

**HIDDEN TECH AND THE VALLEY: At the Cutting Edge of the  
Global Internet Economy**

**By Amy Zuckerman  
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## **HIDDEN TECH REPORT ENDORSEMENTS**

“Amy Zuckerman has laid out in a painstaking and compelling way what many of us observing the digital revolution have observed — that there is a vast, largely ignored flow of brainpower from major metropolitan regions to selected rural areas. This is an important first step in mapping the future of rural America, where growth may be more tied to ‘soft’ factors such as landscape, amenities, good schools, and other lures for talented individuals than traditional factors such as quality of the soil, roads, low taxes or other ‘hard’ economic incentives.”

**-- Joel Kotkin, *The New Geography*, Random House, 2000, 2001**

“The Hidden Tech study team did a tremendous job of identifying the technology resources of western Massachusetts. There’s a lot more depth to the resource base than the outside world realized. Once that information is published I believe it will significantly enhance the attraction potential for high technology businesses to western Massachusetts.”

**-- Dennis Donovan, Principal, The Wadley-Donovan Group**

“This survey shows that electronic commerce continues to radically influence the way people work, negotiate, and transact business. It is clear that Pioneer Valley entrepreneurs are creating new ways of doing business that extend way beyond local markets; rather the outreach now is to sell into the global electronic marketplace. These new market models have helped to eliminate time and distance as sources of friction in the sale of goods and services, and serve to empower consumers and small businesses in their interactions in this new marketplace.”

**-- Scott Cooper, Manager for Technology Policy, Hewlett-Packard**

“HIDDEN TECH AND THE VALLEY is an eye-opening account of a significant — and until now, overlooked — force in the economy. Policymakers in Massachusetts and nationwide who want to understand business in the 21<sup>st</sup> century should read this report and heed its lessons. I’ve seen the future — and it’s hidden!”

**-- Daniel H. Pink, *Free Agent Nation*, Warner Books, Inc., 2001, 2002**

“The experience of building successful technology-based regional economies clearly shows that having the professional support infrastructure in place to provide high-end services in business functions such as marketing, capital investment, legal services and international trade is a key ingredient. Hidden Tech and the Valley is a solid leap forward in understanding what these professionals look for in a community and, equally important, showing communities and regions how to cultivate and leverage these networks to foster technology-based development.”

**-- Delore Zimmerman, President, CEO Praxis, Inc.**

“Technological and economic trends have created unprecedented opportunities for mobile talent to create their own lifestyle and work in places such as the Pioneer Valley. The evolving nature of these places on the economic frontier simultaneously enables, and demands, entrepreneurship. By giving “hidden tech” companies a name and a fact-based identity, Amy Zuckerman and her colleagues are making a significant contribution to efforts to cultivate these adaptive enterprises.”

**-- W. David Bayless, President, Small World Networks, Inc.**

## EXECUTIVE SUMMARY

The following are highlights of the Hidden Tech Pilot Study:

- \* Those surveyed are highly educated
  - Almost the full sample — just under 90 percent — have bachelor's degrees.
  - Almost 30 percent attended regional colleges or the University of Massachusetts Amherst.
- \* They are very highly connected regionally, nationally and globally
  - Hidden Tech companies maintain clients in at least 20 foreign countries and in four continents. They have clients in almost half of the United States — 23 states are represented.
- \* They sell a wide variety of products and services
  - 30 percent develop and sell software products. Of that group, products relating to the Web are most common.
  - 30 percent offer consulting services that relate to software sales, and just under 25 percent are involved in management consulting and strategy both inside and outside the tech industry.
- \* They are actively promoting research and development
  - Just over 50 percent of the survey is involved in some form of R & D. Once again, Web research is the most common.
- \* They bring dollars into the region and spend them locally
  - Revenues/and or earnings of \$10.7 million generate tax money for Valley cities and towns (based on 70 percent of the sample)
  - An estimated \$3.1 million goes directly to local retailers, service providers and others (based on a partial sample)
  - Local Employee Salaries (based on 15 responses): \$1.5 million (est.)
  - Local Subcontractor/Part-Time Employee Payments (based on 29 responses): \$1 million (est.)
  - Payments to local service professionals (based on 42 responses): \$316,000 (est.)
  - Supplies purchased locally (based on 62 responses): \$145,750 (est.)
  - Equipment purchased locally (based on 55 responses): \$128,250 (est.)

- \* The majority — almost 85 percent — are homeowners
  - Just under 60 percent are from Amherst and contiguous towns.
  - Just under 25 percent are from Northampton and contiguous towns.
- \* Just over 35 percent of the sample are incorporated
- \* The majority — 60 percent — have lived in this region at least 10 years
  - The largest group — 30 percent — came here between 1986 and 1994
  - 25 percent arrived between 1995 and 2002
  - Just under 25 percent came between 1980 and 1985
  - About 20 percent came between 1966 and 1980
- \* The majority — 70 percent — relocated from large American urban centers with Boston and New York being the most commonly cited
- \* Lifestyle, following a spouse, a job or pursuing higher education are the most common reasons for relocating to the Valley
- \* Nearly 40 percent want improved broadband service and 25 percent want increased cell phone coverage
- \* Those surveyed are not anti-growth
  - Almost 70 percent want to grow their companies. Of that group, just over 40 percent want to expand their client base and revenue stream; about 40 percent want to sell additional products; and 30 percent predict dramatic growth in the next five years.

## INTRODUCTION

Experts like Joel Kotkin (*The New Geography*, Random House, 2000, 2001) — teaming with economic developers, regional planners and venture capitalists — have identified an emerging technology industry in parts of the country and communities that provide lifestyle opportunities to knowledge workers. There is evidence from venture capital firms such as Village Ventures in Williamstown, Massachusetts, and corroborated by realtors, that this hidden tech economy (Zuckerman, *Hidden Tech*, “The Boston Globe Magazine,” *Feb. 10, 2002*) is well entrenched in the Pioneer Valley region of western Massachusetts, which encompasses Franklin, Hampden and Hampshire counties.

“Hidden tech” is a term this author coined that refers to a sub-set of the national and even global economy. It comprises virtual companies operated by one or two individuals, who develop and sell products or services from a home or small office and leverage the Internet/Web, along with a wide array of advanced technologies, to drive their businesses. Sometimes, as in the case of home offices, they are literally hidden from sight. But in a more general sense they are often hidden from government, private sector or academic statisticians because many are not incorporated. That means they may not be captured by any government reporting service. Word of mouth is one of the only available ways of tracking them.

The hidden tech economy includes, but is not limited to what industry insiders call hard-core “techies” — people like software programmers or hardware developers. Professionals as disparate as lawyers, patent agents, jewelry retailers, management trainers, content providers, graphic artists, Web designers and marketing specialists all support the technology industry, or utilize advanced technologies to operate virtual companies. These knowledge workers also make up the hidden tech economy. And they are relocating throughout the country to bucolic places such as the Amherst-Northampton-Greenfield sector of the Pioneer Valley rather than remain in traditional technology and/or urban centers such as Boston, New York or San Jose, California. Freed from organizations and institutions by advanced technologies of all kinds they are able to set up shop wherever there’s an Internet connection — preferably a high-speed one.

Ranging in age from 20s to post-retirement, they are developing operations that may be small in terms of financials, but are potent in terms of the alliances and contacts they maintain worldwide. And they are boosting the economies of the regions where they are relocating, as they have the means to purchase high-end homes, require a wide variety of technological and professional services, hire subcontractors, part-timers and even full-time employees, and often create alliances that help keep other regional cottage companies and service professionals afloat.

Kotkin calls these sorts of locales, many of which are college communities, “Valhallas.” He cites a “critical shift” in the population that is moving into the countryside. “In the past, it was often less educated people and the elderly who flocked there, but now a growing percentage of the new population consists of knowledge workers. For the first time, vocational choice has expanded to allow these elite workers the option of locating not only outside the city, but outside the metropolis itself.” (*The New Geography*, Introduction xvii)

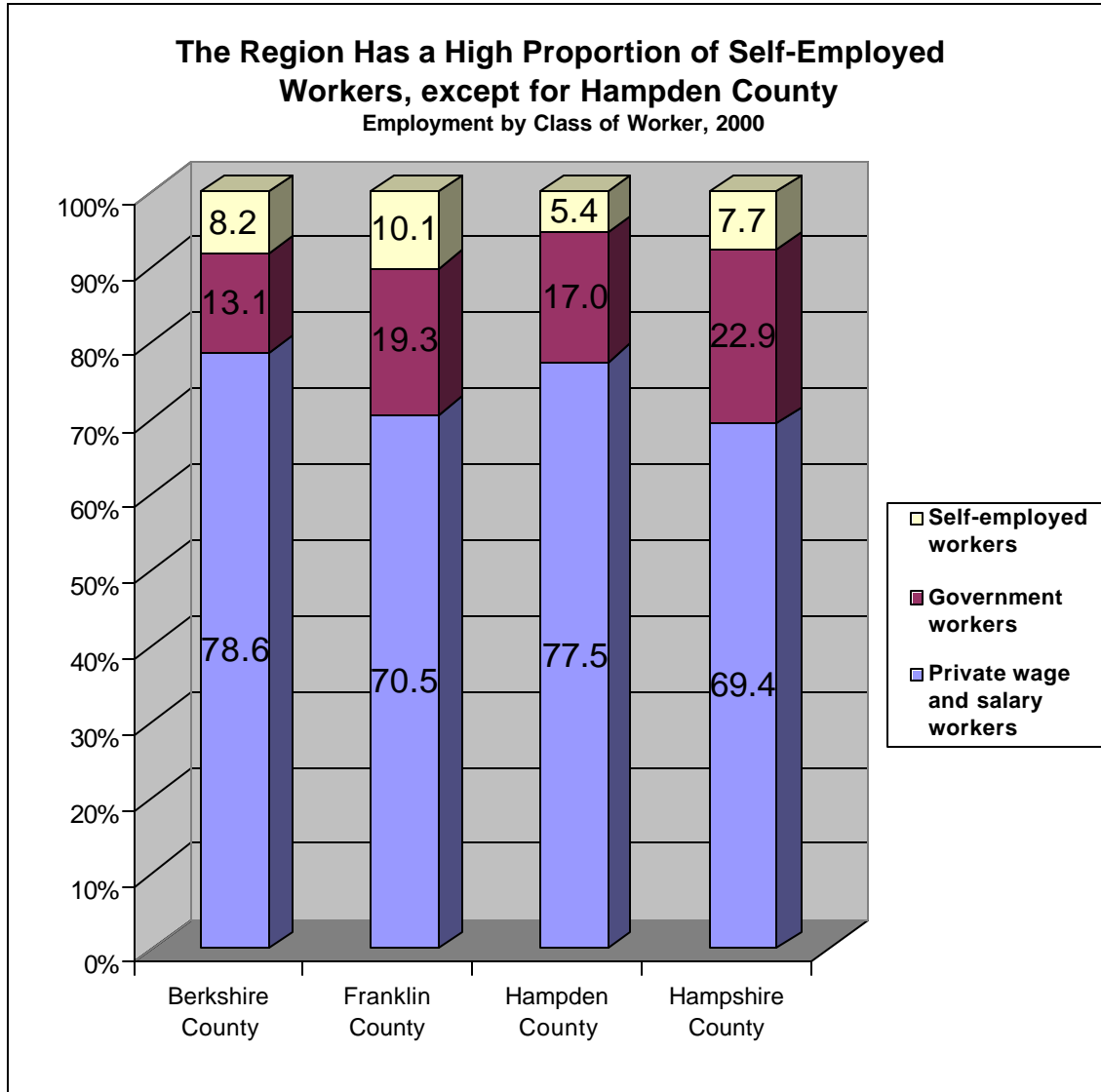
Nationwide, he notes that “the most powerful magnets are those areas with the greatest physical attraction, such as in rural New England, the foothills and valleys adjacent to the Appalachian foothills of North Carolina, and the foothills and valleys adjacent to the great Western mountain ranges, such as the Sierras, the Tetons, the Wasatch, the Rockies, the Cascades and the Sawtooths.” (*The New Geography*, page 47)

### **Hidden Tech in the Pioneer Valley**

The Pioneer Valley is situated in the heart of rural New England, one of Kotkin’s prime “magnet” regions for knowledge workers. This area has a long-entrenched, though undocumented, hidden tech economy. It appears to have taken root in the late 1960s when graduates of the area’s five colleges, and many prep schools that permeate the region, chose to settle here rather than seek opportunities elsewhere. By the 1980s, the University of Massachusetts was actively establishing the legal framework to promote technology transfer through the sale and licensing of scientific/technology research to the private sector. At least 15 small technology companies sprung up in Amherst and the environs during this period as a direct result of these efforts. Other technology and support professionals started to locate in the region as the university and regional planners made concerted efforts to attract technology companies through venture capital and other incentives. (Zuckerman, *Paul McOwen: Catching the Latest Technology Trend in a Down Economy*, “Hampshire Life,” May 24, 2002)

Although not technically what locals call “The Valley,” the nearby Berkshires to the west are also developing a technology economy with indications of a hidden tech community, as well. A recent study of this region — *Technology Enterprise in Berkshire County* — offers findings based on interviews with 60 technology companies that confirm that a similar technology population is developing there. Researchers from the University of Massachusetts Donahue Institute and The Massachusetts Technology Collaborative have found that many Berkshire technology companies have sprung up in the last five years and are backed by baby boomers who have relocated to the Berkshires from urban centers. They cite lifestyle as their main incentive. They favor business growth and are committed to building their companies in the region just like their hidden tech neighbors to the east.

And year 2000 United States Census figures back findings of a burgeoning population of self-employed workers in this region, particularly in Berkshire, Franklin and Hampshire counties with Hampden County being the one exception. In fact, self-employment in all three counties exceeds the national average. Berkshire, Hampshire and Franklin Counties have at least 7.7 percent self-employment compared to the U.S. total of 6.9 percent, and 6.3 percent for the Northeast. Franklin County registers the highest self-employment figures for the region — an amazing 10.1 percent, according to data presented in the 2002 *Western Massachusetts Economic Review* published by Western Massachusetts Electric.



Source: U.S. Census Bureau, Census 2000, Tables DP-1 to DP-4

Although regional efforts to build a technology economy in the Valley have been valiant, they have not proved sufficient to replace the region’s long declining manufacturing base. Economic developers continue to promote growth of a technology and biomedical economy in the Pioneer Valley region as part of a mosaic of economic development efforts taking place to promote a Route 91 Knowledge Corridor from Brattleboro, Vermont to New Haven, Connecticut. They are touting this area’s high degree of intellectual capital, a growing mass of critical technology companies, and lovely, rural landscape coupled with cultural and recreational activities that are proving a draw to people worldwide.

But they have been hampered by the perception that the Valley lacks skilled technology workers, or could attract technology professionals from other locations. In essence, there has been concern that this area lacks the so-called critical mass that is presumed necessary for building a technology center. Ironically, technology and knowledge workers have been flocking to this region for 30 years — particularly since the late 1980s — but in such a private, hidden



fashion that until recently they fell under the radar screen of regional economic planners and regional promoters.

Their arrival in the Valley appears to have accelerated in the mid-to-late 1990s as the boom economy helped many knowledge workers raise capital for their own companies through the sale of a pricey urban home or stock options. (Zuckerman, *Hidden Tech*, “Boston Sunday Globe Magazine,” Feb. 10, 2002) During this period, experts like Kotkin and Richard Florida, a professor of economic development at Carnegie Mellon University in Pittsburgh, started questioning the prevailing theory that technology development would flourish only where clusters of technology companies are based, such as the Route 128 corridor outside of Boston, the Silicon Valley of California or smaller centers such as Austin, Texas and the Research Triangle in North Carolina. During the same timeframe, author Daniel Pink in *Free Agent Nation* (Warner Business Books, 2001) identified the growing national population of self-employed workers of the sort proliferating in the Pioneer Valley.

Basically, all three experts have been pointing out that technology development and employment will take place wherever techies and related professionals choose to locate.

## **THE HIDDEN TECH PILOT STUDY**

This pilot study represents the first effort to identify the Pioneer Valley’s hidden tech community, which regional planners, economic developers such as Western Massachusetts Electric/Northeast Utilities and members of the University of Massachusetts community believe may be one of the faster-growing economic sectors in this region, and possibly serve as a model for the national and global economies.

The purpose of this survey is to locate and better identify the sorts of hidden tech companies that have relocated here and to gather information on their commitment to the region, their products, services, clients and alliance bases (local, regional, national and global) that connect them to the larger global economy. Revenue streams, local spending patterns, growth plans, technology use (both current and future) and energy needs are also explored.

The aim is to provide the sort of data that would help economic experts and planners determine what impact this group is having on the local and regional economy, while at the same time noting how hidden tech companies may be affecting the national and global economies. Although fairly limited in focus, there is a hope that this pilot study will provoke discussion, possibly alter regional economic policy, as well as help economic developers attract outside business to the Pioneer Valley. The following are implications the burgeoning hidden tech economy holds for this region, the national workforce and the worldwide economy:

\* Dennis Donovan of the New Jersey-based Wadley-Donovan group is a national business site selector who has toured the Pioneer Valley and believes the region is ripe for technology growth. He says the emerging hidden tech economy indicates “a lot more depth to the resource base than the outside world realized. Once that information [this study] is published, I believe it will significantly enhance the attraction potential for high technology businesses to western Massachusetts.”

\* Realtors are coming to believe that hidden tech entrepreneurs and professionals define where growth is taking place in the region. Realtors polled throughout the Pioneer Valley in late 2001 indicated that newcomers considered broadband — or high-speed Internet access — key to determining where to purchase a home or commercial property. Many of these newcomers, who are relocating from Boston, New York, New Jersey, the Washington, D.C. area and even the Silicon Valley, have indicated they intend to set up home-based companies, some with a distinct focus on technology development.

\* Economic developers in this region, and even nationwide or in other countries, may be fighting half the battle in the new competition for regional growth. The quality of life and savvy professional networks may be more effective lures for hidden tech growth than traditional industrial parks and tax incentives. Or at the very least these are factors to be considered. Florida makes this suggestion in *The Rise of the Creative Class* (Basic Books, 2002), where he suggests that the places that will win the economic development game in the future will be the locations where creative workers — scientists, computer programmers, entrepreneurs and others — want to live.

\* Regional planners need to understand the new phenomenon of hidden tech in order to devise thoughtful and effective land use strategies, and prepare for the right communication/technology networks, or what some call infostructures. They also need information on developing traditional infrastructures — as in roads, buildings, parking, etc. — that will back up the requirements of this new sector, while preserving the Pioneer Valley's special sense of place that has attracted this sort of knowledge worker in the first place.

\* While focusing on regional needs, it's crucial to understand how hidden tech companies can connect the Pioneer Valley to other similar nodes nationally and internationally. There may be much to gain economically from the alliances and business networks these companies enjoy. Both Kotkin and Pink view the hidden tech economy in national and even global terms.

\* Higher education needs to know how to serve this community.

### **The Hidden Tech Sample**

This pilot study is based on 75 companies, many of which are located in the sector of Hampshire and Franklin counties called affectionately “The Valley,” which is also called the Five College Area. Major cities and towns are Amherst, Northampton and Greenfield. The colleges are the University of Massachusetts, Amherst College and Hampshire College all in Amherst; Smith College in Northampton, and Mount Holyoke College in South Hadley. Several companies from the Springfield area (Hampden County) have been included because they maintain close ties to “Valley” companies and are part of the larger Pioneer Valley region.

This is not a random sample. Companies have been selected from the growing mailing list of the Hidden TEC Affinity Group, a subset of the Hadley, Massachusetts-based Technology Enterprise Council (TEC), which the author helped form in the winter of 2002. Representing over 1,100 professionals and 450-500 companies, TEC is part of the Regional Technology Alliance (RTA), which includes technology, plastics and biomedical companies of all sizes that are located throughout the Pioneer Valley.

About 20 percent of the sample was known by name to the author at the time the survey questionnaire was designed. The remainder has been included in the sample because they have attended a Hidden TEC meeting, or have become known to the author or other researchers through word of mouth. That means this sample is made up of companies and individuals who are intent on networking and promoting their businesses.

Distinct efforts have been made to ensure that the survey represents the wide variety of hidden tech companies that permeate this region. From the roster of the new Hidden TEC Affinity Group, which now has a membership of about 220 hidden tech companies, we have uncovered the following main categories of businesses that depend on technology to advance their business needs:

- \* Software/hardware developers;
- \* E-commerce retailers;
- \* Web designers and hosting services;
- \* Management and organizational development consultants;
- \* Content providers;
- \* IT/trainers and strategists; and
- \* Marketing specialists.

### **Types of Business Locations/Ownership**

Slightly under 60 percent of the survey is based in Amherst and contiguous towns. Why is Amherst such a stronghold of hidden tech businesses? Are the large numbers related to the proximity of the University of Massachusetts and ongoing efforts to spin UMass research into high technology companies, or because Amherst has excellent public schools? Are the numbers due to the existence of a large, if expensive housing stock? This bears additional research.

Northampton and contiguous towns makes up the second “hidden tech” stronghold with about 25 percent of the survey residing in and around the city. The rest of the respondents are scattered from Longmeadow to the south, Shelburne Falls to the north, Belchertown to the east and Williamsburg to the west and many communities — including Greenfield — in between.

The majority — just over 85 percent — of the sample own a home in the Valley. More than half of the survey are sole proprietors and 35 percent are incorporated. The majority — 65 percent — operate home-based companies while about 25 percent operate mainly out of strip mall or commercial office space that they rent. The bulk of the respondents — almost 70 percent — say they don’t plan to move into commercial space any time soon.

It’s interesting to note that of the 25 percent or so who are renting space, most are in commercial office space and strip malls. A handful rent space in industrial or technology parks. Half of the respondents have no intention of expanding their commercial space any time soon. However, it’s important to note that at the time of the survey several respondents had recently moved out of a home setting and several more had recently expanded their commercial space. At least seven respondents, or just about 10 percent, are willing to expand their commercial space in the next year or so if income allows.

## **WHO THEY ARE**

### **Education**

This is a highly educated group. Of the close to 90 percent of respondents (67) who answered this question, all have at least a bachelor's degree. Although they were not asked specifically about higher levels of education, 10 reported having a master's level degree and four have doctorates.

Just about 30 percent of this subset — 22 respondents — attended local universities or colleges for undergraduate or graduate education. Of that group, just over 75 percent attended the University of Massachusetts. Other colleges represented included Hampshire, Smith, Amherst and Holyoke Community College.

### **Previous Location**

Proprietors of hidden tech companies have relocated here from all over the United States and the world. Prior to moving to this region, 68 respondents (90 percent of the survey) reported living in 16 of the U.S. states and three foreign countries — Australia, Germany and Russia.

The majority of this subset — 70 percent — has moved from large U.S. metropolitan areas with Boston and New York City being the most common. Just under half of this subset came from other parts of Massachusetts with Boston and suburban towns claiming 60 percent of that group. Other states with fairly high representation include California, Connecticut, Maryland, Texas, Michigan and Oregon.

At least four came from similar college communities like Madison, Wisconsin and Ann Arbor, Michigan. Many volunteered that they have moved quite a bit throughout the U.S. before settling in the Valley, mainly living in urban centers or like-minded college communities and occasionally spending short times overseas.

### **Reasons for Locating in the Pioneer Valley**

The majority of respondents — 60 percent - have lived in this region at least 10 years, or since 1992. The largest group — 30 percent — have arrived between 1986 and 1994. Anecdotal information from local realtors indicates that even larger numbers of hidden tech proprietors have arrived between 1998 and the present.

Roughly a third of the sample came here for lifestyle reasons, which included cultural activities, desire for community and the physical environment. Just under 30 percent — the next largest category — report following a spouse who had landed a job here. Other reasons for coming included — in descending order — returning after attending college or prep school in the region; a job transfer; growing up and staying or returning; friends and relatives in the region; the proximity to major urban centers; and the quality of local schools.

The main influxes of hidden tech companies, listed in descending order in terms of volume:

- \* 30 percent came here between 1986 and 1994
- \* 25 percent came here between 1995 and 2002
- \* Just under 25 percent came between 1980 and 1985
- \* About 20 percent came between 1966 and 1980

### **Types of Products and Services Offered**

The majority — 75 percent — develop and sell a wide variety of products. Of those who develop and sell products, just under 30 percent sell software products of all kinds with Web-related applications and solutions being the most common. Web content and Web sites, books, manuals, booklets and content for all media, along with training courses, are commonly represented among product categories.

All of the sample provide services, or even a variety of services. The largest group — 30 percent — are involved in consulting and training that relates to sale of their software. Just under 25 percent of all respondents are involved in organizational/ management consulting and strategy both inside and outside the technology industry. The following categories garnered about 10 percent of the survey each: traditional and Web Marketing; IT/Telecomm Consulting/Strategies/Training; Content Editing/Writing; and Graphics/Web Design.

### **Research & Development**

This survey reveals that the Valley is very much a technology incubator, which bodes well for product growth and overall economic growth for the region. Slightly over 50 percent of those surveyed are involved in some form of research and development. Somewhat less than half of the survey — 32 companies or just over 40 percent — listed the sorts of R & D they are conducting. (Note that there will be some overlap of categories.) Half of R & D being reported relates to the Web. Thirty percent of R & D reported involves developing a wide variety of topics for print and Web publication, and another 30 percent of R & D being reported focuses on creating new software or other miscellaneous technologies.

### **Revenues Generated**

Many companies refused to provide any information on finances when the questions were posed in an open-ended fashion. Financial categories were created part-way through the survey, which apparently made it more palatable for respondents. In the end, 51 companies, or just about 70 percent, were willing to offer information when the questions were presented in a more general fashion.

Total revenue for the 51 companies reporting earnings is estimated to be \$10,680,000, or \$10.7 million. This number was derived in this fashion: Presume there were 10 people who said they generated between \$50,000 and \$100,000 gross each year. Take the mid-point — \$75,000 — and multiply it by 10 for a total of \$750,000. This process was repeated for each category unless a specific figure was offered, and then all categories were tallied for a grand total.

The \$10.7 million figure is of necessity low because it doesn't represent 24 respondents, or about 30 percent of those surveyed. But it does indicate that hidden tech companies are able to generate decent income or revenues, and generate tax revenues for this region.

### **The Hidden Tech Mindset**

The sample was asked if they considered themselves a local, regional, national, or global company — or any combination. Just over 25 percent — the largest group — considered themselves a global company only. Just under 25 percent said they were national mainly, and just under 25 percent said they were regional only (meaning working with clients outside the Valley proper, but within 75 to 100 miles of their business headquarters). That means that 75 percent of the survey has a global, national and regional — rather than local mindset.

It would be interesting to conduct a future study that explores how hidden tech companies have cultivated their long-distance clients or alliances, and why they have chosen this approach to work. Some hidden tech companies have arrived here with a worldwide client base, while others have developed contacts over the course of their years in this region. Many of these companies have cultivated regional, national and global client bases because they have not been able to find work or clients locally. Others are happy to work outside the region while living here. This whole topic bears additional research.

## **ATTITUDES TOWARDS GROWTH**

### **Growing Revenues Versus Growing in Size of Employees or Facilities**

The majority of respondents — almost 70 percent — favor growing their company or business. Only 20 percent are opposed to growth, saying they are not seeking to expand either employees or office space. Ten 10 percent did not respond.

Those who favor growth often fit into two basic categories — what Jon Reed, principal of Northampton-based eCruiting Alternatives, Inc. calls the “lifestyle entrepreneur versus the Bill Gates entrepreneur.” In general, lifestyle entrepreneurs want to build client base and revenue stream, but are loathe to add on employees or to move into large office settings. They manage growth through building alliances with other like-minded entrepreneurs, by hiring a fluctuating number of subcontractors or even turning down business they don't want to handle. The Bill Gates entrepreneur, on the other hand, would love to grow a business as large as Microsoft without necessarily employing Microsoft's competitive tactics.

This study indicates that just over 40 percent of the pro-growth subset fit into the lifestyle entrepreneur category. They want to expand their client base and revenue stream without adding employees or enlarging office space. Just about 40 percent of that subset are so-called Bill Gates entrepreneurs who want to sell more products and services, recognizing that this could lead to additional employees and larger office space.

These divergent attitudes are reflected in answers to the question: Are you keeping your company purposely small? To which about 35 percent of the total sample respond affirmatively. Note that they are not necessarily averse to growing revenues or clients, or even taking on a few employees or subcontractors. Mainly, they desire a hands-on approach with few if any employees, preferring to work with subcontractors or part-timers who operate out of another location. Many respondents want to build business, but not greatly expand numbers of employees or move into commercial space.

Also note that hidden tech companies do invest regularly in their businesses and many plan ongoing equipment purchases, or to expand the types of technology and equipment they use. (See section below on Technology Use and Requirements.) The issue of growth and the types of growth people in this region favor bears requires future research.

### **Types of Employees/Numbers**

Eighty-five percent of the survey responded to questions about employees or backup personnel. Of that group, just over 70 percent hire some sort of backup personnel. Most utilize subcontractors or a mixture of subcontractors and part-time employees. Many hidden tech proprietors say they prefer to run virtual companies with as few employees as possible operating in the same space.

Subcontractors and part-time employees are defined as workers hired to carry out a project(s) specific to carry out the company's core mission. For example, a software developer hires a programmer on a subcontracting basis to work on a specific project. A part-timer is someone hired for a set number of hours, but not on a full-time basis.

The total number of people employed in hidden tech companies (based on 64 respondents) is approximately 277, which includes owner/principals, full-time employees, part-timers and subcontractors. That group breaks down in the following fashion: 141 full-time employees, including principals, and 136 subcontractors or part-timers.

About 80 percent of respondents provided information on service professionals they hire for specialized work such. Service professionals are defined as someone outside the company's core industry or market focus hired on a per-project-basis to support the business. Accountants and business lawyers are common examples.

The 61 respondents who answered reported hiring 94 local service professionals. The most common categories they reported were accountants (nearly 35 percent); business lawyers (just over 30 percent); printers (just over 10 percent), and in descending order, tax preparers, technology service/support, marketing strategists, graphic artists, bookkeepers, electricians, writers, animators and photographers, to name most of the smaller categories.

We recommend further research be conducted into the numbers and types of categories of employment offered. This appears to be an area where people are often reconsidering their approaches. Additional investigation may shed some light on the workplace of the future.

## **IMPACT ON THE LOCAL ECONOMY**

Hidden tech companies make a substantial contribution to the local economy. When all earnings/revenues, support personnel salaries, service professional payments and purchases of supplies and equipment are totaled, the figure in dollars spent annually is in the multi-millions. The 75 companies surveyed for this pilot study collectively spend an estimated \$3.1 million locally on an annual basis, which goes to other professionals, local store owners and equipment sales outlets. Note that this figure is of necessity low, as 25 percent of those surveyed did not respond to financial questions.

The following is the breakout by category of annual expenditures that affect the local economy:

- Local Employee Salaries (based on 15 responses): \$1.5 million (est.)
- Local Subcontractor/Part-time Employee Payments (based on 29 responses): \$1 million (est.)
- Payments to local service professionals (based on 42 responses): \$316,000 (est.)
- Supplies purchased locally (based on 62 responses): \$145,750 (est.)
- Equipment purchased locally (based on 55 responses): \$128,250 (est.)

Total spent on the local economy is an estimated \$3.1 million (estimated is based on partial responses).

## **RELATIONSHIP TO THE OUTSIDE ECONOMY**

The Valley's hidden tech community is well connected both nationally and globally. Respondents work with clients in at least 20 foreign countries and on four continents. Some sell products through publishers or alliance partners with worldwide outreach.

They are conducting projects for clients from coast to coast who are situated in 23 — or just under half — of the United States, as well as the District of Columbia. Just about 10 percent have clients in major technology centers like the Silicon Valley. Clients may be other small businesses, or companies and institutions as large as Boeing, the British Standards Institute (BSI), Thomson Publishing or The Vatican.

Small, virtual companies often maintain alliances with other like businesses. This is also the case in the Valley. Respondents maintain alliance partnerships in 15 states, as well as the District of Columbia, and at least two foreign countries.

And just about 30 percent of those surveyed hire support personnel nationally. Mainly subcontractors, these individuals are located in 13 U.S. states. About 10 percent of the survey also hires subcontractors outside the Valley region, but located in other parts of Massachusetts.



How Valley companies interconnect to the world — both before and after the creation of the Internet — would make interesting future research. The numbers collected are low in the sense that they represent only recent clients and don't reflect projects or clients from a company's lifetime.

## **TECHNOLOGY USE**

This section is not intended to be a comprehensive survey of all technologies used by hidden tech companies. Its aim is to show that area businesses are technologically sophisticated and are purchasers of advanced technology equipment and services. Information has been gathered also to offer service providers and retailers a glimpse of the sorts of technology needs — and future purchases — hidden tech companies may generate.

### **Internet Access**

Just under 45 percent of the sample use cable modem-driven broadband and 25 percent use DSL for high-speed connection to the Internet. That means that 70 percent have some form of high-speed Internet access. About 20 percent use 56k dial-up access to the Internet. The remainder of the survey use a variety of Internet connections — more sophisticated and that provide higher bandwidth and commercial hookups — reflecting the fact that they are technology-oriented companies.

### **Technology Used to Operate a Company**

Every hidden tech company has what we call “basic office equipment,” meaning PC, software applications, printers, phones, fax, copier, answering machine, etc. Only a few mentioned specific software or applications.

There are technologically advanced companies that utilize a variety of servers for networking or database access (about 10 percent of the total survey). Other advanced technologies listed include workstations, programming languages, specialized office and graphics software, commercial grade software tools, digital photographic equipment and a touch-screen kiosk.

### **Plans for Acquiring New Technology/Equipment in the Near Future**

Three-quarters of the sample answered this question. Of that group, about 50 percent report that they will purchase new PCs and laptops in 2003-4. Just about 20 percent say they will upgrade hardware, purchase copiers or scanners and additional servers. Another 20 percent of planned purchases include a wide range of miscellaneous technology from cell phones to CD burners, PDA's, cable modems, video equipment and other miscellaneous types of hardware/software.

## **FUTURE TECHNOLOGY/INFRASTRUCTURE REQUIREMENTS**

Respondents were asked about their expansion plans over the next five years and how that might affect energy requirements for the region, including heat and electricity, as well as telecommunication and Internet services. They were also asked to offer thoughts and advice on the sort of technology infrastructure, and physical infrastructure (highway networks, bridges, parking, office space, etc.) this region requires to help them stay competitive.

### **What Expansion Is Projected for 2007**

One third of the survey predicts “dramatic expansion” five years from now that might affect their energy use or alter their communication needs. Two companies specifically say they will require more electricity. Just under half don’t predict dramatic growth or expansion. Given these numbers, it’s doubtful that expansion from the hidden tech sector will be monumental enough to create a surge in energy demand.

About 10 percent of the whole survey envisions growth that will require greater bandwidth for Internet connections, as well as increased use of telecommunication equipment. Once again, these numbers are too low to have much impact on forecasting taking place today about how to best serve the region’s communication needs.

### **Infrastructures/Services This Region Needs**

Ask hidden tech companies what technology and/or physical infrastructures they believe they need to stay competitive and most raise concerns about telecommunications. Nearly 40 percent of the whole sample want to see improved or additional high-speed Internet access or broadband, 25 percent of all surveyed want improved cell phone service, and just over 10 percent want more bandwidth and greater access to the Internet.

On the physical infrastructure side, a handful of companies mentioned improvements in the road networks and public transportation, as well as increased parking in urban centers like Northampton. They mentioned more incubator space, more retail stores that sell computer equipment and additional graphics service bureaus. Hidden tech respondents added some other categories of their own that relate more to the general business climate, or structure, than to actual infrastructure. They wanted to see additional technology companies enter the area, an increase in incubator space, more technology financing and improvements in human networking opportunities for hidden tech companies.

## CONCLUSIONS

The emergence of a hidden tech population, of which this survey covers only a fraction, bodes well for this region. The individuals who have relocated here over the last 30 years are highly creative, highly energetic, knowledgeable and well-connected nationally and internationally. Although they may not be “Yankees” in the strictest sense of the word, they exhibit the sort of “Yankee ingenuity” that has always helped New England develop the innovative means of rebounding from economic troughs.

Their existence shatters at least two long-standing myths about this region. First, that the Valley lacks technology professionals. And second, that this region can not attract the numbers of top-flight techies that would be required to staff a larger technology facility. People are moving here from all over the U.S. and in some cases internationally. (Zuckerman, *Hidden Tech*, “Boston Sunday Globe Magazine,” Feb. 10, 2002) These findings should make it abundantly clear that the Valley can sustain a larger technology industry than is apparent today.

The fact that so many surveyed are involved in research and development and new product creation also bodes well for the region. It signals the potential for increased growth. Moreover, it offers further evidence that the Valley is a technology incubator.

Another positive factor about hidden tech companies is that so many surveyed have been here for a decade or more, and they appear to be here to stay. Talk to hidden tech proprietors and they will tell you they’re committed to this area. This shows up in the fact that almost 85 percent of the sample own their own homes. During interviews many have said they would work hard to stay here.

Hidden tech companies do not generate the sort of revenue that larger corporations do. But economic planners associated with this study such as Tim Brennan, executive director of the Pioneer Valley Planning Commission, believe that small, technology-based businesses may represent a major source of economic growth for the region. Moreover, a large number of the sample indicate a willingness to grow their companies from a home or strip-mall setting into industrial or technology park space. For that subset, the sky is the limit.

And they do spend money locally — in the multi-millions of dollars. Local retailers, equipment providers and telecommunication/Internet service providers all benefit from this trend. Hidden tech companies also help other cottage businesses survive. Moreover, this type of company is environmentally friendly. John Mullin, Vice Chancellor for Outreach at UMass Amherst, has pointed out that when people work out of their homes, or close to their homes, they don’t commute, which spares the atmosphere.

Some calls were made to technology professionals employed at local companies as programmers, system administrators or other technology capacities. Some of these individuals maintain hidden tech companies as side enterprises in the hope of some day opening their own technology enterprise. Interviews were too sparse to offer more than a sense that technology incubation could be taking place among techies who work for local companies. Certainly this subject could use further research as technology employees-turned-entrepreneurs may prove a source for future regional growth.

## **A Look to the Future**

Like just about every company in the fall of 2002, many hidden tech businesses are struggling to stay alive. Given that they are tiny and nimble, that many of the owners have multiple skills and have learned to survive here during economic downturns, there is hope that the core of this population will make it through this recession and continue to grow their companies in the Valley.

How much technology entrepreneurs will manage to spring from home-based settings to develop large technology enterprises is any one's guess. Although the Valley now has more than one venture capitalist — among them Tripp Peake of Long River Ventures who is part of this sample — many hidden tech principals have talked of the need for additional funding. They also want to see the larger technology companies locate to the region, and are eager backers of any networking effort that will bring them face-to-face with other entrepreneurs. The more people move into virtual companies and work alone, the stronger the need for human networking.

Even as this survey was being conducted, anecdotal stories emerged about techies moving into this region from large urban centers. In fact, two high-level technology industry officials — one from Hewlett-Packard and the other from AOL — moved into Amherst in the summer of 2002. Both cited a desire to get out of the D.C. area, particularly after 9/11, as a prime motive for moving. They chose Amherst because they had learned of its hidden tech population and growing technology community through news articles and word of mouth. Their choices have indicated that this region enjoys a growing reputation as a hot spot to set up a virtual technology business, or as a base for telecommuting to a home office elsewhere.

Because this pilot study was designed to be wide-ranging and answer a variety of questions about the hidden tech population, many new questions emerged during the interviewing and analysis process. The following are a number of topics that might benefit this region if they were explained through future research:

- \* The region could use additional information on newcomers (those who have moved since 1998), where they are relocating from and why they've chosen the Valley.
- \* A broader study of hidden tech throughout the Rt. 91 Knowledge Corridor — from Brattleboro, Vermont to New Haven, Connecticut and including the Berkshires — would help determine how much a force this movement is throughout that region.
- \* A more thorough examination of hidden tech products, services and R & D would provide information on the technology and services being developed here. This would help solidify this region's reputation as a technology incubation center.
- \* A more thorough examination of hidden tech spending patterns could serve as a national model for the way virtual companies affect their locales economically.
- \* It also would be beneficial to explore the question of how hidden tech companies define what growth is desirable and what growth is not as a way of helping the region come to grips with the issue of how further development could affect the quality of life that drew people here in the first place.

- \* A larger hidden tech study could provide economic planners throughout the region with a literal and virtual roadmap for the infostructure and infrastructure needed to support hidden tech companies.
- \* Many entrepreneurs are hidden as full-time employees in local companies, both technology-oriented and non-technology. It would be useful to survey them and determine what projects are incubating behind-the-scenes that might benefit this region.

## **STUDY MANAGER**

Amy Zuckerman is an internationally known expert and author specializing in the areas of standards, technology and global trends. She is the author of eight books on this subject and many articles that have appeared in over 70 publications worldwide. Ms. Zuckerman is founder of the Hidden TEC Affinity Group, which is a subset of the Technology Enterprise Council (TEC). She is principal of A - Z International Associates in Amherst, Mass., which provides information products, marketing and consulting services on topics relating to the global economy.

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