139	68	GREEN
■ Escondido	86.9	92	97	72	GREEN
■ Eureka City	86.7	91	91	78	GREEN
■ Filmore Unified	80.2	78	88	74	YELLOW
■ Fremont Unified	103.4	107	138	66	BLUE
■ Fresno Unified	70.0	65	75	70	YELLOW
■ Glendale	89.8	96	108	65	GREEN
■ Hanford	72.1	75	69	73	YELLOW
■ Hayward Unified	79.0	74	106	58	YELLOW

Top Score = 150 Lowest Score = 5[illegible]

🎓 = Graduate Outcome 🏠 = Community Index

$ = Resource Index

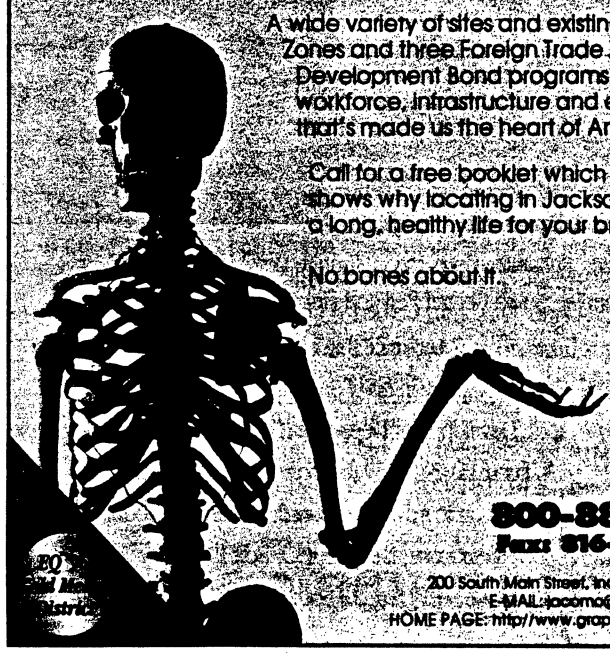
Maybe the business would have fared a little better if he had moved it to Jackson County, Missouri.

We're not saying you have to move to Jackson County, Missouri to succeed... but if you want to do business in the Kansas City area, you'll find we provide everything you need to get you up and running in less time, at less cost.

A wide variety of sites and existing buildings. Enterprise Zones and three Foreign Trade Zones. Industrial Development Bond programs. And the kind of workforce, infrastructure and educational system that's made us the heart of American industry.

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No bones about it.



JACKSON COUNTY ECONOMIC DEVELOPMENT MISSOURI

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FAX: 816-881-4511

200 South Main Street, Independence, Missouri 64050

E-MAIL: jacomo@kc.grapevine.com

HOME PAGE: http://www.grapevine.com/jacomo/ecodvp.htm

Indicate information number 34

THE RATINGS



Gold Medal



Blue Ribbon



Green Light



Yellow Flag



Red Zone

Reprints of the 1996 Education Quotient are $6. To order, call 913-381-480[illegible].

District	EQ 96	🎓	🏠	$	Group
■ Healdsburg Union	89.1	85	108	74	GREEN
■ Hesperia Unified	70.5	75	70	66	YELLOW
■ Huntington Beach City	106.9	112	138	70	BLUE
■ Irvine Unified	116.3	141	143	65	BLUE
■ Long Beach	80.6	79	97	65	GREEN
■ Los Angeles	69.7	53	85	70	YELLOW
■ Manteca Unified	74.5	69	90	65	YELLOW
■ Marysville Joint Unified	67.4	57	74	71	YELLOW
■ Merced City	73.4	83	70	68	YELLOW
■ Modesto City	83.8	81	96	74	GREEN
■ Monterey Pen. Unified	94.8	67	139	79	GREEN
■ Moreno Valley Unified	87.7	75	112	75	GREEN
■ Napa Valley Unified	91.8	86	121	68	GREEN
■ Newport-Mesa Unified	104.6	111	129	74	BLUE
■ Novato Unified	103.2	114	130	66	BLUE
■ Oakland Unified	75.7	55	90	83	YELLOW
■ Oceanside City Unified	82.3	70	104	73	YELLOW
■ Ontario-Montclair	69.2	62	80	66	YELLOW
■ Orange Unified	84.3	105	89	59	GREEN
■ Pajaro Valley Joint Unified	67.1	77	63	61	YELLOW
■ Pasadena	80.4	60	114	67	YELLOW
■ Placer	84.7	99	90	65	GREEN
■ Pleasanton Unified	113.2	118	146	76	BLUE
■ Pomona	66.9	64	73	64	YELLOW
■ Poway Unified	110.7	115	143	73	BLUE
■ Riverside Unified	87.1	75	113	74	GREEN
■ Sacramento City Unified	83.9	78	100	76	GREEN
■ Salinas City	69.6	59	76	73	YELLOW
■ San Bernadino City Unified	69.4	68	66	74	YELLOW
■ San Diego	94.3	84	122	77	GREEN
■ San Francisco	85.6	72	117	68	GREEN
■ San Jose Unified	98.5	99	124	73	GREEN
■ San Leandro	91.4	97	118	59	GREEN
■ San Luis Coastal Unified	98.8	110	102	84	GREEN
■ San Marcos Unified	79.0	84	90	63	GREEN
■ San Marino Unified	117.6	146	148	59	BLUE
■ Santa Ana Unified	63.9	56	71	65	YELLOW
■ Santa Barbara	101.8	108	125	73	BLUE
■ Santa Clara Unified	102.2	105	139	62	BLUE
■ Santa Maria	78.3	90	74	71	GREEN
■ Santa Monica-Malibu	116	133	139	76	BLUE
■ Santa Rosa City	101.7	107	131	67	BLUE
■ Sequoria Union/Redwood City	104.0	98	135	80	GREEN
■ Shasta Union/Redding	88.6	81	114	72	GREEN
■ South Pasadena Unified	104.8	112	138	64	BLUE
■ Stockton City Unified	72.1	58	72	86	YELLOW
■ Sweetwater Union/Chula Vista	80.5	69	96	77	YELLOW
■ Vallejo City Unified	87.5	73	115	75	GREEN
■ Ventura Unified	93.9	92	128	62	GREEN
■ Victor Elementary	71.6	65	75	74	YELLOW
■ Visalia Unified	82.0	84	92	70	GREEN
■ Vista Unified	85.1	92	98	66	GREEN
■ West Contra Costa	84.2	92	92	69	GREEN

COLORADO

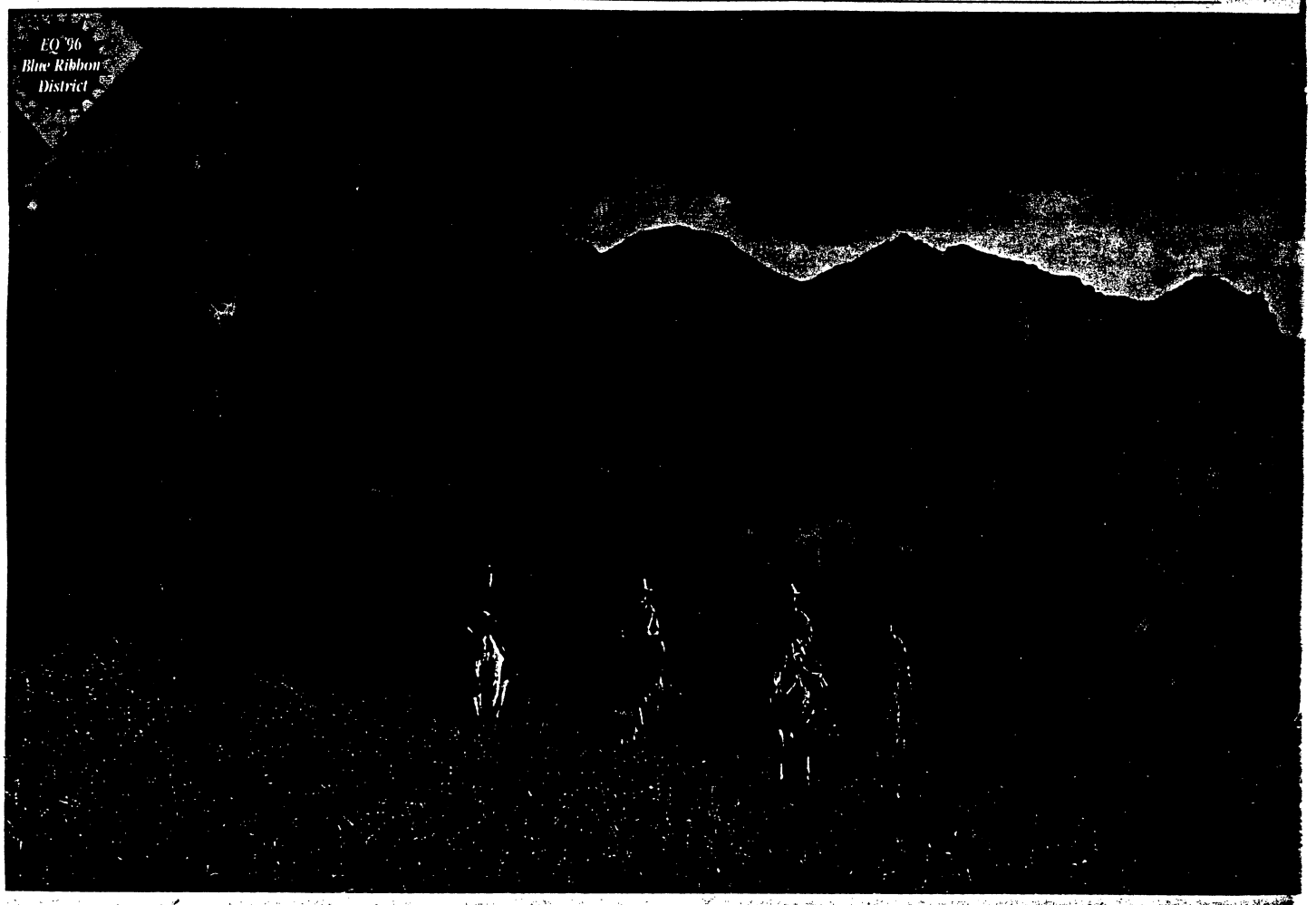
■ Adams-Arapahoe 28J	106.9	105	132	84	GREEN
■ Boulder Valley RE2	114.9	121	140	84	BLUE
■ Cherry Creek	115.5	123	115	108	BLUE
■ Colorado Springs	101.5	91	127	87	GREEN
■ Denver County 1	100.4	96	106	99	GREEN
■ Englewood 1	93.5	107	95	79	GREEN
■ Greeley 6	100.2	100	108	93	GREEN
■ Jefferson County R-1	109.0	112	135	80	BLUE
■ Mesa County Valley 51	101.5	124	84	99	BLUE
■ Park (Estes Park)	113.0	108	131	100	GREEN
■ Poudre R-1	117.9	113	137	104	BLUE
■ Pueblo City 60	98.3	114	77	104	GREEN

CONNECTICUT

■ Bridgeport	79.4	52	70	116	RED
■ Danbury	108.3	88	126	111	GREEN
★ Fairfield	126.0	118	141	119	GOLD
★ Greenwich	139.1	133	145	139	GOLD
■ Hartford	78.9	51	59	127	RED
■ Meriden	94.1	68	104	110	RED
■ New Haven	85.0	53	79	123	RED

Top Score = 150 **Lowest Score = 50**

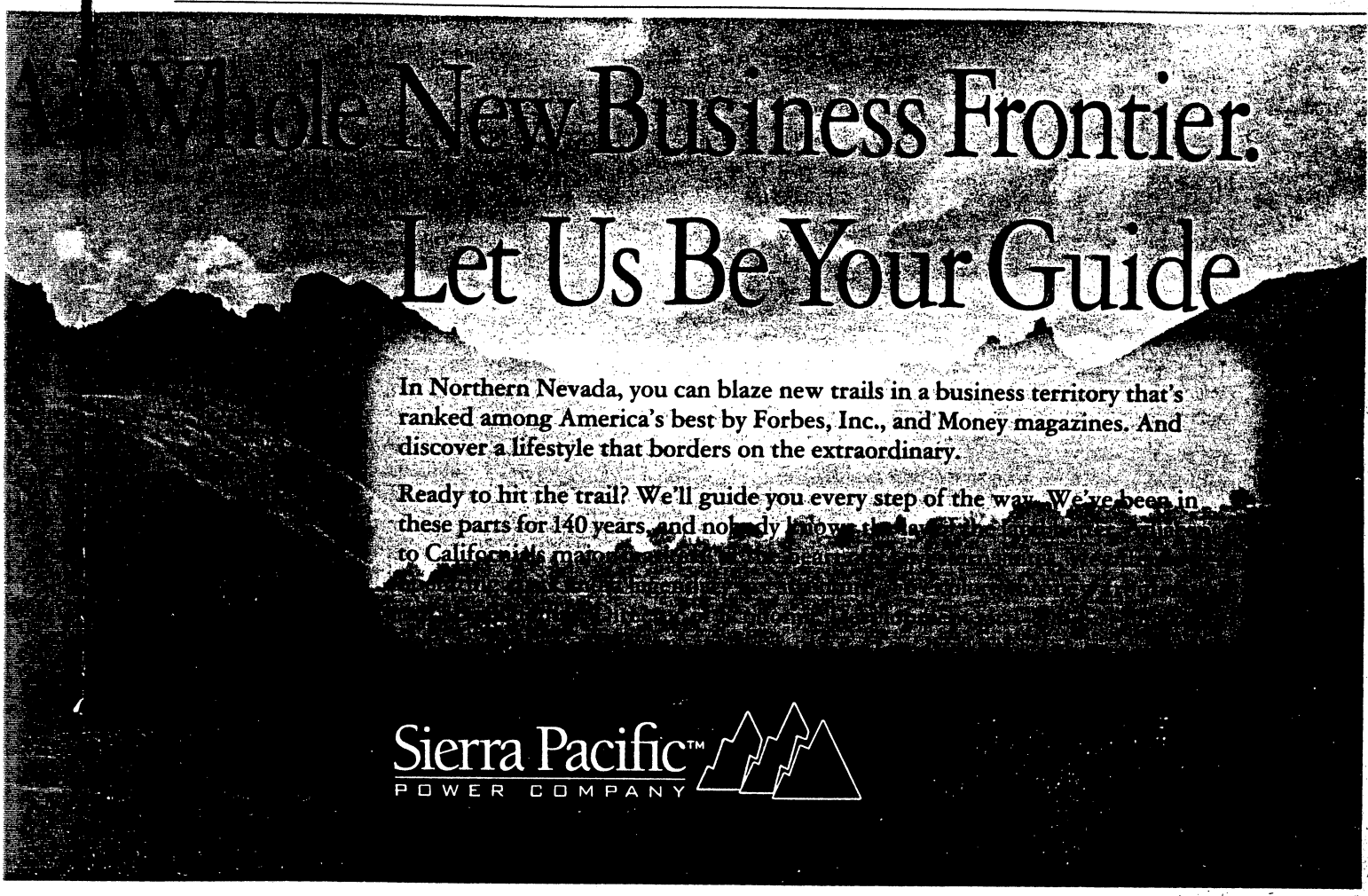
🎓 = Graduate Outcome 🏠 = Community Index $ = Resource Index



Indicate information number 40

Reprints of the 1996 Education Quotient are $6. To order, call 913-381-4800.

District	EQ 96			$	Group
CONNECTICUT					
■ New London	91.2	53	91	129	RED
■ Norwalk	113.8	84	129	128	GREEN
★ Ridgefield	136.6	136	148	125	GOLD
■ Stamford	123.4	106	136	128	GREEN
■ Wallingford	101.2	88	102	114	GREEN
■ Waterbury	90.8	59	86	127	RED
★ Westport (Township)	136.9	130	148	132	GOLD
DELAWARE					
■ Dover	98.6	70	120	106	GREEN
■ Red Clay	91.3	82	82	110	GREEN
DISTRICT OF COLUMBIA					
■ Dist of Columbia (total)	101.8	100	99	107	GREEN
FLORIDA					
■ Alachua County	104.7	85	112	118	GREEN
■ Bay County	99.5	78	92	128	GREEN
■ Brevard County	108.7	85	122	120	GREEN
■ Broward County	97.8	68	109	116	GREEN
■ Collier County	114.5	88	123	133	GREEN
■ Dade County	89.3	63	82	123	RED
■ Duval County	99.5	73	108	118	GREEN
■ Escambia County	104.9	92	96	126	GREEN
■ Hillsborough County	107.1	83	109	129	GREEN
■ Lee County	98.3	68	106	121	GREEN
■ Leon County	108.6	78	128	120	GREEN
■ Marion County	89.5	64	82	123	RED
■ Monroe County	101.4	66	108	130	GREEN
■ Okaloosa County	112.0	96	119	121	GREEN
■ Orange County	105.6	77	117	123	GREEN
■ Osceola County	87.0	64	86	111	RED
■ Palm Beach County	104.9	72	119	124	GREEN
■ Pinellas County	107.4	81	113	128	GREEN
■ Polk County	90.6	66	85	121	RED
■ Sarasota County	112.3	94	120	123	GREEN
■ Seminole County	107.3	81	127	113	GREEN
■ St. Johns County	96.8	68	99	124	GREEN
■ St. Lucie County	92.5	64	89	125	RED
■ Volusia County	96.3	71	98	120	GREEN
GEORGIA					
■ Atlanta City	82.5	52	81	114	RED
■ Bibb County	73.2	57	85	78	YELLOW
■ Chatham County	78.2	54	95	85	YELLOW
■ Clarke County	90.0	67	107	95	YELLOW
■ Clayton County	85.5	69	105	83	YELLOW
■ Cobb County	104.8	93	140	81	GREEN
■ Columbia County	97.2	95	127	70	GREEN
■ Coweta County	79.5	71	87	81	YELLOW
■ De Kalb County	101.4	78	126	100	GREEN
■ Dougherty County	71.7	55	78	82	YELLOW
■ Douglas County	83.3	69	103	78	YELLOW
■ Floyd County	83.6	77	86	87	YELLOW
■ Fulton County	110.5	86	146	99	GREEN
■ Glynn County	87.6	63	106	94	YELLOW
■ Lowndes County	74.7	63	82	79	YELLOW
■ Muscogee County	79.3	60	86	92	YELLOW
■ Richmond County	74.5	59	87	77	YELLOW
HAWAII					
■ Total State	95.6	106	117	63	GREEN
IDAHO					
■ Boise Ind. District No.1	113.4	129	130	82	BLUE
■ Idaho Falls District No.92	105.4	120	123	73	BLUE
■ Lewiston Ind. District No.340	105.4	116	108	92	BLUE
■ Nampa District No.131	83.9	108	70	73	GREEN
■ Pocatello District No.25	98.4	108	112	75	GREEN
■ Twin Falls District No.411	84.0	104	78	69	GREEN
ILLINOIS					
★ Arlington Hts Sch Dist 25	139.4	143	145	131	GOLD
■ Aurora East Unit Sch Dist 131	100.6	126	108	68	BLUE
■ Belleville Sch Dist 118	107.6	126	108	88	BLUE



Indicate information number 40

District	EQ 96	🎓	🏠	$	Group
■ Bloomington Dist 87	114.6	129	131	84	BLUE
■ Calumet Dist 155	99.7	119	94	88	BLUE
■ Carbondale Comm HS 165	113.2	138	101	101	BLUE
■ Champaign Comm Unit 4	117.3	131	131	90	BLUE
■ City of Chicago Dist 299	78.8	61	78	97	YELLOW
■ Crystal Lake C C Dist 47	112.8	130	133	75	BLUE
■ Danville C C Dist 118	98.5	115	88	93	GREEN
■ Decatur District 61	92.5	115	97	66	BLUE
■ Dixon Unit Dist 170	96.8	130	80	81	BLUE
■ Elgin Dist. 46	105.4	116	113	87	BLUE
★ Evanston C C Dist. 65	137.2	132	143	136	GOLD
■ Fairfield Dist 225	87.7	129	59	75	BLUE
■ Galesburg C U Dist 205	93.6	128	86	66	BLUE
★ Highland Park Dist 108	133.7	144	135	122	GOLD
■ Joliet School Dist 86	98.3	111	98	86	GREEN
■ Kankakee Dist 111	88.0	96	72	96	GREEN
■ Marion Comm Unit Dist 2	86.2	110	72	77	GREEN
■ Moline Unit Dist 40	111.2	138	117	79	BLUE
■ Naperville C U Dist 203	130.5	144	149	98	BLUE
■ Orland School Dist 135	120.8	141	141	81	BLUE
★ Palatine C C Dist 15	140.1	142	145	133	GOLD
■ Peoria District 150	101.3	120	104	80	BLUE
■ Pontiac Esmen	91.9	131	74	71	BLUE
■ Quincy School	94.2	138	88	56	BLUE
■ Rock Island District 41	101.8	133	79	94	BLUE
■ Rockford District 205	104.4	119	103	91	BLUE
■ Schaumberg	124.4	143	139	91	BLUE
■ Springfield Dist 186	111.3	116	123	95	BLUE
■ Waukegan C U Dist 60	98.0	110	100	84	GREEN

INDIANA

■ Anderson Comm Sch Corp	90.3	90	79	102	GREEN
■ Bartholomew Cons Sch Corp	105.8	108	113	96	GREEN
■ Elkhart Community Schools	89.3	91	92	85	GREEN
■ Evansville-Vanderburgh	105.0	107	105	103	GREEN
■ Fort Wayne Comm Schs	100.6	99	108	95	GREEN
■ Gary Community	74.0	91	56	75	GREEN
■ Hammond City Schools	82.6	83	80	85	GREEN
■ Indianapolis Public Schools	90.9	62	113	97	YELLOW
■ Kokomo-Center Township	96.2	105	88	96	GREEN

A location for companies that worry about things like payroll, production and energy expenses.

Expand to East Point, Georgia, and you'll find lower taxes, affordable land prices, a large work force in a right-to-work state and many leading industrial companies. Located close to Atlanta, I-75, I-85, and I-285, we're a thriving community, thanks in part to a strong and innovative city-owned system of services. To learn more, call Gary Bussey at (404) 209-5167 or MEAG Power at 1-800-WIN-IN-GA.



East Point, Georgia
a city that works

Indicate information number 27

District	EQ 96	🎓	🏠	$	Group
■ Lafayette School Corp	105.8	99	120	98	GREEN
■ Marion Community Schools	91.0	106	70	97	GREEN
■ Merrillville Comm Sch Corp	100.7	110	116	77	BLUE
■ Michigan City Area Schools	82.4	75	76	96	YELLOW
■ Monroe County Comm p	102.0	117	120	69	BLUE
■ Muncie Community Schools	90.9	80	81	112	GREEN
■ Richmond Comm School Corp	84.6	93	70	91	GREEN
■ South Bend Comm Sch Corp	94.4	93	97	93	GREEN
■ Vigo Co School Corp	86.8	86	98	77	GREEN

IOWA

■ Ames	125.1	145	134	97	BLUE
■ Burlington	105.9	116	96	106	GREEN
■ Cedar Rapids	115.7	128	128	92	BLUE
■ Centerville	93.8	116	63	102	GREEN
■ Clinton	106.1	128	95	95	BLUE
■ Council Bluffs	104.1	110	92	110	GREEN
■ Davenport	107.8	120	105	98	BLUE
■ Des Moines	108.7	106	112	109	GREEN
■ Dubuque	113.9	138	112	91	BLUE
★ Fort Dodge	111.8	122	101	112	GOLD
■ Iowa City	119.5	145	134	79	BLUE
■ Jefferson-Scranton	105.0	129	91	96	BLUE
■ Sioux City	109.0	125	100	101	BLUE
■ Storm Lake	111.7	141	95	99	BLUE
■ Waterloo	98.7	105	91	101	GREEN
■ West Des Moines	127.3	135	145	102	BLUE

KANSAS

■ Blue Valley	129.4	149	150	90	BLUE
■ Bonner Springs	107.7	137	95	91	BLUE
■ Emporia	102.9	120	94	94	BLUE
■ Garden City	101.0	127	92	84	BLUE
■ Gardner-Edgerton-Antioch	117.3	125	139	88	BLUE
■ Great Bend	102.7	133	83	92	BLUE
■ Hays	108.9	137	99	91	BLUE
■ Hutchinson	103.9	120	99	93	BLUE
■ Kansas City	75.0	79	75	70	YELLOW
■ Lawrence	120.6	136	130	96	BLUE
■ Leavenworth	118.7	138	120	98	BLUE
■ Manhattan	120.5	133	132	97	BLUE
★ Olathe	131.1	144	141	108	GOLD
■ Ottawa	92.2	102	80	95	GREEN
■ Piper	98.5	128	73	96	BLUE
■ Pittsburg	99.2	116	83	98	GREEN
■ Salina	108.8	121	108	97	BLUE
★ Shawnee Mission	128.4	131	146	108	GOLD
■ Topeka	102.5	99	117	91	GREEN
■ Turner	94.8	101	88	95	GREEN
■ Wichita	102.2	104	120	82	GREEN

KENTUCKY

■ Ashland	101.1	111	84	109	GREEN
■ Bell County	96.8	97	78	115	GREEN
■ Boone County	108.5	111	113	102	GREEN
■ Bowling Green	105.7	108	91	118	GREEN
■ Christian County	86.6	97	65	97	GREEN
■ Daviess County	97.2	104	84	104	GREEN
■ Fayette County	115.6	106	121	119	GREEN
■ Frankfort	108.5	96	97	132	GREEN
■ Henderson County	92.9	116	64	99	GREEN
■ Jefferson County	116.5	96	137	117	GREEN
■ McCracken County	92.4	102	71	105	GREEN

LOUISIANA

■ Bossier Parish	84.7	87	95	72	GREEN
■ Caddo Parish	84.2	77	82	94	YELLOW
■ Calcasieu Parish	86.1	88	80	91	GREEN
■ East Baton Rouge Parish	97.2	83	110	98	GREEN
■ Iberia Parish	77.2	81	59	92	YELLOW
■ Jefferson Parish	98.1	77	116	101	GREEN
■ Lafayette Parish	93.1	96	94	90	GREEN
■ Monroe City	75.4	61	74	92	YELLOW
■ Orleans Parish	79.9	60	74	106	YELLOW
■ Rapides Parish	86.3	89	71	98	GREEN
■ Terrebonne Parish	71.1	75	60	78	YELLOW

MAINE

■ Augusta	104.5	110	97	107	GREEN
■ Bangor	108.5	117	109	101	BLUE
■ Lewiston	94.6	105	76	103	GREEN
■ Portland	109.1	101	117	110	GREEN

Top Score = 150 **Lowest Score = 50**

🎓 = Graduate Outcome 🏠 = Community Index $ = Resource Index

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District	EQ 96	🎓	🏠	$	Group
■ Waterville	98.9	108	97	92	GREEN

MARYLAND

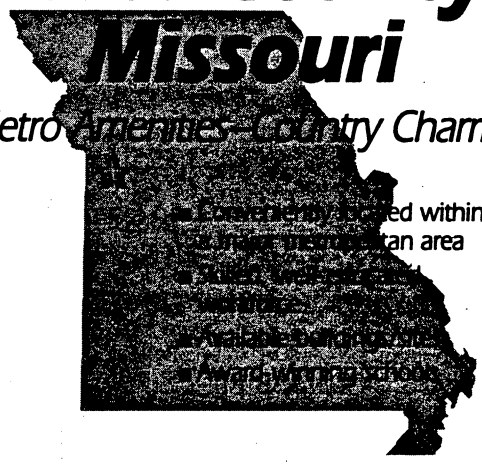
District	EQ 96	🎓	🏠	$	Group
■ Allegany County	100.9	106	79	118	GREEN
★ Anne Arundel County	123.5	118	132	120	GOLD
■ Baltimore City	94.7	92	71	121	GREEN
★ Baltimore County	122.4	113	129	127	GOLD
■ Calvert County	113.8	108	113	120	GREEN
■ Charles County	105.3	105	117	94	GREEN
★ Frederick County	122.9	115	129	124	GOLD
■ Harford County	116.3	108	132	109	GREEN
★ Montgomery County	132.7	129	146	123	GOLD
■ Prince Georges County	106.9	98	125	98	GREEN
■ Washington County	108.0	108	95	121	GREEN
■ Wicomico County	107.5	106	102	114	GREEN
■ Worcester County	99.9	98	78	124	GREEN

MASSACHUSETTS

District	EQ 96	🎓	🏠	$	Group
■ Boston	86.1	58	95	106	YELLOW
■ Brockton	77.7	60	85	88	YELLOW
■ Cambridge	119.4	106	124	128	GREEN
■ Fall River	79.2	62	67	109	RED
■ Fitchburg	78.6	60	81	95	YELLOW
■ Haverhill	95.0	87	108	90	GREEN
■ Holyoke	81.9	75	68	103	YELLOW
■ Lawrence	72.2	71	56	90	YELLOW
■ Leominster	100.7	87	115	100	GREEN
■ Lowell	82.0	61	80	105	YELLOW
■ Lynn	82.1	67	85	94	YELLOW
■ New Bedford	76.5	67	64	98	YELLOW
■ Pittsfield	104.8	106	108	100	GREEN
■ Plymouth Elementary	103.4	95	117	98	GREEN
■ Quincy	112.0	92	125	120	GREEN
■ Springfield	83.6	64	73	114	RED
■ Taunton	96.9	100	83	107	GREEN
■ Watertown	117.5	90	135	127	GREEN
■ Woburn	114.7	90	131	123	GREEN
■ Worcester	88.9	65	99	103	YELLOW

Cass County Missouri

Metro Amenities–Country Charm



The Cass County Economic Development Team:

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PART OF AMERICA'S SMARTCITIES™
Cass County, Missouri

Indicate information number 386

MICHIGAN

District	EQ 96	🎓	🏠	$	Group
■ Ann Arbor	122.1	103	144	119	GREEN
■ Battle Creek	101.4	102	90	112	GREEN
■ Benton Harbor	64.8	53	50	91	YELLOW
★ Birmingham	136.3	120	149	140	GOLD
★ Dearborn City	125.1	123	117	136	GOLD
■ Detroit	79.9	74	55	110	RED
★ Farmington Hills	133.0	138	139	123	GOLD
■ Flint	81.6	80	62	103	YELLOW
■ Grand Rapids	98.1	87	102	106	GREEN
■ Jackson	100.5	133	66	102	BLUE
■ Kalamazoo	110.7	116	99	118	GREEN
■ Lansing	101.4	100	94	111	GREEN
■ Midland	119.1	108	132	117	GREEN
■ Muskegon	90.0	100	59	112	GREEN
★ Novi	134.2	141	142	119	GOLD
■ Plymouth-Canton	112.8	103	135	100	GREEN
■ Pontiac	83.5	88	58	105	GREEN
■ Rochester Hills	127.0	136	137	108	BLUE
■ Saginaw City	89.1	99	58	110	GREEN
■ Traverse City	111.7	131	113	92	BLUE
★ Utica	126.4	142	127	110	GOLD
★ Warren Consolidated	113.6	120	104	116	GOLD

MINNESOTA

District	EQ 96	🎓	🏠	$	Group
■ Anoka-Hennepin	121.2	131	127	105	BLUE
★ Brooklyn Center	125.6	140	118	120	GOLD
★ Burnsville	132.7	134	143	121	GOLD
★ Duluth	120.9	132	112	119	GOLD
★ Eden Prairie	132.0	139	147	110	GOLD
★ Fridley	129.8	133	130	126	GOLD
★ Mankato	116.7	123	117	110	GOLD
■ Minneapolis	109.8	84	113	132	GREEN
★ Moorhead	114.0	133	95	114	GOLD
★ Osseo	127.6	125	144	114	GOLD
■ Owatonna	115.9	133	114	101	BLUE
★ Rochester	130.6	144	140	108	GOLD
★ St. Cloud	128.0	145	120	119	GOLD
■ St. Paul	108.8	97	109	120	GREEN
■ Wayzata	125.9	146	134	98	BLUE

MISSOURI

District	EQ 96	🎓	🏠	$	Group
■ Blue Springs R-IV	113.6	117	136	88	BLUE
■ Cape Girardeau #63	109.6	116	111	102	BLUE
■ Columbia 93	114.1	124	126	92	BLUE
■ Fort Zumwalt (O'Fallon)	109.4	113	129	86	BLUE
■ Fulton 58	87.2	98	79	85	GREEN
★ Independence 30	114.6	126	108	110	GOLD
■ Jefferson City	111.7	108	127	100	GREEN
■ Joplin R-VIII	88.7	94	88	85	GREEN
■ Kansas City 33	101.8	62	110	133	RED
■ Kirksville R-III	91.2	110	79	84	GREEN
■ Lee's Summit R-VII	113.8	118	137	87	BLUE
■ Mehlville R-IX	104.3	98	120	95	GREEN
★ Parkway C-2	130.9	127	148	118	GOLD
■ Perry Co. 32 (Perryville)	88.9	125	69	79	BLUE
■ Sikeston R-VI	86.0	130	62	66	BLUE
■ Springfield R-XII	98.1	116	100	78	BLUE
■ St. Charles R-VI	122.9	139	122	108	BLUE
■ St. Joseph	98.6	123	84	89	BLUE
■ St. Louis City	91.3	77	67	130	GREEN
■ Wentzville R-IV	90.7	106	69	97	GREEN

MISSISSIPPI

District	EQ 96	🎓	🏠	$	Group
■ Biloxi	92.4	112	82	83	GREEN
■ Columbus	86.1	99	70	89	GREEN
■ DeSoto County	96.1	116	110	62	BLUE
■ Greenville	67.3	68	64	70	YELLOW
■ Hattiesburg	101.8	126	82	97	BLUE
■ Jackson City	86.8	88	92	80	GREEN
■ Laurel Division/Jones Co.	90.1	104	68	98	GREEN
■ Meridien	94.8	128	70	87	BLUE
■ Natchez-Adams	78.2	80	75	80	YELLOW
■ Pascagoula	93.6	107	88	87	GREEN
■ Vicksburg-Warren	91.5	108	84	82	GREEN

MONTANA

District	EQ 96	🎓	🏠	$	Group
■ Billings	109.1	134	115	78	BLUE
★ Butte	111.9	123	99	116	GOLD
■ Great Falls	112.2	136	104	97	BLUE
■ Helena	107.5	118	111	94	BLUE
■ Missoula County	111.0	121	112	100	BLUE

Top Score = 150 **Lowest Score = 58**

🎓 = Graduate Outcome 🏠 = Community Index $ = Resource Index

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NEBRASKA

District	EQ 96	🎓	🏠	$	Group
★ Beatrice	113.4	137	77	126	GOLD
■ Columbus	112.9	132	102	105	BLUE
■ Grand Island	115.1	137	107	102	BLUE
★ Hastings	115.2	122	113	110	GOLD
★ Lincoln	127.4	124	134	124	GOLD
■ Norfolk	111.4	129	111	94	BLUE
■ North Platte	110.1	124	102	104	BLUE
■ Omaha	120.2	131	121	108	BLUE
■ Scottsbluff	99.5	126	76	101	BLUE
■ Sidney	108.8	126	96	104	BLUE
■ South Sioux City	100.9	111	88	114	GREEN

NEVADA

■ Carson City	93.9	103	106	73	GREEN
■ Churchill County	102.6	126	90	91	BLUE
■ Clark County	92.8	100	103	76	GREEN
■ Douglas County	91.6	82	108	85	GREEN
■ Elko County	101.8	118	99	88	BLUE
■ Lyon County	85.6	100	67	90	GREEN
■ Washoe County	106.1	120	121	77	BLUE

NEW HAMPSHIRE

★ Concord	122.2	123	129	114	GOLD
■ Hudson	114.6	104	135	105	GREEN
■ Keene	113.2	104	114	121	GREEN
■ Manchester	101.3	94	110	100	GREEN
■ Nashua	112.8	96	133	109	GREEN
■ Portsmouth	114.1	90	123	129	GREEN

NEW JERSEY

■ Atlantic City	76.5	63	57	110	RED
■ Camden	74.4	54	51	119	RED
★ Edison	110.4	130	83	118	GOLD
■ Elizabeth	86.7	70	68	122	RED
■ Fairfield	96.2	97	74	118	GREEN
■ Freehold Regional	116.0	112	107	128	GREEN
■ Hackensack	119.1	92	121	143	GREEN
★ Haddonfield Memorial	124.5	137	122	114	GOLD
■ Jersey City	86.7	56	79	125	RED
■ New Brunswick	92.9	67	83	129	RED
■ Newark	84.0	63	54	135	RED
■ Paterson	88.1	64	61	140	RED
■ Perth Amboy	90.3	71	83	117	RED
■ Pleasantville	95.5	101	71	114	GREEN
■ Sayreville	104.3	107	97	109	GREEN
★ Somerville	123.0	126	110	133	GOLD
■ Trenton	78.8	51	64	122	RED
■ Union City	83.1	71	59	119	RED
■ Vineland	91.0	84	82	107	GREEN
■ Woodbridge	104.2	112	83	118	GREEN
■ Woodbury	98.1	105	85	104	GREEN

NEW MEXICO

■ Albuquerque	109.3	131	118	79	BLUE
■ Farmington	100.1	122	106	73	BLUE
■ Gallup	82.8	104	78	66	GREEN
■ Las Cruces	101.5	129	102	74	BLUE
■ Roswell	93.9	124	76	83	BLUE
■ Santa Fe	100.7	121	121	60	BLUE

NEW YORK

■ Albany	115.3	93	109	144	GREEN
■ Bay Shore	117.8	107	102	144	GREEN
■ Binghamton	110.3	99	94	139	GREEN
■ Buffalo	97.7	109	65	119	GREEN
■ Elmira	98.4	99	67	129	GREEN
★ Garden City	143.4	139	148	143	GOLD
★ Glens Falls	123.1	119	114	130	GOLD
■ Hempstead	123.5	107	134	129	GREEN
★ Ithaca	130.1	131	115	145	GOLD
■ Jamestown	103.7	104	74	133	GREEN
■ Kingston	115.0	110	95	140	GREEN
■ Middle Country	122.2	111	116	140	GREEN
★ Monroe Woodbury	131.5	114	140	140	GOLD
■ New York City	87.6	96	79	88	GREEN
■ Niagara Falls	98.1	90	66	138	GREEN
■ Oswego	108.8	107	83	137	GREEN
■ Peekskill	125.7	111	117	149	GREEN
■ Plattsburgh	118.1	104	108	142	GREEN
■ Poughkeepsie	109.5	94	93	142	GREEN
■ Rochester	99.7	85	74	140	GREEN
■ Rome	108.6	100	91	135	GREEN
■ Schenectady	111.5	102	91	141	GREEN
★ Syosset	143.8	144	145	142	GOLD
■ Syracuse	106.9	108	85	128	GREEN
■ Utica	93.5	83	68	130	GREEN
■ Watertown	103.4	103	88	119	GREEN
■ White Plains	126.1	100	133	145	GREEN
■ Yonkers	104.6	92	101	121	GREEN

NORTH CAROLINA

■ Asheville City	99.5	80	98	121	GREEN
■ Burlington City	96.1	74	108	106	GREEN
■ Cabarrus County	86.4	81	89	90	GREEN
■ Columbus County	76.8	60	76	95	YELLOW
■ Cumberland County	90.4	78	97	96	GREEN
■ Durham City	100.3	71	119	111	GREEN
■ Forsyth County	103.0	72	122	116	GREEN
■ Gaston County	87.5	66	92	105	YELLOW
■ Goldsboro City	83.8	69	79	103	YELLOW
■ Greensboro City	104.2	80	125	108	GREEN
■ Hickory City	98.5	82	112	102	GREEN
■ Macon County	79.6	68	74	97	YELLOW
■ Mecklenburg (Charlotte)	105.5	80	129	107	GREEN
■ Nash-Rocky Mount	80.2	67	80	94	YELLOW
■ New Hanover County	93.5	71	112	97	GREEN
■ Onslow County	81.3	70	94	80	YELLOW
■ Pitt County	86.8	75	92	94	GREEN
■ Wake County (Raliegh)	112.2	94	138	104	GREEN

NORTH DAKOTA

■ Bismarck	112.5	133	128	77	BLUE
■ Fargo	118.0	136	131	87	BLUE
■ Grand Forks	113.9	138	124	79	BLUE
■ Minot	105.4	130	110	77	BLUE
■ Williston	93.7	128	83	70	BLUE

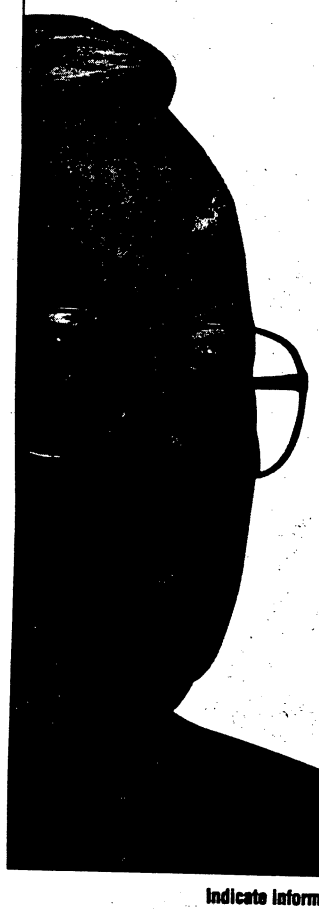
OHIO

■ Akron City	87.5	85	81	96	GREEN
■ Ashtabula Area City	68.6	76	60	70	YELLOW
■ Cambridge City	79.3	100	64	74	GREEN
■ Canton City	82.9	78	66	104	YELLOW

Top Score = 150 **Lowest Score = 50**

🎓 = Graduate Outcome 🏠 = Community Index $ = Resource Index

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ILLINOIS POWER

Indicate information number 335

District	EQ 96	T	H	$	Group
■ Cincinnati City	84.0	61	80	111	RED
■ Cleveland City	80.3	79	65	97	YELLOW
■ Columbus City	93.9	76	106	100	GREEN
■ Dayton City	72.6	52	65	101	YELLOW
■ Euclid City	105.4	108	108	100	GREEN
■ Findlay City	108.7	100	124	102	GREEN
■ Hamilton City	75.8	97	62	69	GREEN
■ Lima City	76.5	84	67	79	YELLOW
■ Mansfield City	90.7	98	79	95	GREEN
■ Marion Local	87.6	109	75	80	GREEN
■ Piqua City	83.7	100	70	81	GREEN
■ Portsmouth City	78.6	97	58	80	GREEN
■ Sandusky City	81.7	84	76	85	GREEN
■ Springfield City	74.4	77	69	77	YELLOW
■ Steubenville City	82.8	88	68	92	GREEN
■ Tiffin City	90.6	115	84	72	GREEN
■ Toledo City	82.3	76	84	87	YELLOW
■ Troy City	92.5	88	97	93	GREEN
■ Youngstown City	78.0	80	57	97	YELLOW
■ Zanesville City	76.0	82	57	89	YELLOW

OKLAHOMA

■ Anadarko	88.7	99	57	111	GREEN
■ Ardmore	101.1	121	70	112	GREEN
■ Bartlesville	116.3	131	122	96	BLUE
■ Enid	99.3	114	88	96	GREEN
■ Guyman	98.3	109	87	99	GREEN
■ Lawton	94.3	106	93	84	GREEN
■ Miami	97.4	123	69	100	GREEN
■ Muskogee	88.6	92	69	105	GREEN
★ Norman	121.3	123	118	123	GOLD
■ Oklahoma City	88.3	74	93	98	GREEN
■ Pryor	101.6	136	71	98	BLUE
■ Stillwater	105.3	129	108	79	BLUE
■ Tulsa	97.4	87	105	100	GREEN

OREGON

■ Beaverton 48J	118.7	121	140	95	BLUE
■ Bend	101.5	106	101	98	GREEN
■ Corvallis 509J	113.1	104	130	105	GREEN
■ Eugene 4J	111.1	103	126	104	GREEN
■ Greater Albany 8J	91.5	98	81	95	GREEN
■ Medford 549	107.1	108	105	108	GREEN
■ Portland 1J	107.7	92	114	117	GREEN
■ Salem/Keizer 24J	108.2	115	107	103	GREEN

PENNSYLVANIA

★ Abington	125.7	112	133	130	GOLD
■ Allentown	96.9	77	91	122	GREEN
■ Altoona Area	89.4	96	74	98	GREEN
■ Bethlehem	103.7	86	104	121	GREEN
■ Bristol Township	104.9	73	115	126	GREEN
★ Central Bucks	124.2	112	143	118	GOLD
■ Chester-Upland	74.0	77	53	92	YELLOW
★ Council Rock	125.4	115	133	130	GOLD
■ Erie	88.8	73	77	117	RED
■ Fox Chapel Area	117.8	112	102	139	GREEN
■ Gateway	122.1	116	112	139	GREEN
■ Greater Johnstown	84.8	68	55	131	RED
■ Greensburg Salem	96.3	90	94	105	GREEN
■ Harrisburg	85.2	65	63	128	RED
■ Hazleton	103.4	103	82	125	GREEN
■ Lancaster	81.8	62	67	116	RED
★ Lower Merion	133.1	113	144	143	GOLD
■ Monessen City	87.9	84	59	121	GREEN
★ Moon Area	127.6	114	135	135	GOLD
★ Mt. Lebanon	136.7	133	144	133	GOLD
■ New Castle	84.8	65	63	126	RED
■ Penn Hills	108.8	100	113	114	GREEN
■ Philadelphia	71.9	53	68	95	YELLOW
■ Pittsburgh	106.3	100	81	138	GREEN
■ Radnor Township	122.1	110	120	135	GREEN
■ Reading	77.1	56	64	111	RED
■ Scranton	96.7	74	81	135	GREEN
■ Sharon	87.6	79	74	109	GREEN
★ State College	129.1	126	139	122	GOLD
★ Tredyffin-Easttown	134.6	114	149	141	GOLD
■ Upper Darby	110.9	113	116	104	GREEN
■ Upper Merion Area	130.3	101	144	146	GREEN
★ Upper St. Clair	136.0	131	149	128	GOLD
■ Wilkes-Barre	106.0	105	83	130	GREEN
■ Williamsport	88.4	72	73	120	RED
■ York City	78.0	54	65	116	RED

RHODE ISLAND

■ Bristol	95.4	83	98	106	GREEN
■ Pawtucket	80.8	62	85	96	YELLOW
■ Providence	75.8	68	75	85	YELLOW
■ Warwick	111.6	105	123	107	GREEN
■ Woonsocket	75.9	66	71	90	YELLOW

SOUTH CAROLINA

■ Anderson No. 4	90.2	101	77	93	GREEN
■ Camden	89.7	105	84	80	GREEN
■ Charleston County	90.8	91	100	81	GREEN
■ Florence No. 1	92.3	100	92	84	GREEN
■ Greenville County	103.9	115	110	86	BLUE
■ Richland No. 1	100.0	96	106	97	GREEN
■ Spartanburg No. 7	108.3	120	87	120	GREEN
■ Sumter No. 17	87.9	97	89	78	GREEN

SOUTH DAKOTA

■ Aberdeen 06-1	106.0	135	93	90	BLUE
■ Pierre 32-2	109.0	137	113	77	BLUE
■ Rapid City 51-4	110.6	138	115	78	BLUE
■ Sioux Falls 49-5	116.3	141	126	81	BLUE

TENNESSEE

■ Athens	100.3	134	64	103	BLUE
■ Bristol	110.4	118	93	120	GREEN
■ Chattanooga	91.7	88	86	102	GREEN
■ Davidson County	108.6	99	116	111	GREEN
★ Franklin	126.7	134	120	126	GOLD
■ Johnson City	104.6	103	102	109	GREEN
■ Kingsport	110.5	113	90	129	GREEN
■ Knox County	108.7	118	111	98	BLUE
■ Lawrence County	83.8	124	56	71	GREEN
★ Madison County	115.7	141	88	119	GOLD
★ Manchester	106.8	134	71	116	GOLD
■ Marshall County	85.5	120	58	78	GREEN
■ Memphis	85.0	80	79	96	GREEN
■ Monroe County	89.5	138	53	77	BLUE
■ Montgomery County	99.8	118	100	82	BLUE

Top Score = 150 **Lowest Score = 50**

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Indicate information number 95

District	EQ 96	🎓	🏠	$	Group
★ Oak Ridge	135.3	148	128	131	GOLD
■ Sullivan County	100.3	114	83	104	GREEN
■ Tullahoma	111.9	138	92	106	BLUE

TEXAS

District	EQ 96	🎓	🏠	$	Group
■ Abilene	100.0	87	104	109	GREEN
■ Amarillo	91.3	84	98	91	GREEN
■ Arlington	101.9	94	137	75	GREEN
■ Austin	98.1	92	116	86	GREEN
■ Beaumont	87.1	58	97	107	YELLOW
■ Brownsville	77.9	59	54	120	RED
■ Bryan	90.6	72	98	102	GREEN
■ Clear Creek	117.5	105	140	107	GREEN
■ Corpus Christi	85.1	71	87	97	YELLOW
■ Dallas	81.9	56	98	92	YELLOW
■ Denton	97.0	108	97	87	GREEN
■ Ector County	72.2	65	71	81	YELLOW
■ El Paso	74.1	67	68	87	YELLOW
■ Fort Bend	108.2	97	146	82	GREEN
■ Fort Worth	82.0	64	95	87	YELLOW
■ Gainesville	90.8	120	61	92	GREEN
■ Galveston	85.1	77	81	98	YELLOW
■ Garland	93.7	84	124	73	GREEN
■ Goose Creek	80.1	72	82	87	YELLOW
■ Grand Prairie	90.9	95	106	72	GREEN
■ Grapevine-Colleyville	108.4	97	142	86	GREEN
■ Harlingen	69.7	62	65	83	YELLOW
■ Houston	81.6	60	91	93	YELLOW
■ Hurst-Euless-Bedford	108.7	108	130	88	BLUE
■ Irving	97.0	91	123	77	GREEN
■ Killeen	77.3	64	94	74	YELLOW
■ Laredo	68.8	63	55	89	YELLOW
■ Longview	95.0	76	103	106	GREEN
■ Lubbock	94.8	78	106	101	GREEN
■ Lufkin	80.5	67	85	89	YELLOW
■ McAllen	82.0	66	70	111	RED
■ Mesquite	89.9	89	115	65	GREEN
■ Midland	95.0	79	119	87	GREEN
■ Mission Cons.	77.0	73	55	103	YELLOW
■ New Braunfels	91.8	113	82	80	GREEN
■ Orangefield	84.0	92	73	87	GREEN
■ Paris	89.9	106	61	103	GREEN
■ Pasadena	80.2	67	87	87	YELLOW
■ Plano	129.7	135	147	108	BLUE
■ Port Arthur	79.5	67	61	111	RED
■ Round Rock	110.2	117	119	95	BLUE
■ San Angelo	84.5	91	85	78	GREEN
■ San Antonio	81.0	53	78	112	RED
■ Sherman	90.6	88	98	85	GREEN
■ Spring	102.9	90	126	93	GREEN
■ Temple	97.2	99	95	98	GREEN
■ Texarkana	81.6	72	82	91	YELLOW
■ Tyler	95.9	89	104	95	GREEN
■ Victoria	88.1	73	89	102	YELLOW
■ Waco	80.8	62	72	108	RED
■ Wichita Falls	97.3	103	93	96	GREEN

UTAH

District	EQ 96	🎓	🏠	$	Group
■ Alpine	103.1	124	130	56	BLUE
■ Granite	94.6	123	99	62	BLUE
■ Ogden	94.2	124	91	68	BLUE
■ Provo	99.4	130	102	66	BLUE
■ Salt Lake	104.3	120	114	79	BLUE
■ Washington County	101.0	141	102	60	BLUE

VERMONT

District	EQ 96	🎓	🏠	$	Group
■ Burlington	114.0	93	119	130	GREEN
★ Montpelier	119.1	123	116	119	GOLD
★ Rutland City	117.0	130	102	119	GOLD
★ South Burlington	126.3	126	119	134	GOLD

VIRGINIA

District	EQ 96	🎓	🏠	$	Group
■ Alexandria City	127.6	109	140	134	GREEN
■ Arlington County	120.9	90	142	130	GREEN
■ Charles City	91.6	85	65	125	GREEN
■ Charlottesville City	112.8	86	114	138	GREEN
■ Chesapeake City	108.4	98	107	121	GREEN
★ Chesterfield	114.4	109	136	113	GOLD
■ Danville City	91.3	71	72	131	RED
■ Dinwiddie	88.0	83	72	109	GREEN
★ Fairfax County	129.7	125	147	117	GOLD
■ Fredericksburg City	107.5	93	95	135	GREEN
■ Goochland	104.8	87	102	125	GREEN
■ Hampton City	103.8	77	112	122	GREEN
■ Hanover	109.2	98	120	110	GREEN
■ Henrico	115.1	97	125	123	GREEN
★ Loudoun County	122.3	109	141	118	GOLD
■ Lynchburg City	108.4	93	96	136	GREEN
■ Martinsville City	98.4	79	83	133	GREEN
■ Montgomery	95.8	90	82	115	GREEN
■ New Kent	105.5	97	106	113	GREEN
■ Newport News City	100.8	72	102	128	GREEN
■ Norfolk City	91.8	53	83	140	RED
■ Petersburg City	78.2	52	69	114	RED
■ Powhatan	99.9	97	97	106	GREEN
■ Prince George	104.1	87	111	114	GREEN
■ Prince Williams County	118.9	96	139	122	GREEN
■ Richmond City	101.2	89	84	131	GREEN
■ Roanoke City	109.9	107	83	140	GREEN
■ Virginia Beach City	115.2	82	135	129	GREEN

WASHINGTON

District	EQ 96	🎓	🏠	$	Group
■ Auburn 17-408	98.4	108	91	97	GREEN
■ Bellevue 17-405	117.3	106	140	105	BLUE
★ Bellingham 37-501	121.6	128	123	115	GOLD
■ Bremerton 18-100	96.6	86	84	120	GREEN
■ Edmonds 31-015	110.8	96	119	117	GREEN
■ Everett 31-002	107.8	104	103	116	GREEN
■ Federal Way 17-210	108.8	98	128	100	GREEN
■ Kennewick 03-017	108.4	114	96	115	GREEN
■ Kent 17-415	108.8	117	110	101	BLUE
■ Longview 08-122	103.1	98	91	120	GREEN
■ Olympia 34-111	119.0	110	129	118	GREEN
■ Pullman	116.4	142	101	107	BLUE
■ Renton 17-403	103.9	99	113	100	GREEN
■ Richland 03-400	116.8	115	131	104	BLUE
■ Seattle 17-001	119.7	110	130	116	GREEN
■ Spokane 32-081	107.1	103	101	117	GREEN
■ Tacoma 27-010	108.7	98	96	132	GREEN
■ Vancouver 06-037	101.7	97	89	119	GREEN
■ Yakima 39-007	104.7	94	95	125	GREEN

WEST VIRGINIA

District	EQ 96	🎓	🏠	$	Group
■ Cabell County	100.1	111	85	104	GREEN
■ Harrison County	101.3	116	77	111	GREEN
■ Kanawha County	104.9	114	93	107	GREEN
■ Marion County	99.3	111	76	110	GREEN
■ Monongalia County	112.3	126	108	103	BLUE
■ Ohio County	108.2	112	97	115	GREEN
■ Raleigh County	87.9	104	63	97	GREEN
★ Wood County	114.2	135	91	117	GOLD

WISCONSIN

District	EQ 96	🎓	🏠	$	Group
★ Appleton Area 0147	131.5	140	132	123	GOLD
★ Eau Claire Area 1554	127.9	146	116	121	GOLD
★ Fond du Lac 1862	116.1	132	104	112	GOLD
★ Green Bay Area 2289	122.8	134	109	125	GOLD
★ Janesville 2695	126.0	141	115	122	GOLD
★ Kenosha 2793	114.8	125	96	123	GOLD
★ LaCrosse 2849	123.3	129	106	135	GOLD
★ Madison Metropolitan 3269	137.9	140	140	135	GOLD
■ Manitowoc 3290	112.0	137	97	101	BLUE
■ Milwaukee 3619	103.4	114	75	121	GREEN
★ Oshkosh Area 4179	121.7	137	110	118	GOLD
★ Racine 4620	117.0	131	92	128	GOLD
★ Sheboygan Area 5271	123.6	142	105	124	GOLD
■ Superior 5663	106.4	126	77	116	GREEN
★ Wausau 6223	120.6	136	102	123	GOLD

WYOMING

District	EQ 96	🎓	🏠	$	Group
★ Campbell County No. 1	119.2	119	126	113	GOLD
★ Laramie County No. 1	118.8	126	122	109	GOLD
■ Natrona County No. 1	110.1	114	119	98	BLUE

Top Score = 150 **Lowest Score = 50**

🎓 = Graduate Outcome 🏠 = Community Index $ = Resource Index

Reprints of the 1996 Education Quotient are $6. To order, call 913-381-4800.

13.

CITY OF CAMBRIDGE
CAMBRIDGE, MASSACHUSETTS 02139

TEL. 349-4300
FAX. 349-4307

EXECUTIVE DEPARTMENT
ROBERT W. HEALY
City Manager

RICHARD C. ROSSI
Deputy City Manager

January 6, 1997

To The Honorable, The City Council:

Please find attached for your consideration the Cambridge Economic Development Policy, received from Assistant City Manager for Community Development Susan Schlesinger.

Very truly yours,

Robert W. Healy
City Manager

RWH/mec
attachment

Consent Agenda #13 1-5

Relative to the Cambridge Economic Development Policy.

In City Council January 6, 1997

Referred to the Economic Development, Training and Employment Committee, Housing and Community Development Committee and Finance Committee.

Copies sent 1-8-97 mc