



Northern Tier
Strategic Investment Initiatives

FINAL REPORT

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EXECUTIVE SUMMARY

Context

The Northern Tier Project was created to accomplish two critically important goals for communities, businesses, and residents in the region:

1. Develop new economic engines and sectors that will lead to a stronger and more dynamic regional economic base.
2. Establish a skills and training system that will help the region's low-income and working class residents gain access to well-paying jobs.

In this context, a considerable amount of economic and demographic data were collected and analyzed over the last eight months, and an inventory of the region's economic assets and challenges was prepared. (Copies of these documents are available.) Based on this information, **four sectors** were chosen to strengthen the region's economic base, an **Entrepreneurial Development** program was designed to help growth-oriented businesses in these and other promising sectors, and two **sector-based training** areas were chosen to help residents gain access to well-paying jobs.

The **four sectors** that focus on the region's economic base are:

- The Creative Cluster
- Ecotourism and Outdoor Recreation (Ecotourism)
- Small, Growth-oriented Manufacturing (Manufacturing)
- Renewable and Alternative Energy (Renewables)

Strategic Investment memos on each of these sectors are contained in this report. Included in the memos are strategies and recommendations that are designed to help individuals, enterprises, and institutions in these sectors to grow, to find new markets, to increase production, and to find commercial applications for products and services. In other words, the goal is to move these sectors to a higher level of economic and commercial importance within the region. The hope is that, over the long-term, a small artisan will grow his or her business and hire new workers; an existing ecotourism business or recreation organization will increase its customer/visitor base and expand its operations; renewable energy research and demonstration projects will lead to commercial applications, and small enterprises will gain new customers and hire new employees; and small manufacturers will find new ways to increase production efficiencies and take on new workers.

The Strategic Investment memo on **Entrepreneurial Development** recommends a new set of information technology services, stronger industry expertise, data-based market information, a matching-grant pool, and more staff capacity to help small and growing firms in the most promising economic sectors.

Finally, a Strategic Investment memo recommends a **sector-based training program and system** in Healthcare and Manufacturing, the two sectors that have the highest level of wages and benefits. The recommendation focuses on existing programs at the community college and vocational school level, but offers strategies for significantly expanding them to meet the needs of the region's residents.

Recommendations

Creative Cluster

- Convene an event that brings together the nonprofit cultural institutions, individual artists and performers, and creative businesses operating in the region.
- Establish a Northern Tier Creative Cluster Council.
- Strengthen and broaden the West County Artists Project.
- Promote artisan and crafts-related business development.
- Establish the Northern Tier as a Center of Excellence in Cultural Education and Training.
- Capitalize on the synergies between the Creative Cluster and other sectors in the region.

Renewables

- Host a one-day organizing and strategy summit with federal, state, and regional officials, as well as local and regional stakeholders, to capitalize on the wealth of Alternative and Renewable Energy activity that is occurring in the region.
- Create a strong economic development leadership capacity in Renewable Energy in the region.
- Develop the region's role as a leader in Renewable Energy Education and Training.
- Position the region as a national Center for Biomass Technology Development.
- Investigate the opportunity to develop Greenfield as a regional manufacturing and distribution hub for renewable energy.
- Explore the potential of the region's hydropower facilities and capacity.

Entrepreneurial Development

Establish a Northern Tier Economic Gardening Program—it would include:

- an Information Technology service;
- a database network of industry experts;
- market development services;
- a regional matching grant pool for growing entrepreneurs;

- an active business outreach program;
- two new staff positions to oversee and administer this program.

Ecotourism

- Develop more touring and recreation packages in the region.
- Explore the idea of new revenue sources (to help fund Ecotourism-related projects).
- Convene a Northern Tier Ecotourism Working Group.
- Broaden the region's Ecotourism infrastructure.
- Begin an Ecotourism branding campaign in the region.

Manufacturing

- Develop a consortium of the region's community colleges and technical schools to serve as a focal point for manufacturing training.
- Organize a more coordinated effort to ensure that the Northern Tier can take full advantage of the state's manufacturing- and technology-related resources.
- Capitalize on the region's manufacturing capabilities with the interest in renewable energy and renewable energy products.
- Build on and enhance the existing informal manufacturing networks in the region, and consider a more formalized leadership structure.

Healthcare

- Develop an industry-cluster approach to healthcare training.
- Establish a regional Healthcare Education Consortium that includes the region's three public higher educational institutions and vocational technical schools.

THE CREATIVE CLUSTER

Creative Cluster Definition

The Creative Industries Mapping Report, produced in Great Britain, defines the Creative Cluster in these terms—“*those industries that have their origin in individual creativity, skill and talent, and which have a potential for wealth and job creation through the generation and exploitation of intellectual [and creative] property.*”

Using this definition as a basis, Mt. Auburn prepared a report on the Creative Cluster in New England for the New England Council, a regional business organization, and a partnership of other arts organizations, including the New England Foundation for the Arts, the six state arts agencies of New England, and the Boston Symphony Orchestra. In the report, we noted that the creative industries included the following components:

- nonprofit arts and cultural institutions;
- commercial businesses involved in the creation, production, and distribution of goods and services that are essentially creative in nature; and
- individual, self-employed artists, producers, and performers who cross the commercial and nonprofit boundaries.

There are several key points about using the definition of the creative industries, and including these components. First, we included for-profit, commercial enterprises because they are essential to the production and distribution of creative content, and these enterprises employ significant numbers of people. Second, we included individual artists because much of the economic value in the creative cluster is produced by individuals who are self-employed and work primarily through selling their products on their own, or who work on a contract basis. According to the U.S. Department of Labor, visual artists held about 149,000 jobs in 2002, and more than half were self-employed. Those who are not self-employed work in a variety of industries including: advertising and related services; publishing (newspapers, periodicals, books); software production; motion picture and video industries; specialized design services; and computer systems design and related services. Most economic analyses exclude the self-employed and, thus, the creative cluster is seriously underrepresented.

<p>New England Creative Cluster: Product Lines</p> <ul style="list-style-type: none">• Applied Arts: graphic design, architecture, industrial design, crafts, advertising, interior design, photography, and web design• Performing Arts: music, theater, dance• Visual Arts: painting, sculpture, galleries, auction houses• Literary Arts: writing, publishing, libraries and archives• Media: broadcast media, cable radio, television, music, film production• Heritage: museums, historic sites• Advocacy and Support: education, cultural councils, funders
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Third, we included creative workers from other sectors because there is a significant amount of creative employment that is missed, because the jobs are often counted as part of other industries. This is what we call “embedded employment.” Two examples of embedded employment can be found in higher education and manufacturing. In higher education, colleges and universities not only have entire departments that are engaged in training individuals interested in creative careers, they also operate museums, galleries, and performing arts venues. These jobs are categorized under “educational institutions” in standard economic studies, but should be counted under creative industries. Also, there are many manufacturers that are design intensive and that produce “creative products,” but whose employment is listed under other manufacturing industries. This is particularly true in the Northern Tier, where some of the largest manufacturers including Yankee Candle and Lunt Silversmiths are basically artisan-related companies that are producing creative products on a larger scale.

Since traditional economic analysis does not examine these types of critical creative companies and activities that are closely interrelated, state and regional studies have missed what we see as one of the more vibrant and growing parts of the Northern Tier economy. Of recent note, the economic studies completed under Michael Porter’s guidance as part of the Commonwealth’s Regional Competitiveness Councils, has only included arts and culture as one component of the tourism strategy in the Pioneer Valley. The economic strength of the creative cluster in terms of direct job creation was entirely missed.

Creative Cluster Trends

Over the past five years there has been an evolution in the thinking about the economic importance of cultural and creative activities. In this country, the orientation has shifted from advocacy efforts, which have used economic impact studies of nonprofit arts and cultural institutions to justify public and philanthropic contributions to the arts, to a broader understanding of the economic role of arts and culture in the economy. With the growing interest in the work of Richard Florida, who has made a compelling case that a vibrant arts and culture environment is critical to attracting the young, highly mobile talent pool that forms the basis of a competitive economy, there is a new understanding of the importance of creative activities to the economy. Louisiana, Maine, and Idaho, are three of several states around the country that are in the early stages of developing strategic plans for the creative cluster. A strategic plan is now underway in New York City on the creative cluster, and the plan will presumably position the cluster as a critical economic engine in the New York economy.

In this new focus on the role of arts and culture, the Northern Tier itself has become a model that has received both national and international attention. The development of MASS MoCA and the renaissance of North Adams that has been associated with that development has become the most cited example of how an investment in arts can lead to significant economic development and revitalization.

The focus of this memo is to examine how the many creative activities in the Northern Tier come together to form a vibrant economic cluster that has the potential to

be an even more significant economic and employment-generating engine in the region over the next decade. The challenge is to take this to the next level and to ensure that what we refer to as the “creative cluster” indeed becomes an economic engine—that creates jobs and economic opportunities for residents of the Northern Tier region.

Creative Cluster in the Northern Tier

Did you know?

- One of the largest employers in the Northern Tier region, Yankee Candle, got its start in 1969 when Michael Kittredge, then 16 years old, started making candles in his parents’ home. Twenty years ago, no one in the Northern Tier region would have predicted that what was a small artisan company would become a \$500 million company employing over 4,000 people, and grow into one of the largest tourist attractions in the state. As Governor Romney recently noted, “The story of Yankee Candle is a reminder that you don’t need to manufacture a cutting edge product to be innovative, exciting and extremely successful.”
- There are two serious theater companies located in Ashfield. *Pilgrim Theatre*, which started in 1986 in Poland and incorporated in the U.S. in 1989, is a growing collaborative of artists including actors, musicians, composers, designers, as well as an ASL interpreter and a videographer. Pilgrim Theatre is a Resident Company of The Boston Center for the Arts. Its production of *Guys Dreamin’* was named one of the ten best productions in New York’s 1997 season by the New York Critics Theatre Wire. The *Double Edge Theatre* is an innovative theater company, which moved from Boston in 1995 when it purchased a 105-acre former dairy farm in Ashfield. Today, “the Farm” is host to artists, students, and a community exchange program. Its facilities include permanent artist housing for five company members, two performance spaces, archives, and guest facilities for 30 people. According to the company, “Double Edge initiated the first artist’s think tank in this country to research theatre, culture, and creation, and to provide a place for professional artists to work free from the demands of daily survival.”
- The region has a number of multimedia companies that produce state-of-the-art special effects and animation. The best known is Kleiser-Walczak, which is headquartered at the Massachusetts Museum of Contemporary Art. In addition, there are at least two companies in the region that were started by individuals who worked at major California special effects and multimedia firms. Pileated Pictures, based in Shelburne Falls, was started by an individual who worked for Lucas Entertainment, and Digital Fauxtography in Williamstown, whose founders created the original *South Park* digital animation, and went on to create visual effects for major motion pictures.
- Williamstown is a national center for art history, museum curating, and arts-related conservation. There are significant collections at the Williams College Museum of Art and The Sterling and Francine Clark Art Institute. And, the Institute houses one of the largest art research libraries in America, consisting of 200,000 volumes, 1,000,000 photographs and reproductions, and more than 149,000 slides. In addition, the Williamstown Art Conservation Center (WACC) is another arts-related nonprofit

organization located on the grounds of the Sterling and Francine Clark Art Institute. WACC is a full-service facility conserving paintings, works-on-paper, photographs, furniture, frames, sculpture, ethnographic and decorative arts objects, and archaeological and historic artifacts. The Center serves more than 50 member museums and historical societies in New England, New York, the Mid-Atlantic and the Southeast, as well as individuals and corporations. WACC has also become a center for information on all aspects of “collections care.”

These are just a handful of the creative assets that are found throughout the Northern Tier, all of which have substantial artistic and economic importance.

The recognition that arts-related activity could provide an important target for economic development in the region is not a new concept. In 1994, the Berkshire County Regional Planning Commission completed a study of art related business in Berkshire County. The study concluded that “targeting the commercial and applied arts as the potential new economic engine for the Northern Berkshire is a sound concept.” The study also found that there was a critical mass of talent, a quality of life that attracted this type of business, and relatively high paying jobs, all of which fits well with the rural nature of the region. In the decade since that study was completed, there has been significant growth in this sector. When all of the creative individuals, enterprises, and institutions in the Northern Tier are viewed as a whole, it becomes clear that it is imperative that arts and culture become a significant component of any economic investment strategy for the region.

In spite of the scale of activity in the cluster, a word of caution is in order here—it is very difficult to get an accurate measure of the economic role of the creative cluster. Using the most conservative estimates, the creative cluster accounts for about 5 percent of the employment located within Franklin and Berkshire counties.¹ As Table 1 illustrates, the economic value of the creative cluster is greater in Franklin and Berkshire counties than it is in the state of Massachusetts as a whole. Also, the Table does not include a significant amount of economic activity, most notably, the most recent data available from 2001. Nonetheless, visits to Northern Tier communities and interviews with key individuals in these communities provided strong anecdotal evidence that there has been a significant increase in the economic activity related to arts and culture in the past four years. One need only to visit North Adams, Shelburne Falls, Greenfield, and Turners Fall to confirm this.

Also of note is the fact that the arts and cultural-related employment in design intensive manufacturing has not been included in the following numbers. Including the employment from those manufacturing companies that produce highly design intensive products would likely increase the scale of the “creative cluster” significantly.

¹ It is not possible to get detailed economic data at less than the county level. Worcester County was not included since the Northern Tier towns in that county comprise such a small component of total country economic activity.

Industry	Franklin County: 2001			Berkshire County: 2001			Massachusetts: 2001		
	Non Employer	Employer	Total	Non- Employer	Employer	Total	Non- Employer	Employer	Total
Performing arts	16		16	38	248	286	634	2784	3418
Museums		208	208		423	423	189	4250	4439
Promoters and Agents			0			0	582	3566	4148
Independent artists, performers	386		386	561		561	17888		17888
Publishing	48	452	500	64	649	713	2524	24424	26948
Broadcasting		189	189		593	593	916	12758	13674
Film and sound	21		21	12		12	1209	4635	5844
Info services	15		15	32	354	386	2335	27256	29591
Architects	21		21	32		32	1783	10171	11954
Landscape architects	14		14	41		41	875	1126	2001
Other design	49		49			0	4583	3759	8342
Advertising			0	64		64	2833	16847	19680
Photography			0	50		50	2345		2345
TOTAL CREATIVE	570	849	1419	780	2267	3047	33518	108792	142310
TOTAL EMPLOYMENT	5389	24338	29727	9045	57538	66583	412941	3129980	3542921
% CREATIVE	10.58%	3.49%	4.77%	8.62%	3.94%	4.58%	8.12%	3.48%	4.02%

An effort to more fully document this “cluster” through traditional sources of data on businesses also provided only a limited picture of its strength in the Northern Tier. A review of the Yellow Pages, for example, for the 44 cities and towns that comprise the Northern Tier of Massachusetts identified about 100 arts-related companies, organizations, or individuals. However, after visiting just a few of the cities and towns along Route 2, what becomes clear is that the Northern Tier is teeming with cultural offerings, creative talent, and entrepreneurs in the creative arena, most of which were not listed in the Yellow Pages. In the Shelburne Falls area alone, we found nearly 25 galleries, museums, music clubs, design companies, and other creative enterprises. Again, only a very small number of these are listed in the Yellow Pages.

Key Institutions, Businesses, and Programs

The Northern Tier has an extraordinary number of art institutions, organizations, businesses, and programs that makes the region’s creative cluster so rich and deep.

Anchor Cultural Institutions

The Northern Tier region is home to a handful of very strong, nationally known cultural institutions that provide a strong set of anchors upon which to build its creative cluster. While there are too many cultural institutions to note, the most important are:

- *The Massachusetts Museum of Contemporary Art (MASS MoCA)*, the largest center for contemporary arts in the United States, was created five years ago in North Adams. The Museum has become a significant cultural institution, attracting about 120,000 visitors a year to the region. In addition to housing innovative exhibitions, the museum “functions as a laboratory for the contemporary arts, fostering experimentation by artists, encouraging collaborations among institutions, and allowing visitors a behind-the-scenes look at the creative process.” Its facilities include:
 - 19 light-filled galleries with more than 100,000 square feet of exhibition space;
 - a 10,000-square-foot black box theatre with a clear-span 30-foot ceiling that can accommodate up to 850 seats;
 - 3,500-square-foot Lab Theater;
 - outdoor cinema with a 50-foot-wide movie screen and a 70 mm projector;
 - two performance courtyards, one of which spans 22,500 square feet;
 - workshop and art fabrication facilities;
 - 5,000 square feet of rehearsal and production support space;
 - 60,000 square feet of office and retail space for commercial tenants in the communications, high tech, and new media industries.
- *The Sterling and Francine Clark Art Institute in Williamstown* opened in 1955, and is both a well-respected art museum as well as a major center of research and academic programs in the arts. The Institute houses a major art history library, and it recently unveiled a new master plan which involves a 90,000 square foot expansion. The Museum also has Visiting Fellowships for established art historians, critics, and museum curators. The Clark also co-sponsors a Graduate Program in the History of Art with Williams College.
- *The Williams College Museum of Art (WCMA)* houses 12,000 works that span the history of art. Within the broad range of time periods and cultures represented, the collection emphasizes modern and contemporary art, American art from the late 18th century to the present, and the art of world cultures. In addition to displaying works from the permanent collection, the museum organizes loan exhibitions of outstanding works from other collections.
- *Historic Deerfield* is a museum of New England history and art preserved within the 330-year-old village of Deerfield. The Village has a collection of 18th and 19th century houses and the Flynt Center of Early New England. *The Pocumtuck Valley Memorial Association* is a private nonprofit historic institution that operates Memorial Hall Museum in Historic Deerfield. PVMA has a very significant collection of historic houses, furnishings, paintings, textiles, and Indian artifacts. It also hosts a number of exhibits throughout the year, produces theater works related to the history of Deerfield, has educational programs at area schools, and organizes several fairs that draw thousands of visitors interested in historic and high-end crafts.

Nonprofit Arts Support and Advocacy Organizations

In addition to these major cultural destinations, the region has many cultural institutions that are focused on promoting and supporting arts and cultural activities within their communities. Again, while not a comprehensive list, examples of the notable organizations in the Northern Tier are:

- *The 1794 Meeting House* is a nonprofit arts organization dedicated to the preservation of the Meeting House and the creation and production of a number of first-rate cultural programs and productions that engage, entertain, and educate people of all ages in the North Quabbin area. Located in New Salem Center, the Meetinghouse is in the heart of the North Quabbin area, and is a focal point for a wealth of music and theater-related activity.
- *Artspace Community Arts Center* in Greenfield was created to nurture the appreciation and participation in the arts through training and instruction, networking and advocating for the importance of the arts. It is a member of the National Guild of Community Schools of the Arts and serves about 600 students a year.
- *The Contemporary Artists Center* in North Adams is a not-for-profit artists' studio facility established in 1990 by working artists for working artists. The CAC focuses on the diverse needs of today's professional and emerging contemporary artists by providing intense art-making residencies, acting in a leadership role for regional arts and the local community, and by acting as a conduit for artists to the outside world through a variety of resources. Through ongoing community programs and partnerships, the Center also offers a lecture series, specialized exhibitions, a resource network and database for area artists, an online gallery and slide bank, and youth programs. The CAC has five unique galleries that feature regional and international and CAC artists in residence exhibits. The galleries are open May through October.
- *Tourism Councils:* The Berkshire Visitors Bureau and Franklin County Chamber of Commerce oversee much of the tourism promotion efforts within the Northern Tier communities. While not focused on arts and culture exclusively, these organizations have a deep understanding of the role of arts and culture to tourism, and are extremely supportive of the arts and cultural environment.
- *Western Massachusetts Arts Alliance* is part of the outreach efforts of the University of Massachusetts Amherst and was created to build on the unique cultural resources found in the four counties of Western Massachusetts. Its mission is to foster community-based arts activity by building relationships and collaborations among diverse cultural organizations, artists, educators, and community groups. To date, its major accomplishments have been running a successful conference "Creativity Sparks Economy," developing a Connecticut River Valley Cultural Corridor Map, and developing a website on cultural resources in the four-country area. The Alliance is still in the formative stages and will be undertaking a strategic planning process in the summer of 2004 to determine its focus in the future.
- *Northern Berkshire Cultural Council and Local Cultural Councils:* Local Cultural Councils are the conduit for arts-related grants through the Massachusetts Cultural

Council. These organizations provide advocacy, some funding, and technical support for a wide range of arts and cultural activities in their community.

- *Arts Extension Service at University of Massachusetts at Amherst* develops the arts through continuing professional education for arts managers, artists, and civic leaders. AES is a national arts service organization, founded in 1973 as a program of the Division of Continuing Education at the University.
- *Northern Berkshire Community Coalition's START Project* is the sponsor of a cultural inventory in the Northern Berkshires, which is part of a larger national effort funded by the Lila Wallace Reader's Digest Foundation and 13 state art agencies. The focus of the project is to examine how cultural programming has impacted the quality of life for local residents. The first step is to complete a Cultural Participation Inventory. The information that is collected through the inventory will be used to promote increased networking and opportunities related to arts and cultural activities in the region. The principals of the Project are considering developing a cultural website for Northern Berkshire County.
- *The Center for Creative Community Development* was recently established as a collaborative effort between MASS MoCA and Williams College. This new center will be run by Williams College and directed by Stephen Sheppard, a professor of economics at the College. A \$350,000 grant from the Ford Foundation will enable Sheppard to expand his research into the economic impact that art has on communities.
- *Shelburne Falls Area Business Association's* mission is to support the development of strong and vibrant communities in Shelburne Falls and in the West County area, to preserve its cultural, historic, and natural heritage, and to help businesses prosper. The organization is very active in efforts to support artists and creative businesses in the community. As just one example, SFABA was instrumental in identifying some of the economic needs of artists in the community and developing a collaborative effort to address these challenges with Greenfield Community College. (See discussion of West Country Artists Project below.)
- *West County Artists Project* got its start through the efforts of the Shelburne Falls Area Business Association. A series of meetings was held with artists and the staff from the Association around marketing and the use of technology. The meetings highlighted a significant need and interest among artists for technical and support in these two areas—many artists felt that better marketing and enhanced use of technology would improve their businesses. As a result of the meetings, the Shelburne Falls Area Business Association, in conjunction with Greenfield Community College, developed a program of specialized assistance in technology for artists in the Shelburne, Heath, and Colrain communities. Eventually, the collaboration included the Franklin County CDC. There are now special workshops for West County artists on a range of topics, such as Technical Tips for Self Marketing and Marketing the Arts. Workshops are also planned on computer software programs that are relevant to the arts.
- *Field Forward Network* is a consortium of artists, administrators, and organizations in 15 U.S. cities and Tokyo. Its mission is to create a community of independent

performing artists and to facilitate communication among the Network sites. The Berkshires is currently part of the Field Network.

Performing Arts Organizations

Within the Northern Tier there are a large number of organizations involved in the performing arts— theater, music, and dance. Some of these organizations, such as the Williamstown Theater Festival, Mohawk Trail Concerts, and Berkshire Lyric Theater, attract visitors from all over the country. Others are more regional in terms of their audience. There are also a number of large, nonprofit venues for the performing arts that are located throughout the region. And, the region has a growing concentration of performing artists who make the Northern Tier their home and they perform locally, as well as regionally and nationally. Again, while in no way comprehensive, the following list provides a glimpse of some of the performing arts activities found within the Northern Tier.

- Williamstown Theatre Festival
- Berkshire Lyric Theater
- MCLA and FPA
- Greylock Theatre Project (Williamstown)
- Arena Civic Theater (Greenfield)
- Country Players (Northfield)
- Orange Town Hall Auditorium (Orange)
- Greenfield Community College
- Memorial Hall Museum (Deerfield)
- Mohawk Trail Concerts (Shelburne Falls)
- Main Street Stage and the Trova Theater Arts company (North Adams)
- Music In Deerfield
- Theater at the Mount, Mt. Wachusett Community College
- Pioneer Valley Symphony and Chorus (Greenfield)
- Pilgrim Theatre (Ashfield)
- Double Edge Theater (Ashfield)
- Hilltown Folk (Shelburne Falls)
- Shea Community Theater (Turners Falls)
- West County Players

Higher Educational Institutions

The region's colleges and universities are a very strong part of the region's creative cluster. These institutions are critical for a number of reasons. First, they train and educate residents of the region in creative careers, providing the youth in the area with the skills needed to enter a career in the arts and cultural arena. Second, the students graduating from the programs are a potential source of workers for existing institutions

and businesses in the area, as well as potential entrepreneurs, who may stay in the region and create new opportunities in the creative cluster. Third, the colleges and universities add to the arts and cultural environment in the region through their galleries and museums, performances and venues related to the arts. Finally, the faculty of the colleges and universities, and their spouses are an important part of the creative talent pool in the region. Many of the faculty have their own studios, sell their work in the region, and perform within the region. The following colleges and universities are clearly critical resources as the region seeks to further strengthen its creative cluster:

- *Greenfield Community College:* Greenfield Community College enrolls more than 3,000 students. The College has an extraordinarily strong arts program. Its visual arts program is its strongest. It provides Associate Degree Programs in Fine Art, Communication Design, and Media Arts and its programs are designed to match the first two years of study in the visual arts at regional and national art schools and colleges. Its students are well known in the arts world and go on to the best arts colleges in the country, including the Rhode Island School of Design, The Art Institute of Chicago, and the Massachusetts College of Art. The program maintains strong ties, through its faculty, with the arts community in New York City and Boston. In addition to its visual arts program, the school has programs in dance and a growing music department. Given the strength of its visual arts program, there are discussions in process about having the Massachusetts College of Art provide GCC students with the opportunity to receive a 4-year BFA degree through GCC. In addition, the college has longer-term plans for strengthening its performing arts programs, and for developing a new performing arts center at its campus that could be a venue for its own students and faculty, as well as potentially being a new home for the Pioneer Valley Symphony. A final role of GCC in the creative cluster is in its outreach activities. GCC is a partner in a new initiative focused on providing training in technology and management to local area artists. (See discussion of West County Artists Project.)
- *Massachusetts College of Liberal Arts:* The Massachusetts College of Liberal Arts in North Adams has a Fine and Performing Arts Program, a Theater and Music Program, and an Arts Management Program. In addition to its regular academic programs, two faculty have spearheaded the creation of the Massachusetts Institute of Contemporary Culture (MICC). Currently, the MICC is comprised of five programmatic thrusts—the Theoretical Study of Contemporary Culture, Production of Creative Works, the Study of Economics and Culture, Sports and Leisure, and Food Culture. The Institute “seeks to blend the methods and findings of the rapidly developing field of cultural studies, with the rich and unique offerings of the museums, theatre, dance and concert halls that make Berkshire County their home.” The Institute plans to create a Center for the Analysis of Art and Culture and a Center for the Creative Process that will examine the role of culture in regional economic development. The Institute also plans to serve as a clearinghouse for internships in art, theater, and music. Currently, MICC runs a wide range of workshops over the summer for adults. Courses in the summer of 2004 include The Economics of Culture, Music Composition, Drawing and Painting, and the Changing Face of Film.

- *Williams College:* Williams College is an extremely competitive small liberal arts college located in Williamstown. The College has particular strengths in the arts, most notably through its own Museum of Art, as well as its affiliation with the Clark Art Institute. Its Master of Arts in the History of Arts is one of only two graduate level programs at the college. In addition to visual arts and art history, the College has a significant theater and dance program. The College also is an important venue for performing arts in the region.
- *Hallmark Institute of Photography:* Hallmark Institute of Photography in Turners Falls provides a ten-month in residence program designed to equip students with the tools needed for a career in the professional photography industry. In addition to aesthetic and technical imaging training, Hallmark Institute focuses on providing the skills needed to operate or manage a successful photographic business. Many of the faculty and graduates of the program live and work in the region, adding to the creative talent in the Northern Tier. The school has been expanding and is currently looking to build dormitory space for its students.

Creative Communities

Along the Route 2 Corridor there are now four communities that have a large concentration of artists, galleries, and creative businesses (other towns, like Orange, are also beginning to focus on the arts). These communities are in effect a new “creative trail” within the Northern Tier, having the potential to attract new, creative talent to the region as well as cultural tourists. While there are pockets of creative activity throughout the region, this activity is somewhat more concentrated in the following communities:

- *North Adams:* The redevelopment of North Adams as a thriving creative community has captured the attention of economic and community development leaders from throughout the world. Starting with the establishing of MASS MoCA, and through its connections with MCLA, North Adams has been able to attract a vibrant arts community. The recent redevelopment of a 130,000-square-foot vacant textile mill space for artist housing has also been a key part of this development. Because of the artists coming to the region, and the increase in visitors through the development of the museum, the community has seen its main street transformed. In the past few years, the city has seen the establishment of eight new restaurants, a nationally recognized Inn (Porches Inn), as well as the development of gallery spaces, bookstores, and a theater on its main street.
- *Shelburne Falls:* Since the late 1970s, partially through the leadership of McCusker’s Market and other local artisan and business leaders, this community has become a magnet for individuals looking for a new lifestyle and economic opportunity. Many of the town’s residents developed their work in the arts and crafts as a means of economic survival. Others were creative individuals who moved to the area to set up their studios or to start galleries. While there have been pockets of artists and craftspeople for many years, the community has changed significantly over the past five years—seeing the growth in galleries, artist studios, related retail businesses, and restaurants and cafes.
- *Turners Falls:* The growth of an arts and cultural community in Turners Falls is relatively recent—within the past 5-10 years. Within this time, there has been an

upsurge in activity. Newer developments include the renovation of the Colle Opera House and the leasing of space in that building to a dance troupe. In addition, Hallmark Institute of Photography, which is located in the industrial park, has been going through a period of expansion and is looking to build dormitories and to increase its presence in the community. The community is also the home to many artists and craftspeople, and several new galleries.

- *Williamstown:* Williamstown is probably the most established creative community in the region, with a long association with the arts through the Clark Art Institute and Williams College. The community has had a rich cultural environment with galleries, theater, innovative film venues, and music. It has long been associated with the cultural strengths of the larger Berkshires region and has been attracting culture tourists for decades.

Art and Crafts Galleries

All along the Northern Tier there is a very rich concentration of galleries. Some of these galleries are operated by artists and craftspeople, others are cooperatives or galleries that specialize in the works of regional artists and crafts persons, and yet others sell the work of artists and craftspeople from throughout the world. The following is a listing of just some of the galleries that are located in the region and part of the creative communities:

- Plum Gallery in Williamstown
- Harrison Gallery in Williamstown
- Studio Works North Adams
- The Framery in Greenfield
- Gallery 267, the Matthew Leighton Gallery in Greenfield
- The 11 South Street Gallery in Bernardston
- Green Trees Gallery in Northfield
- Ewe and Me in Northfield
- Pure Light Gallery and Tim Lynch Studio in Turners Falls
- Salmon Falls Artisans Showroom in Shelburne Falls
- Leverett Crafts and Art in Leverett
- JH Sherburne Fine Art in Shelburne Falls
- Art Inside in Shelburne Falls
- The Porter Street Gallery
- Laurie Goddard Studios
- Mirror Stone Gallery
- Surrounding Gallery in Gardner
- The Ole Mill Shop
- Salmon Falls Artisans Showroom
- Shelburne Arts Cooperative

- Wings of Light - Angel Gallery and Gift Shop
- Zona Gallery
- Stonewood Artisans in North Adams provides space for regional artisans, artists, and craftspeople.

Art and Technology

Contrary to the commonly held belief that for an individual artist to succeed in the entertainment and media industries he/she has to live in either Los Angeles or New York, the Northern Tier has become the home to a number of individuals who left these urban centers in order to live in a more rural environment. Some individuals live in the Northern Tier and do most of their work outside of the region, including the road manager for the Rolling Stones who lives in Greenfield. In addition to Kleiser-Walczak (see above), the region has a small number of firms involved in the film and entertainment industries that depend heavily on technology for their artistic content and distribution, including: Reelife Documentary Productions in Montague, Green Mountain Post Films, Arcansus Productions in Shelburne, Straight Ahead Pictures in Conway, and Pileated Pictures. There are also a small number of recording studios including Up Side Sound Recording in Ashburnham, Down Under Recording and Launch Pad Records in Gardner, and in Shelburne Falls Avocet Productions and Blue Fox Inc., an information technology company specializing in web development and web design. Eric Rudd, a sculptor, works with the Physics Department at MCLA.

Craftspeople and Artisans

As noted, there are a number of companies in the Northern Tier region that were started by artisans who pursued their craft. The largest of these is Yankee Candle. Others include Lunt Silversmith and glassmaker Josh Simpson. Within the region there is a large number of other small artisans—some are members of organizations like the Gardner Area League of Artisans, some working out of their homes with little visibility, others that are showing their work in their own galleries, and still others who sell their products throughout the country and locally as well (e.g., through businesses like the Crafters Cottage in Northern Berkshire County). While most of these will remain small independent craftspeople, a few may be able to move their activity to a higher-production level, leading to job creation in the region. Some areas of particular strength in the region are:

- wood related products;
- fiber arts: quilting, weaving, and spinning;
- pottery;
- glass.

Arts-related Festivals

Over the years, the region has been developing a series of events that have become more established, and attract visitors to the region to celebrate the region's creative assets. These events include:

- *The North Quabbin Garlic and Arts Festival* is a celebration of art, agriculture, and community that will have its 6th annual event in the fall of 2004
- *The Williamstown Jazz Festival* is a collaborate effort of the Williamstown Chamber of Commerce, the Williams College Department of Music and Dance, and MASS MoCA.
- *The Green River Music Festival* in Greenfield will celebrate its 18th year in 2004. The Festival, which began in 1986 as a balloon festival, has attracted more and more visitors each year and today it has become one of the more important summer musical events in Western Massachusetts.
- *The Williamstown Film Festival* was founded in 1998 by individuals who thought that film was the missing link in an artistically rich region. The festival is focused on honoring America's film past, celebrating the current independent films, and exploring new technologies associated with the art of film. The Festival will have its 6th season in the fall of 2004.

It is also worth noting that while there has been considerable reinvestment in some of the older mills in the Northern Tier in the last decade, most notably in North Adams, there remains a number of properties throughout the region that are well-positioned to be artist housing or to house creative businesses. In North Adams alone, the director of MASS MoCA has noted there are still a number of downtown storefronts for lease, a large stock of underutilized housing, and space still available at MASS MoCA. There are specific projects that are high priorities in some of the communities. For example, in Turners Falls, the Strathmore building used to house about 25 artists and crafts persons. However, when the building was sold the individuals left. Now the redevelopment of that building is again a priority, with the hope that it would become another "creative" center. The Northfield Mt. Herman School Property also offers a potential opportunity for further building the region's creative assets.

Challenges to Growth and Expansion

While there are significant opportunities in the region, there are also some economic challenges that need to be addressed as the region develops its creative economy. These include the following.

◆ *Disparities in wages and income in the arts and cultural sector*

The quality of jobs in the "creative cluster" is somewhat mixed. The average annual income of many artists is relatively low, and for most individuals involved in the creative cluster in the Northern Tier, the key challenge is to piece together a family wage through a variety of different activities. For many, the income derived from their arts and

cultural activities is not sufficient to make a decent living. As a result, many creative workers often have a job outside of the industry and then supplement their income through their work in the arts. Others do a variety of work in the creative field—contracting their time, selling their products, and teaching. For many, not only are the wages low, but also access to health and other benefits remains a serious problem. This issue is of particular concern when the creative worker is the primary wage earner in a family.

◆ ***Lack of regional leadership and support organization***

As noted, there are many organizations that are involved in some aspects of promoting and supporting the creative cluster in the Northern Tier. However, there is a great deal of fragmentation related to these organizations, both geographically and in terms of their primary mission. Geographically, there is no one organization that spans the Northern Tier and is involved in supporting or promoting creative enterprises and cultural institutions.

◆ ***Lack of networking opportunities***

Related to the lack of regional organizations, there are not many opportunities for the hundreds of creative individuals, creative businesses, and creative communities in the Northern Tier to meet to discuss common issues as well as opportunities. This does take place at the local level—for example, in Shelburne Falls and in North Adams. However, there is little crossing of borders, both geographically and in terms of disciplines.

◆ ***Potentially competing projects/initiatives around performance space***

Currently, there is significant interest in the region to develop new facilities related to the region's arts and cultural strengths. These include the redevelopment of some of the older buildings and mill sites, as well as local theaters. In addition, as noted, Greenfield Community College is interested in developing a performing arts center. As individual initiatives move forward there is some risk of overbuilding and even saturating the market if too many facilities are developed.

◆ ***Lack of broadband capacity***

While the region has a number of small companies involved in web design, computer animation, and other multi-media activities, the further development of this segment of the creative cluster is seriously impacted by the lack of broadband in many parts of the region.

Best Practices and Models

- ***Montana Creative Cluster Effort:*** The Governor of Montana recently initiated a study of the state's economy, with a focus on the key economic clusters that had the highest possibility for growth. The Creative Cluster was one of the 6-targeted clusters in the state. The Cluster was defined as being “composed of firms in which art and creativity provide competitive advantage or that provide competitive

advantage to other clusters.” This effort identified nine action steps that are in the process of being implemented. These included creating a Creative Enterprise Cluster Leadership Council, emphasizing design competencies in secondary and higher education, recruiting technical talent, establishing a one-stop jobs resource center, linking creative enterprises with companies making products that depend on appearance and content, promoting galleries, studios, and workshops as tourist destination, and connecting Montana artisans to distant artisans and market.

- ***Upper Valley Creative Economy Summit:*** In the spring of 2004 the cultural and business communities in the Upper Valley of New Hampshire and Vermont sponsored a two-day summit that focused on the connection between the creative economy and strong, vibrant, and healthy communities. The Summit was attended by hundreds of individual artists, economic development and community development officials, and businesses. The event combined national speakers with workshops focused on specific initiatives and projects that could help to build and promote the creative economy in the region. Associated with the Summit was a tour of White River Junction that brought hundreds of visitors to a recently redeveloped old mill that is now the home to many creative businesses. The Summit is part of The Upper Valley Community Foundation’s Creative Economy Initiative, which was conceived to energize the arts and the Creative Economy in the Upper Valley region. The Foundation has committed significant funding for implementing some of the initiatives emerging from the Summit.
- ***The Creative Entrepreneurs Club:*** The Creative Entrepreneurs Club in Glasgow, Scotland, is part of the Lighthouse, Scotland’s first national center dedicated to architecture and design. The Club was developed to be a forum for discussion and a means of building a network of artists and creative enterprises. It has held meetings on such topics as arts festivals, art and commerce, and art and the rural economy. In addition, the Club offers one-to-one sessions with expert advisors on Intellectual Property, Finance, Business Planning, and Innovation. It will also be offering dedicated workshops on design, marketing, and overseas trade. Since it began in 2001, the CEC has built up a membership base of 800 artists and arts businesses.
- ***Atlantic Economuseum Network, in Quebec:*** This initiative is designed to help individual craftspeople and artists, in effect, turn their small operations into micro-museums. The goal is to get these artists and craftspeople more visibility, access to wider markets, and, hence, more income to support themselves. A recent Canadian reporter highlighted the work of two artists and offers an example of how this program works.
 - A lute-maker in Montreal makes very sophisticated stringed instruments. He used to sell them to a limited customer base, but this Economuseum program helped him expand his shop and facilities, and turn it into a very small, but high-end museum of stringed instruments. As a result, he now has exhibits and extensive information on all kinds of stringed instruments, and his shop has become a tourist destination. His customer base is broader and he is part of a network of other artists and craftspeople throughout Quebec.
 - A fine bookbinder, also in Montreal, used to produce on a small scale. Through the Economuseum Program, he now teaches bookbinding classes, has

demonstrations for the visiting public, and has exhibits of old bookbinding practices.

This initiative has the support of the Canadian Tourism Commission, and it links individual artists and craftspeople with other tourism and arts-related people and organizations, giving them regional and national exposure and integrating them into the entire tourism and arts development and promotion system.

- ***The Surrey Institute of Art and Design University College:*** Located in the outskirts of London, the Institute received funding from the European Social Fund to manage three projects. The first “The Supporting Creative Enterprise” Project assists graduates who wish to develop their own businesses in the creative sector, but need management assistance. This project is focused on the rural region in the South East of England. The “Creative Industries Skill Training Initiative” provides state-of-the-art technology-related skills to creative professionals. Finally, the “Work Bureau for Creative Enterprises” Project provides internships to companies in the creative industries through a web portal and employer networking events.

Recommendations

Much of the development of the creative cluster in the Northern Tier to date has happened on its own. Given its current strength, one can only imagine the opportunities for growth when the communities in the region are truly able to effectively promote and support the creative cluster in an organized fashion. This is not just a website or project for one city or one town—a regional approach needs to be taken. The creative cluster in the Northern Tier, once properly supported, has the potential to significantly assist those working in the creative economy to earn a living wage, to provide a source of new jobs in the region, and to offer the promise of a career for the youth of the Northern Tier.

We have outlined a number of recommendations below, and we believe they should be carried out to: create jobs through the growth of commercial enterprises that produce and distribute creative products and services; enhance the income of local artists and performers through creating new markets for their products; enhance the image of the region as a national center for creative industry development; and provide new career opportunities for local residents in creative careers.

Convene an Event that Brings Together the Nonprofit Cultural Institutions, Individual Artists and Performers, and Creative Businesses Operating in the Region

Similar to the concept of “Hidden Tech,” there are many creative individuals and businesses operating in the Northern Tier who are hidden throughout the region. There are also many established leaders in the artistic community, as well as successful enterprises that produce or distribute creative products. As a first step in the process of

building a stronger creative cluster in the Northern Tier, we recommend that arts and business and economic development leaders should convene a region-wide meeting to discuss this document and some of the proposed strategies. A meeting like this was exactly the kind of inspiration that led to the New England Council's New England Economy Initiative. The meeting/event should be sponsored by a collaboration of some of the organizations that are listed. The agenda should be to take stock of the creative cluster resources of the region, using this memo as a guide, and to collectively decide on a plan of action.

Establish the Northern Tier Creative Cluster Council

Based on the outcome of the initial meeting or event, key leaders in the region could consider developing a more formal organization—the Northern Tier Creative Cluster Council. The Council could be the lead organization that sponsors a set of initiatives focused on strengthening the creative cluster.

The purpose of the Council would be to provide a venue for increased networking within the region, and to create increased attention to the creative cluster in the region through better branding, information access, and synergies amongst existing activities. Specific actions steps that could be taken are:

1. *Create a regional database on all components of the region's creative economy:* We have taken one step forward in this process, as have the efforts of the START project in the Northern Berkshires, the Western Massachusetts Arts Alliance, and others. The challenge is to put what we all know about the region's assets in one database and maintain this database.
2. *Develop regular networking and marketing events:* There is a clear benefit when individual artists and businesses in the creative cluster have the opportunity to share ideas and to develop areas of joint interest. The Council could be the sponsor of regular events to promote this networking, and to support joint marketing throughout the region.
3. *Sponsor a regional open gallery weekends:* Rather than have each of the towns in the region sponsoring its own open studio event, these efforts could be coordinated. A good model of such an effort takes place in Vermont, where on Memorial Day weekend over 200 Vermont artists and craftspeople opened their studios to visitors. A map of the state was created, providing an ongoing document that provides a sense of the richness of the creative talent in that state. A similar event throughout the Northern Tier/Route 2 Corridor could be an important jumpstart to further efforts in this cluster.

At some time in the future, the Council could affiliate with the larger New England Creative Economy Council (CEC) whose primary objective is to promote the

sustainable economic development of New England’s creative economy among industry members within and beyond New England.

Strengthen and Broaden the West County Artist Project

The West County Artist Project is a collaborative effort to provide technical and management assistance to artists in the region, and it is a critical first step in building the economic viability of the region’s creative assets. This effort should be supported and expanded to reach the entire Northern Tier region. In addition to expanding its geographic scope through engaging organizations in the Northern Berkshires and the North Quabbin area, the Project could consider increasing assistance in the area of market development. Specifically, it could work on joint marketing activities, assistance in touring and participating in art shows around the country, and help in terms of audience development.

Promote Artisan- and Crafts-related Business Development

There is significant potential in the region to generate jobs through helping local craftspeople transform their business and grow their markets. Specific steps could be taken to help these businesses and artists:

1. Identify artisans in the region who have products that have the potential to move into a large-scale production mode.
2. Consider developing a project modeled after the successful “Economuseum” movement in Canada (see above under models and best practices). This project engaged local artisans more fully in efforts tied in to regional tourism and allows them the opportunity to expand their markets.

Establish the Northern Tier as a Center of Excellence in Cultural Education and Training

As noted, the Northern Tier’s educational institutions are a unique resource in further building the creative economy. Its public institutions, the MCLA and Greenfield Community College, not only have significant strengths in the area, but they have leaders who are committed to promoting their schools as leaders in arts and cultural education. As noted, Williams College and the Clark Art Institute are already national leaders in the area of art history and arts preservation. And, with the expansion of Hallmark Institute, the region has another strong private proprietary schools whose mission closely matches the goals noted in this initiative. The challenge is to further build the linkages and visibility of the education and training resources and to make increased connections

between the institutions of higher education and the region's secondary schools. Specific actions to further develop this effort could be:

1. *Create a Culture Education Alliance in the region:* While there are already informal relationships between these educational institutions, forming a more formal collaborative group could help to further explore areas of cooperation. GCC and MCLA have already begun some of these discussions. In addition, there have been some discussions with the Massachusetts College of Art that would allow GCC students to get a 4-year BFA degree through a cooperative relationship with the MCA. There are many other areas of potential collaboration that could be entertained.
2. *Explore the feasibility of developing a new performing arts center at GCC:* GCC is very interested in exploring the possibility of a performing arts center, which could not only house its own activities, but also become the home to the Pioneer Valley Symphony.
3. *Develop outreach efforts in local public schools:* The arts can be a viable career for the youth of the Northern Tier. Not only are there increasing opportunities within the region, but with public higher educational institutions such as MCLA and GCC, students from the public schools in the region have the opportunity to get the training they would need to succeed in an arts career anywhere in the country.
4. *Further develop ways in which faculty at the colleges could support creative businesses and artists:* Both GCC and MCLA (Arts/Science/Robotics) have already developed programs in collaboration with local economic development and cultural groups. These academic institutions can become an even stronger focal point for work in the creative cluster.

Capitalize on the Synergies Between the Creative Cluster and Other Economic Sectors in the Northern Tier

There are a number of potentially innovative linkages that could occur between the Northern Tier's creative cluster and the other economic sectors, if given the right support and visibility. These cross-sector linkages and synergies could significantly highlight the region as a source of creative economic development and innovation. For example:

- *Arts and Forestry -- The North Quabbin Woods Project* is an effort of the New England Forestry Foundation. The goal of the project is to revitalize the North Quabbin economy based on the sustainable use of local forest resources. This project has been supporting and promoting the work of artisans involved in wood products.

- ***Arts and Manufacturing -- The Re-Work Project*** is a yearlong project linking regional artists with local manufacturers. Montague manufacturers have donated industrial scrap materials that have been recycled into works of art by 10 Pioneer Valley artists. The results of this work are being shown at a gallery in Turners Falls.
- ***Arts and Alternative Energy -- Solar Energy Project at MASS MoCA*** is an effort by MASS MoCA to create one of the largest solar panel projects in the country, and to connect this effort to educating visitors about alternative energy.

As the region examines each of the initiatives suggested throughout this Northern Tier Project, there are many that would cross sector boundaries and further build the kind of synergies that lead to economic growth and the development of a sustainable regional economy.

ECOTOURISM SECTOR

Description of the Sector

The International Ecotourism Society (TIES) defines ecotourism as “responsible travel to natural areas that conserves the environment and sustains the well-being of local people.” It is believed that ecotourism in the United States is growing by 20-30 percent per annum. In a North Carolina study, researchers found the following preferences for an ideal nature-oriented vacation: uncrowded (60.9%), experiencing nature (56.9%), inexpensive (51.9%), historic (42.4%), educational (42.0%), friendly (39.3%), and hospitable (30.9%). (Source: *Strategies for Ecotourism Development in the North Quabbin*, April 2002.) The Northern Tier contains these characteristics in abundance.

Broadly speaking, most outdoor leisure activities fall into the category of ecotourism. Hiking, biking, camping, canoeing and kayaking, rafting, swimming, birding, winter sports, horseback riding, and fishing are the most popular examples found in the Northern Tier. Some controversy arises around hunting (a traditional outdoor activity, but is it ecotourism?), and the fast growing mechanized activities including snowmobiles, all terrain vehicles, and mountain bikes. Other “new age” activities that are also popular in the region, such as yoga and meditation retreats, are borderline ecotourism candidates, as are “extreme” sports, such as parachuting, tubing, cannoning, and spelunking.

Massachusetts has a long history of environmental consciousness: the first state reservation was established in 1898, the Trustees of Reservations was founded in 1891, and the first Audubon Society in the country was established in 1896. In total, there are over 250,000 acres of state protected land in Western Massachusetts.

The Massachusetts Department of Conservation and Recreation (formerly DEM) is currently undergoing a significant strategic shift in its thinking about the stewardship of its land holdings. Its Ecoregions Initiative could result in a restructuring of the organization to better manage 15 Ecoregions in the state. This new model, outlined in a paper entitled *Ecoregions: Linking the Massachusetts Ecology, Economy and Communities*, could prove to be a vital intellectual starting point for the rethinking of ecotourism possibilities in the Northern Tier as a way of integrating ecological with broad social, economic, and community values. The vision need not be limited to the state-managed sector, but could also include other interested organizations and entrepreneurs in the region.

A complex mosaic of stewardship over the natural resources of Western Massachusetts and the Northern Tier region has evolved over the years. Twenty-five federal and state agencies, local towns and municipalities, private nonprofit organizations, and for-profit businesses all share an interest in seeing the development of sustainable, responsible ecotourism. Some of the key players in the region are:

State Entities

- Massachusetts Department of Conservation and Recreation
- Massachusetts Department of Agricultural Resources
- Massachusetts Department of Fish and Game
- Massachusetts Division of Watershed Management
- Massachusetts Executive Office of Environmental Affairs

Federal Agencies

- National Park Service Rivers and Trails Assistance Program
- US Army Corps of Engineers
- US Fish and Wildlife Service

Municipal and County Entities

- Local Chambers of Commerce and Visitors' Bureaus
- Franklin Regional Council of Governments
- Berkshire and Montachusett Regional Planning Agencies
- Local Conservation Commissions

Nonprofit Organizations and Associations

- Appalachian Mountain Club
- Athol Bird and Nature Club
- Community Involved in Sustaining Agriculture
- Congress of Lakes and Ponds
- Connecticut River Watershed Council, and local watershed councils
- Northeast Sustainable Energy Association
- Harvard University, Harvard Forest
- MCLA, Environmental Studies Program
- Hoosic River Watershed Association
- North County Land Trust
- Franklin Land Trust
- Williamstown Rural Lands Foundation
- Berkshire Natural Resources Council
- Mass Forestry Association
- Massachusetts Audubon Society
- Massachusetts Land Trust Coalition
- Massachusetts Sierra Club

- Millers River Watershed Council
- Mount Grace Land Conservation Trust and other local Land Trusts
- New England Forestry Foundation
- The Nature Conservancy
- The Trustees of Reservations
- The Mohawk Trail Association

Private Businesses

- Individual Private Landowners, the only private sector member of the North Quabbin Regional Landscape Partnership.
- Northfield Mountain Recreation Center, an environmental and recreation center owned by Northeast Utilities, part of the Northeast Utilities System.
- Small businesses offering outdoor recreation activities e.g., Zoar Outdoor, Bicycles Unlimited, Wildwater, The Spoke Bicycles, Crab Apple Whitewater.
- Outdoor outfitters and equipment providers e.g. Saddleback, Greenfield Outfitters, Allure Outfitters, The Spoke, and Appalachian Outfitters.
- Lodgings (privately owned inns, bed and breakfasts) and B&B associations
- Private guides and training companies, e.g., The New England Naturalist Training Center (run by local naturalist John Foster) based in Northfield, and Walnut Hill Tracking and Nature Center in Orange.
- Naturalist photographers, like Paul Rezendes, another well-known local naturalist.
- Private farms and agritourism businesses.

Key Organizations, Programs, and Projects

Following are examples of some of the key organizations, businesses, and programs within the Northern Tier.

Hiking and Biking Trails

- ***The Tully Trail***, an 18-mile-loop trail, is the first project of the North Quabbin Regional Landscape Partnership, whose members include private, regional and municipal, and state and federal partners. The partnership itself is an excellent example of collaboration and region-wide thinking necessary both for land protection and ecotourism development.
- ***The Ashuwillticook Trail*** has 11 miles under use between Adams and Lanesborough. Another 10 miles of the trail are planned that will extend the trail to North Adams, Williamstown, and eventually into Vermont. The ultimate vision is a multi-purpose trail that goes from Connecticut, through Massachusetts to Vermont.
- The DCR has published a paper entitled ***Connecticut Valley Healthy Trails Initiative***, which outlines a vision of the region as “one of America’s most active centers for trail-oriented recreation.” The paper envisions the creation of ten trail

centers, each offering 25 to 30 miles of well-designed and well-marked trails for a variety of non-motorized uses, for the purpose of encouraging healthy lands, healthy people, and healthy communities.

- ***The Franklin County Bikeway*** will run along the Northeast Utilities power canal from Unity Park in Turners Falls to Montague City Road in Montague. In May 2004, the Canalside Trail portion of the Bikeway began construction after 20 years of exhaustive collaborative efforts between Congressman Olver, state, federal, and municipal bodies, and local residents.
- ***The North Central Pathway*** is a planned 16-mile recreational walking and biking trail that stretches from downtown Gardner to downtown Winchendon. Several miles of the trail are already under use, and the remaining sections of it will be worked over the next several years. When completed, it will pass along Crystal Lake, Whitney Pond, and cross wooden bridges over the Millers River.
- ***The Northfield Mountain Recreation and Environmental Center*** has an extensive trail system that is maintained for hiking, mountain biking, horseback riding, and cross-country skiing. The center is operated by the Northeast Utilities System, and is located on the site of the Pumped Storage Hydroelectric Station in Northfield. In addition to the trails and hiking activities, the Center offers a very broad range of outdoor-related programs and services: riverboat cruises in Barton's Cove on the Quinnetukut II, kayaking in the French King Gorge, camping at Munns ferry, fire hikes along the Metacomet Monadnock Trail, as well as orienteering workshops for school teachers.
- ***The Lake Denison Recreation Area, Otter River State Forest, and the Birch Hill Dam and Wildlife Area*** are located in the Winchendon/Gardner region. Combined, these recreation areas offer more than 4,000 acres of parks, recreation, and trails that are available for public use.

Visitors and Naturalist Centers

- The ***Great Falls Discovery Center*** is a product of collaboration between the former DEM, the U.S. Fish and Wildlife Service, Northeast Utilities, Congressman Olver, the Town of Montague, and a number of nonprofit conservation groups. The center was built to educate the public about the natural, cultural, and historic resources of the Connecticut River and its watershed. It is expected to draw more than 50,000 people on an annual basis.
- A “state-of-the-art” ***Discover the Berkshires Visitor Center*** in Adams opened in May 2004 to establish the town as an entry point for touring the Berkshires. Among other things, the Center will be a focal point for recreational and outdoor activities in the County.
- The Athol Bird and Nature Club opened the ***Millers River Environmental Center*** in 2001, as a community resource providing a working environment for collaboration between governmental and non-governmental agencies and citizens. Its mission is to educate area citizens about the rich natural resources of the region and their ability to steward those resources and enjoy the natural environment.

Promotion and Visitor Information

- ***MassCountryRoads.com*** is a website started in May 2003 and managed by the Greenfields Visitors' Information Center, which acts as a portal for information on Northwestern Massachusetts. The site covers all of the communities in the Northern Tier, in addition to Amherst, and is still in the development stage. It includes information on a very broad range of activities in the arts, culture, regional heritage, and outdoor recreation.
- ***NESEA*** (Northeast Sustainable Energy Association) is a regional membership organization that promotes the development and adoption of renewable and alternative energy and conservation. The Association also produces maps and information packs on "Getting around clean and green in the Pioneer Valley."
- ***Massvacation.com*** endorses or sponsors several visitor oriented publications including an annual booklet on "The Mohawk Trail Region," the "Guide to the Johnny Appleseed Trail," the "Franklin County" booklet, and location-specific brochures. Combined, these publications provide an introduction to many of the outdoor recreational activities in the Northern Tier region.

Protection and Advocacy Organizations/Initiatives

- ***The Massachusetts Trustees of Reservations*** has had a long record of land protection in the state, and making special properties available for outdoor recreation. Since its founding in 1891, the Trustees have helped protect 48,000 acres of land, and developed over 100 sanctuaries and reservations throughout the state. Several of these sanctuaries and reservations are located in the Northern Tier—Royalston Falls, the North Common Meadows in Petersham, Bear Swamp in Ashfield, and Field Farm in Williamstown among them. Of particular note is a relatively new program called the Highland Communities Initiative (HCI), an effort that will protect "natural and cultural landscapes" in 38 communities in Western Massachusetts. Small grants and technical assistance are available from the HCI to help communities that want to protect parcels of land and open space.
- ***The Massachusetts Audubon Society*** is another one of the larger and well-established protection, advocacy, conservation, and education organizations in the state. The Society has helped protect more than 30,000 acres of environmentally and ecologically significant land in the state. In addition, Audubon offers nature walks and tours, farm-related activities, teacher training programs, boat tours and cruises, day and overnight camps, and a rivers-exploration and protection tool kit. Also, the Society oversees a number of wildlife sanctuaries throughout the state, several of which are located in the Northern Tier (e.g., High Ledges in Shelburne Falls, and Lake Wampanoag in Gardner).
- ***The Appalachian Mountain Club*** is a member-based organization that protects and maintains 1,400 miles of trails along the Appalachian Trail. There are 12 chapters along the Trail each of which organizes groups of volunteers to help keep the trails in good shape. The Berkshire Chapter has more than 3,400 members in Western Massachusetts, and they are involved in trail maintenance, as well as leading groups of people on hiking, snowshoeing, kayaking, canoeing and rock climbing trips.

- **Land Trusts and Resource Councils.** There are many examples of these entities throughout the Northern Tier, and their role of land preservation, environmental protection, and support for sustainable recreation is critically important. For example, *The Berkshire Natural Resources Council and the Williamstown Rural Lands Foundation* have considerable acreage under their ownership/management/protection, as does the *North County Land Trust* in Fitchburg. *The Mount Grace Land Conservation Trust* is based in Athol, and has been working to protect and preserve open space and farm and forestland in the North Quabbin area since 1986. The organization serves 23 towns in the North Quabbin region. It has helped facilitate the protection of over 13,000 acres in 146 projects, it manages 1,270 acres in 17 conservation areas, and it helped create the 20-mile Tully Loop Trail that runs through the towns of Orange, Athol, and Royalston. The **Franklin Land Trust** has been in existence for 17 years, and has protected 11,500 acres in 127 projects in 17 towns in Franklin County. The Trust recently launched “We’ve Saved It – Now Let’s Share It,” a program jointly sponsored by area naturalists that highlights protected properties in the region. A Farm and Garden Tour typically attracts close to 500 people from throughout New England.
- **The North Quabbin Community Forestry Initiative** was designed to raise the profile of the neglected region around the North Quabbin Woods as “an outdoor recreation dream,” and its North *Quabbin Ecotourism Task Force* has started to implement some of the recommendations made in its 2002 Ecotourism Marketing Report. Some of the measures include creating a logo, involving local businesses and organizations in developing and marketing a brand identity for the area (forestry, wood products, recreation), and working on product development such as trail building. Larger scale infrastructure building efforts (e.g., restrooms, campgrounds), and more comprehensive outreach (such as instituting an “I” system for information), as well as transportation and highway signage are in the development stage, and will require region-wide cooperation and coordination.

Municipal and County Activities

- Three towns, among many in the Northern Tier area, that have made ecotourism and outdoor recreation part of their long-term economic development strategies are *Adams, Montague, and Athol*. The town of Athol has partnered with the Executive Office of Environmental Affairs to create the *Urban River Visions* that will result in a network of trails and walks that link existing community facilities and environmental resources. The town of Adams has participated in a long-range visioning and strategic planning exercise and is currently working on a number of projects to revitalize itself. It is positioning itself as the “base camp for the Berkshires; the destination point for families and individuals to enjoy the natural beauty and recreation opportunities of the area.” The town of Montague just completed its annual Economic Development Plan, and embedded throughout the Plan are actions that link recreation and water-related resources to commercial and economic development. The town, for example, was very involved in the development of the Discovery Center and the proposed Canalside bike trail.

- ***The Regional Comprehensive Economic Development Strategy (CEDS)*** is an overall economic development plan for an entire county or labor market area. The Franklin and Montachusett regions have prepared a CEDS for their region. Each of the plans contains goals and action steps around the protection and sustainable development of open space, farmland, and forestlands. The idea of using the natural and recreational environment for economic development purposes, in a sensitive way, is a priority for the Councils of Government, the Regional Planning Agencies, and many of the towns that are participating in the CEDS process.
- ***Councils of Government and Regional Planning Agencies.*** These institutions often advocate for environmental protection, recreation, and making linkages with economic development. The Berkshire Regional Planning Commission, the Montachusett Regional Planning Commission, and the Franklin Regional Council of Governments all play a role in this regard. For example, the Franklin Regional Council of Governments and the Deerfield River Watershed Council are developing a Ten-Year Action to protect and preserve the watershed areas along the river, and to use the natural and water resources for sustainable economic purposes as well. The plan is very comprehensive: it identifies all of the relevant agencies and organizations that can and should play a role in the protection and preservation efforts; it outlines strategies to support forest-based businesses and products; it identifies a number of zoning and land-use strategies for protecting sensitive farmland and open space; it recommends action plans and steps to protect wildlife and wildlife habitats along the river; and it highlights several specific scenic resources, along the Mohawk Trail and Clesson Brook Valley areas, for example, as priority protection areas. Also, the Berkshire Regional Planning Commission works with the Hoosic River Watershed Association, the Williamstown Rural Lands Foundation, the Berkshire Natural Resources Council, and the Mohawk Trail Association on conservation and recreational issues.

Local Industry Groups

- One example is ***Community Involved in Sustaining Agriculture (CISA)***, a nonprofit organization whose mission is to build a secure, local food and farming system in Western Massachusetts. CISA has almost transformed the way farms in the region are promoted and marketed, and its Local Hero campaign has become nationally known for its effective and creative approach to helping enhance the economics of farming. CISA's work is heavily focused on sustainable and commercial use of the land, and very much a part of the fabric ecotourism and outdoor recreation.
- Another example is the recently formed ***Mohawk Bed and Breakfast Association***, which envisions collaboration with other local tourist-related enterprises. The idea here is similar to the kinds of partnerships and collaborations that happen in other parts of this country and in Europe, where touring and biking packages are created to link inns, B&Bs, historical sites, and restaurants with private touring businesses.
- The four **chambers** in the region, the Franklin County Chamber, the North Quabbin Chamber, the Gardner Chamber, and the Berkshire Chamber, are all very active promoters and supporters of the outdoor recreation industry. Also, they all sponsor a variety of fairs and festivals that bring visitors into the area. Oftentimes, these events

are linked or connected with the activities of parks and environmental centers in the Northern Tier.

Private Enterprises

- A few businesses specializing in ecotourism activities have opened and thrived in recent years. *Zoar Outdoor* offers river-based activities and has recently added lodging facilities for its customers. It has a location in Charlemont and is contemplating one in Orange. In addition to river-related activities, Zoar also offers a “Bike the Berkshires” program, where customers have the option of a self-guided bike tour or one-way trip that follows the Deerfield River from the Vermont border to Franklin County.
- *Crab Apple Whitewater* is the largest white-water rafting outfitter in New England, and has operations in Forks, Maine, and Charlemont, Massachusetts. At the Charlemont location, the company offers a 10-mile whitewater trip on the Fife Brook section of the Deerfield River, a rafting trip in the Monroe Bridge area on the Deerfield, a half-day solo Funyak trip down the Deerfield, guided and self-guided Float trips, and a spring rafting trip along the Millers River.
- Specialist outfitters for outdoor sports, such as *The Mountain Goat* in Williamstown, are also an important part of the ecotourism industry, offering not only equipment, but also free-guided summer and snowshoe hikes. In addition, there are several small operators of guiding, tracking, and nature photography services.

Strengths and Challenges

With growing demand for active recreation, the region has considerable **strengths** to draw upon. Among them are the following.

- **Good location:** The Northern Tier is conveniently located close to almost 100 million people, and is within 1-½ to 3 hours’ drive from the major population centers of Boston, New York, and Hartford. Relatively well-maintained roads (Routes 2, the I-91, and the Massachusetts Turnpike) make easy access for people interested in one-day outings or multiple day stays in the area.
- **Significant amount of open space:** The Northern Tier has two important natural resources: the land and the water. The principal state forests in the Northern Tier are Wendell State Forest (7,900 acres), Mount Greylock State Reservation (12,500 acres), Dubuque Memorial (7,822 acres), Savoy Mountain (11,118 acres), Mohawk Trail State Forest (6,457 acres), Monroe (4,321 acres) Erving (4,479 acres), Clarksburg State Forest, the Natural Bridge State Park, and Otter River State Forest. The North Quabbin Woods alone, including state, municipal, and private lands, cover 94,000 acres.

The Connecticut River and its tributaries, the Deerfield and Millers rivers, as well as the Quabbin Reservoir and several natural ponds, brooks, and lakes also comprise an important scenic and recreational resource. The predictable dam releases into the Deerfield have allowed kayaking and rafting businesses to develop, while the other water resources offer swimming and fishing opportunities.

- ***A strong base of facilities and events.*** Throughout the region and throughout the year, there are events, shows, and activities encouraging visitors to come to the region, all of which have potential to be linked to ecotourism and recreation. In February, the Greenfield Winter Carnival and the Chocolate Festival take place. The River Rat Race, an Athol-to-Orange Canoe Race for up to 500 paddlers, is a well-established spring tradition that started in March 1964 and attracts many visitors. The last weekend of June sees a Lavender Day Festival and Tour of farms and gardens in the area, and the annual North Quabbin Garlic and Arts Festival, an unusual combination of culture and agriculture, takes place each September. The Green River Music Festival is one of the region’s premier venues for cutting-edge musicians from around the country and the Pioneer valley.
- ***Good models of stewardship:*** The Massachusetts Audubon Society has a number of managed properties in the area. It only allows the public access to its properties when adequate maps and signage are available, when there is a safe place for vehicles to park, and when the trail system is appropriately marked using a color code system to ensure both public safety and ecological protection. These standards set an excellent model for ecotourism in the region. The Trustees of the Reservations follow similar procedures.
- ***History of successful partnerships:*** Some of the natural resources have successfully been developed for ecotourism by imaginative and cooperative partnerships between various agencies. And, there are many more instances where creative partnerships can be formed around the theme of ecotourism to better promote economic development. Businesses that offer similar or complementary services (bike rental and lodgings, or hiking and food in the tradition of the “randonnée gastronomique”) could invent packages for visitors who enjoy creature comforts as well as outdoor recreation. Links with large businesses such as Yankee Candle could be established, either for data sharing purposes, or as a target market for less strenuous ecotourism pursuits. Greater links between private and not-for-profit organizations could be formed, for operational, financial, or promotional purposes. Developing a region-wide mentality is important both for securing financing for future initiatives and for creating effective marketing. As one interviewee said, “We have people with vision and energy—both the newcomers moving in from the outside and the old-timers—who can cross boundaries and act as catalysts to overcome history and create a new future.”
- ***Good education and training opportunities:*** For local people, training and skill building are needed to provide services to visitors and to build general knowledge and appreciation of local natural resources and pride in the region. In this context, the region has a history of training and workforce development for the outdoor recreation industry. MCLA has education and training programs, Greenfield Community College trains 20 students a year in outdoor leadership and adventure travel, and other organizations offer small-scale non-credit naturalist oriented training programs. For example, the New England Naturalist Training Center and the North Quabbin Guide Training program at the Millers River Environmental Center provide training for the field.

- ***Business opportunities exist:*** Currently, a small number of private businesses can be found in the ecotourism industry, including whitewater rafting and canoeing, outfitters and equipment suppliers, and lodging and food service providers. Some of these businesses have seen their market and customer base expand in the last five to seven years because of the popularity of the industry and the entrepreneurial talent of the people in the businesses. Through the interviews and focus groups conducted for this project, it is quite clear that other people who live in the region are intending to open bicycle rental stores or equipment storage businesses. The trend for new business opportunities is not great, but the business support systems in the Northern Tier region could make it possible for new businesses to flourish.
- ***Some positive marketing and branding:*** There is a significant opportunity to build a strong brand identity for the region as an ecotourism destination. The North Quabbin Ecotourism Task Force’s study offers an excellent model of a positioning statement for how the region as a whole could be perceived by consumers/visitors. Communications tools, such as the website www.masscountryroads.com, could be more effectively capitalized upon if there were a more integrated vision of the region to promote.

In spite of these strengths and opportunities, there are a number of **weaknesses** in the region and in the industry that make productive economic development a challenge. These weaknesses include the following.

- ***Poor identity and image:*** The Northern Tier is often overlooked and overshadowed by more famous tourist destinations: Vermont, New Hampshire, the Berkshires, and Cape Cod. As one businessperson in the industry said, “This area is not high on the political agenda, so key public policy makers tend to ignore it. It’s a chicken and egg situation—hard to start up activities if the people aren’t there.”
- ***Limited facilities, access, and signage:*** At many sites, there are inadequate parking and restroom facilities. Areas within some of the region’s parks are often over-utilized, while many others are underutilized, because people are not aware of them, or because access is poor. Many trails are poorly designed and maintained. There is inconsistent and often inadequate access and signage. Many ecotourist destinations are simply not known, and others are difficult to find. Bureaucratic hurdles often get in the way of establishing a good, clear, consistent signage policy for all ecotourism sights and activities.
- ***Infrastructure constraints:*** While many believe that the region’s natural resources are underutilized, there are significant infrastructure problems that deter many tourists from coming or returning to the area. Parking and restroom facilities are hard to find at some of the more popular hiking trails or other outdoor recreation sites. Also, restaurant, and lodging are very sporadic across the entire Northern Tier. The towns of Orange and Athol, for example, have only a handful of beds for visitors. An influx of ecotourists would strain the resources available very quickly, unless provisions are made to expand the lodging and even restaurant options within the region.
- ***Insufficient co-ordination:*** There is a tendency to think at the micro-level, within small businesses and among public, private and nonprofit land managers, and as a consequence opportunities to think regionally or across sectors are often lost. A

particular weakness is the lack of economic and marketing collaboration between the public and private sectors. The partnerships and collaborations that have been developed in the region are often with organizations in the nonprofit and environmental communities. Until the private sector is more of an integral partner, the commercial and economic development possibilities of the industry will not be fully realized.

- ***Conflicts of interest:*** While small private enterprises may be financially motivated to provide services to ecotourists, state parks and agencies are often not. Despite the increasing number of vacationers, and the demand for ecotourism facilities and activities, resources and budgets in the public sector have not kept pace and, in many cases, are shrinking. The state-sponsored land acquisition and easement program's primary goal is conservation and stewardship. As a result, providing services and support for ecotourism may not be of high enough priority to allocate resources to these activities. Furthermore, potential liability issues may prevent certain sites from being developed or promoted (such as Rose Ledge, an excellent climbing site on the Northfield property).
- ***Unclear branding and marketing strategy:*** Without a strong image or “brand” as an ecotourism destination and without a clear marketing plan or sufficient resources to back it up, the development of the area will remain patchy. Current promotional efforts are tactical in nature and fragmented by organization, town, or sector. The multiplicity of media and marketing within the region do not convey a unified concept of the region as a destination for ecotourism. As one interviewee noted, “Marketing has never been focused, cohesive, integrated. We need to co-market the experience and lodging; one side of the Connecticut River needs to talk to the other side; the whole is greater than the sum of its parts.”
- ***Lack of resources:*** There is a scarcity of money (and sometimes capacity) to implement many of the strategic initiatives needed to develop a serious platform for ecotourism. State budget cuts are often cited as a large problem, as is the difficulty of securing grant funding.
- ***Structural impediments and implementation difficulties:*** Insufficient agreement and the absence of a regional decision-making structure about the allocation and prioritization of resources region-wide, could mean that ecotourism will remain underdeveloped. In addition, even where there are good ideas, the problem often lies in executing them. Because of the multiplicity of agents and stakeholders involved, securing all the elements that need to be in place is an onerous task. Without a strong champion and committed, on-the-ground, visionary leaders, many well-intentioned projects will flounder or fail. One interviewee indicated, “A couple of meetings a year just aren’t enough. The job won’t get done unless we do it on a sustained basis.”

Best Practices and Models

There is documented evidence of the positive economic benefits of ecotourism and trail-oriented recreation. Also, numerous examples of successful ecotourism

initiatives exist around the country, which have addressed many of the key weaknesses and challenges noted above:

- The **Adirondack Economic Development Corporation (AEDC)** was founded to improve the economic conditions in and around the Adirondack Park Region. To help it reach its goal, the AEDC developed a Tourism program that focuses on community preparedness, training, and financial assistance to the outdoor and recreational industry. The organization is actively involved in helping build the infrastructure (i.e., hotels, inns, and restaurants) the industry needs. AEDC hired a staff person with experience and strong relationships in the outdoor recreation and tourism industry to build partnerships between communities, recreation organizations, and private entrepreneurs. AEMC provides financing assistance to tourism and recreation-based organizations and entrepreneurs through the Adirondack Tourism Fund. The Fund distributes loans from \$500 to \$150,000, although funding for larger projects is obtained either through bank partnerships or through the Adirondack Venture Fund.
- Pennsylvania has two examples of innovative approaches to ecotourism. The **Westsylvania Heritage Corporation** is a nonprofit organization covering 15 counties in southwestern Pennsylvania, and was established to tell the stories of the region and make “Westsylvania” a premier heritage destination that integrates both culture and nature. By promoting a specific story/theme rather than the typical focus on an attraction or regional destination, the region connects attractions, services, products, and resources and offers them as a unit. Another example of imaginative packaging of ecotourism opportunities is found in the Buffalo Valley region of central Pennsylvania, where inns have formed an alliance to offer three-day inn-to-inn cycling tours with luggage portage between lodging properties. Other bed and breakfasts offer safe storage of bicycles, maps of trail areas and box lunches as part of their promotion.
- **La Ruta de Sonora Ecotourism Association** (www.laruta.org) is another reasonably successful example of a community-based model of economic development and conservation that promotes responsible and ethical tourism for the Arizona-Sonora borderlands region. In the summer of 1999, La Ruta hired staff and opened an office in Ajo, Arizona. The organization presents a unique ecotourism experience because it uses only certified local hosts, including naturalists, biologists, historians, archaeologists, and wilderness outfitters, as part of its program offerings. A variety of travel options allows guests to create an experience that fits their individual interests, budgets, and special needs. Guests can select from packaged specialized tours, theme itineraries, or custom trips.
- In Mount Shasta, California, **Jefferson Economic Development Institute (JEDI)** is a nonprofit organization that provides resources for ecotourism-related microenterprises. The organization promotes and supports ecotourism through a “Travel Green” branding campaign, and a Stewardship Fund for Visitors and Communities that care about protecting their natural, historical, and small town rural surroundings. JEDI’s website, www.e-jedi.org, summarizes the organization’s philosophy: “Our future lies in business and customers that understand the need to provide stewardship, while making a profit.” JEDI also promotes all ecotourism-

related businesses that are engaged in the following: Rafting & Inflatable Kayaking, Bed and Breakfasts, Vacation Planning & Rentals, Trips, Tours & Lodging, Hot Air Balloon Rides, Ski Mountaineering & Rock Climbing, Guided Biking, Hiking, Vehicle & Bus Tours, Rafting & Kayaking Wilderness Adventures, and Guided Mountaineering Climbs.

Recommendations

Convene a Northern Tier Ecotourism Working Group

Some kind of informal Working Group needs to emerge in order for the region to fully capitalize on the potential of the ecotourism and outdoor recreation industry. The basis of the convening should be the DCR's report, *Ecoregions: Linking the Massachusetts Ecology, Economy and Communities*, as well as the North Quabbin Ecotourism Task Force, and the 2002 report it prepared on Ecotourism Marketing. The report provides exactly the kind of framework and strategic direction that the region and the industry needs. For example, the report has several recommendations that, in effect, could and should be implemented throughout the entire region:

- For self-directed travelers, there should be online maps, access to outdoor rental equipment, clear signage, and bathroom facilities.
- For travelers seeking education and guided interpretation, there should be a cooperative of knowledgeable local guides who would provide a customized educational experience (MCLA's Center for Environmental Studies is an example of a resource in this regard).
- For travelers who are interested in the culture and history of the region, there should be an easy way of packaging their ecotourism activities with tours of local mills, antique shops, festivals, and other cultural attractions.

The only deficiency of the Task Force is its limited geographical scope, but this could be easily remedied. With the right leadership and commitment from key leaders and organizations in the Northern Tier, a region-wide effort could emerge, and a collaborative or Working Group formed. The goal of the collaborative should be to expand upon the work of the North Quabbin Ecotourism Task Force, and to guide the process of developing a truly region-wide ecotourism industry. A strong public and private sector leadership team will be able to better leverage private, state, and federal resources to secure both longer-term financing and shorter-term grants for smaller towns and initiatives.

Develop More Touring and Recreation Packages

Tour packages are common within the tourism industry, and are becoming more of an integral part of the ecotourism and outdoor recreational industry. However, tour packages within the Northern Tier are quite limited, even though the interest and potential is there. There are several B&B associations in the region that have expressed an interest in developing packages, as have a few recreational organizations. A private

tour enterprise or one of the region's chambers of commerce could provide the initial capacity and organizing support for this kind of activity.

Using the examples noted above in the section on Best Practices, the region should create more packages that link recreational activities with inns, B&Bs, and area restaurants. By shifting the thinking from discrete destinations to broader themes and regional opportunities, the region can develop new activities, new ways of packaging tours, outings, and adventures in creative and original ways. If attractive packages are created with cultural and historical components, ecotourism will act as a magnet for a broader range of visitors and foster broader economic development.

Explore the Idea of New Sources of Revenue

The State Forests currently charge no admission fee for access to their facilities. It has been suggested that, following the model of Acadia State Park in Maine or Yosemite in California, charging for access could provide an unanticipated revenue flow to the relevant authorities. These funds could be utilized for contributing to the region's ecotourism potential, and even expanding the infrastructure or enhancing the quality of signage. A secondary effect of charging entrance fees would be to hold down numbers of tourists, which would be consistent with the conservation aims of the stewards of the natural resources, enabling ecotourism to grow in a responsible and controlled way.

Also, there are various sources of federal, state, and foundation funding such as the NEFF and the Ford Foundation, which could be used for ecotourism. One new program is a U.S. Small Business Administration venture capital program for businesses in rural areas. Rural Business Investment Companies will leverage their own privately raised capital with up to \$60 million in government-guaranteed loans to invest in rural businesses. And, in Massachusetts, communities have a "local option" right to assess a small tax on hotels—the money goes to the state and then is given back to the community.

Broaden the Region's Tourism Infrastructure

Although it would be difficult to do in the near-term, the region has to develop a stronger support infrastructure, particularly accommodations and mid-level to high-market restaurants in some of the sub-regions within the Northern Tier. There are several ways to at least begin this process:

- One of the other Strategic Investment Initiative memos in this Northern Tier Project is Entrepreneurial Development. In short, the memo recommends a new set of services that is directed to helping promising entrepreneurs with financing, technical assistance, and computer-based market information. This Entrepreneurial Development Initiative should focus some of those resources on ecotourism support businesses.

- Closer collaboration between existing B&B, inn, and restaurant owners could lead some of those businesses to see greater market opportunities, and therefore expand their existing businesses.
- Chambers of commerce and local municipal economic development offices should begin to target lodging and restaurants in their business marketing and attraction efforts. Currently, many of the promotional efforts are directed, understandably, to manufacturing and high-wage companies, but these important support businesses should not be neglected.

Begin an Ecotourism Branding Campaign in the Region

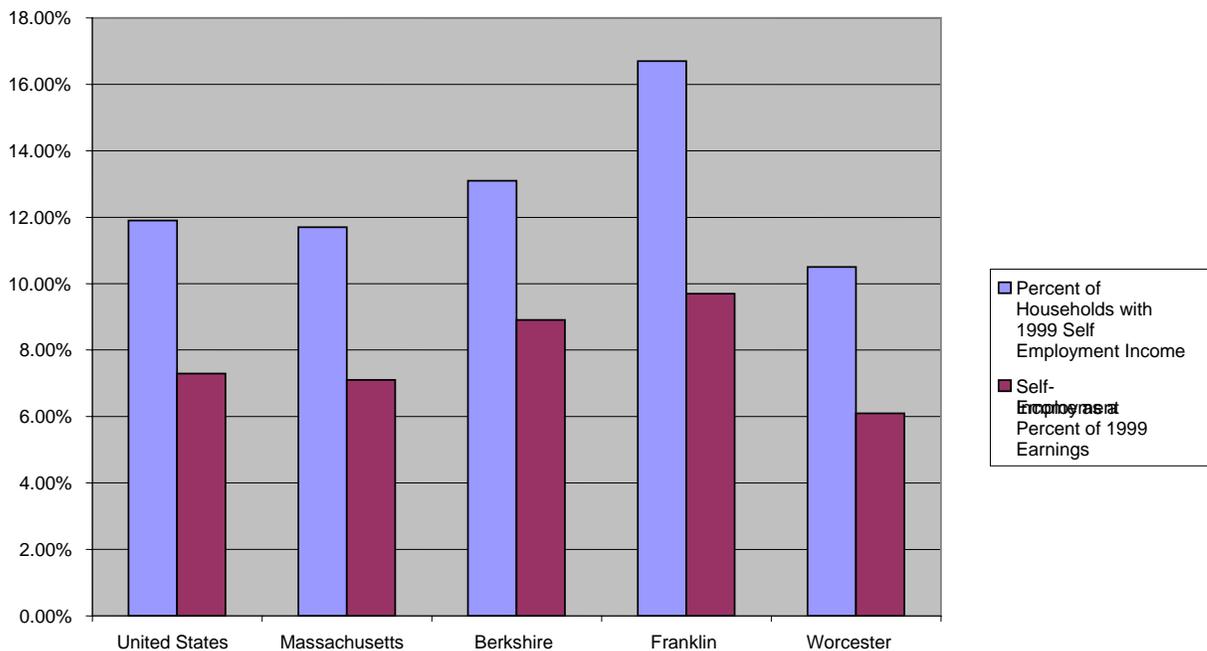
A re-branding initiative should begin. Locals and visitors alike must be educated about the features and benefits of the Northern Tier as an ecotourism destination. A branding campaign is a long-term commitment that must be articulated and conveyed in a consistent manner over several years, from the smallest details (use of logos and tag lines on promotional materials) to the broadest strategic decisions. A full communications campaign, including public relations and pro bono and grant funded advertising, should promote ecotourism in the region. Maps, brochures, signage, websites, and other communication tools that increase awareness of trail-based recreation, and programs and events that encourage healthy outdoor activities, should all reflect a unified image that appeals to ecotourists.

ENTREPRENEURIAL DEVELOPMENT

Description of Entrepreneurial Base

Fostering successful entrepreneurs is especially important for the Northern Tier. First, the region's residents and economic base are more dependent on individual initiatives and small firms than the state and nation. Chart 1 shows that 13.1 percent and 16.7 percent of households in Berkshire and Franklin counties, respectively, have self-employment income, compared to 11.9 percent for the U.S. and 11.7 percent for Massachusetts. Similarly, microenterprises (i.e., firms with fewer than five employees) are a greater share of businesses in these two counties than for the state and nation. (See Chart 2.) These entrepreneurs and small firms represent an important part of the economy, but their limited experience, time, and resources often prevent them from identifying and capitalizing on growth opportunities that can generate higher sales and new jobs. Second, improving the performance and expansion of the region's entrepreneurs is a promising way to generate new jobs to reduce unemployment and offset the decline of traditional industries.

Chart 1.
Self Employment in 1999 for Northern Tier Counties

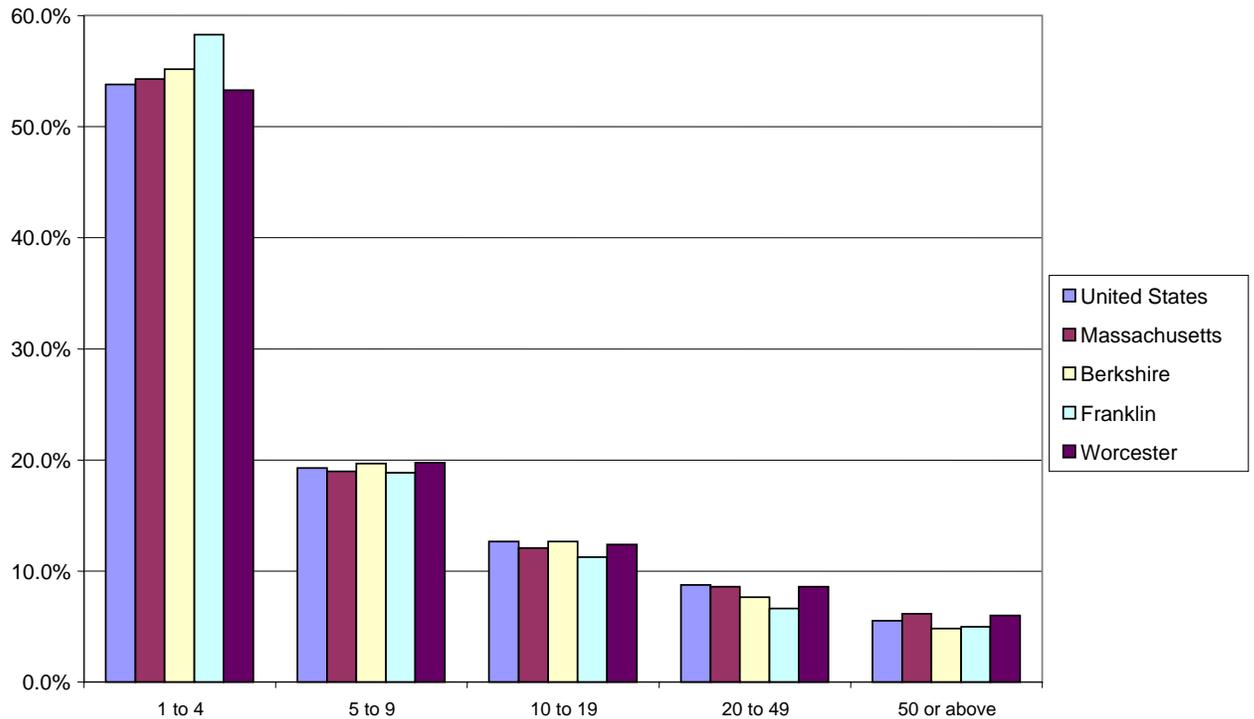


Source: 2000 Census of Population and Housing

This memo summarizes the existing small business and entrepreneurial development services in the Northern Tier and assesses their strengths, weaknesses, and gaps. It then discusses options and models for expanding these services and concludes

with recommendations to add value to and to enhance the impact of entrepreneurial development efforts. It draws upon data from state and local program websites, interviews with 25 business development practitioners and entrepreneurs, and studies on best practices.

Chart 2. Percent of Firms by Employment Size in 2001 for Northern Tier Counties



Source: County Business Patterns

Key Programs, Services, and Resources

Multiple organizations provide a continuum of services to Northern Tier entrepreneurs. These services, summarized in Table 1 by organization, include:

- courses on how to start a business and write a business plan;
- workshops on specific management and business issues;
- networking events for peer support and forming business relationships;
- individual counseling and one-on-one technical assistance;
- loan packaging assistance and loan funds to expand access to capital;
- industry networks to support peer learning and business collaboration.

Key service providers are:

- Massachusetts Small Business Development Center (SBDC);
- Service Corps of Retired Executives (SCORE);
- community-based nonprofits (Berkshire Enterprises, Franklin County Community Development Corporation (CDC), Young Entrepreneurs Society and the Greater Gardner CDC);
- public community and four-year colleges; and
- regional development organizations (Western Massachusetts Enterprise Fund and the Regional Technology Corporation).

Table 1. Summary of Small Business and Entrepreneurial Development Services in Northern Tier

Organization	Geographic Scope	Training	Technical Assistance/Counseling	Industry-Based Assistance	Financing	Firms Served	Comments
Regional Nonprofits Franklin County CDC	Franklin County	Nxlevel w/ Donahue Institute; Workshops on Mktg., Finance, Business Planning	Monthly Info Session Individual Counseling Incubator	Food Industry Shared facility, TA Training, 16 member firms	4 loan funds target: Manuf, artisans, nat resource-based firms, & CBD retailers	Pre-start-up Start-up Established	2/3 of clients pre-startup or startup; 1/3 established firms
Western Massachusetts Enterprise Fund (WMEF)	4 western counties	No	Assessment, referral Loan Packaging	No	Direct loans up to 100K, access to bank loans	Start-up Established	Works w/ banks, CDCs, SBDC, Donahue to deliver TA, find clients, make loans
Berkshire Enterprises	Berkshire Cty	10 week course w. BCC for dislocated workers; 8 week eve. class for others	Fee-based counseling Incubator	Training & TA for contractors in 16 small cities	Help clients access loans	Pre-start-up Start-up Established	Mostly serve self-employed
Greater Gardner CDC	Gardner and 5 adjacent towns	Workshops on computer software	Grants to hire private consults	No	Originate for WMEF	Pre-start-up Start-up Established	Most clients very small: self-employed or with 1 to 2 employees
Regional Technology Corporation	4 Western Counties; I-91 Tech Corridor		Connect companies to resources; email referrals and advice	Support networks for IT, Biotech and Telecom firms	No	Existing Technology Firms	Newsletter, networking breakfasts, informational talks and events
Young Entrepreneurs Society	Rural Western Massachusetts	Training for youth (13 to 21) on starting & operating a business		No	No	Pre-start-up Start-up Youth owned	Operates odd job exchange for teens. Runs a business service center in Orange.
Chambers of Commerce Greater Gardner North Quabbin Franklin County Berkshire County		May host, conduct or sponsor workshops	Host SBDC Counselors (except No. Quabbin) Referrals	Tourism marketing and visitor services	No	Start-up Established	Networking role and events Group insurance plans
Local Governments Gardner Redevelopment Authority	City of Gardner	No	Referrals	No	Grow Gardner Fund (Small RLF)	Start-up Established	
State & Fed. Agencies SBDC	Entire state with 5 regional offices	Workshops on many topics	Individual counseling hours at local sites	No; some counselors have industry	No, counselors help with loan	Pre-start-up Start-up	Two-thirds of clients are pre-start-up and start-ups

		Nxlevel Course	Special exporting & govt procurement TA	expertise	packaging and referrals	Established	
MOBD	Entire state with 5 regional offices	No	Referrals State permitting State incentives	No	Referrals, help with state programs	Existing Relocating to MA	
MassDevelopment	Entire state with 5 regional offices	No	No	No	Direct loans, loan guarantees, IDBs	Existing	New Microloan program for Pittsfield and No. Berkshires
Service Corp of Retired Executives (SCOR)	National. 9 active volunteer counselors in Franklin County	No	Individual counseling by volunteer retired business executives	Yes, depends on volunteer counselors	No	Start-up Existing	Internet-based counseling service
<u>Colleges</u> Berkshire Comm College	Berkshire County	Business degrees & courses Entrepreneurial Certificate Program	No	Training and work force development		Existing Individuals	
Greenfield Comm College	Franklin County	Business degrees & courses Non-credit workshops	No	Training and work force development	No	Existing Individuals	
Mt. Wachussett Comm College	North Worcester County	Business degrees & courses Business workshops & start-up course	No	Training and work development	No	Existing Individuals	Creating new Entrepreneurial Resource Center
Mass College of Liberal Arts	Massachusetts	Business degrees & courses Computer Skills	No	No	No	Existing Individuals	Creating new Center for Entrepreneurial Studies

SBDC management counselors provide free one-on-one advice and coaching to firms via regular office hours at chamber of commerce offices in Gardner, Greenfield, and North Adams. They also hold training workshops and courses on numerous topics, although many of these are held in business centers outside the Northern Tier (e.g., Pittsfield, Springfield, and Worcester), and provide specialized services in exporting, government procurement, and minority business development. Community-based organizations supplement the SBDCs with additional and more specialized services within sub-regions. *SCORE* provides individual counseling to start-up and existing businesses through volunteer retired executives. Its nine active counselors in Franklin County assisted 50 clients in 2003.

Berkshire Enterprises offers two 13-week entrepreneurial training courses, one for dislocated workers and the second for other aspiring and existing entrepreneurs, in conjunction with Berkshire Community College. It also runs a small business incubator in Pittsfield and is rolling out a training and technical assistance program for construction firms this fall. With a recent USDA grant, it also now offers one-on-one technical assistance. Although these services are based in Pittsfield, northern Berkshire residents regularly attend classes and a staff member who lives in Williamstown provides individual attention to North County businesses.

Franklin County CDC offers the most extensive business development services in the Northern Tier. It provides business counseling through its staff and private consultants, sponsors numerous training workshops at multiple locations, holds monthly networking events, operates a small business incubator, and manages four small business loan funds. Through its Food Processing Center (FPC), the CDC rents storage and modern processing facilities to members and provides advice and training on how to start and operate a food processing firm. *Greater Gardner CDC* helps microenterprises in Gardner and five surrounding towns access financing and technical assistance by helping firms apply for loans through the Western Massachusetts Enterprise Fund (WMEF) and local banks, and making referrals to the SBDCs and private technical assistance providers. It offers training workshops on computer software and provides small grants for firms to purchase legal, accounting or other consulting services.

Young Entrepreneurs Society (YES) is an innovative program based in Orange that helps youth ages 13 to 21 become active and economically productive community members through entrepreneurship, job readiness, and financial life skills education. It offers two youth entrepreneurial programs at multiple locations in Franklin and northern Worcester County, provides a services to match youth with odd jobs, and recently opened a youth-run café and business center in downtown Orange.

The region's colleges focus on business education, with both formal degree programs along with short classes and workshops for existing firms and people interested in starting a business. Two schools are creating new centers on entrepreneurial development. *Mt. Wachusett Community College* plans to establish an Entrepreneurial Resource Center to address the educational components of entrepreneurial development. It will offer workshops on starting a small business, financial management, and writing a

business plan, hold regular business plan competitions, and will explore other ways to be a resource center for entrepreneurs. *Mass College of Liberal Arts* is working with several alumni to establish a new Center for Entrepreneurial Services that they expect to announce by early fall. The center will include: (1) academic credit courses for students working in business internships and research projects; (2) a summer residential study program for entrepreneurs; (3) expanded courses and services to support entrepreneurs in the region.

Two regional organizations also provide critical services. *Western Massachusetts Enterprise Fund (WMEF)* is a regional nonprofit business lender that supplies loans ranging from \$1,000 to \$100,000. It relies on local CDCs to market its program, to identify firms that need financing, and to provide them technical and loan packaging assistance to qualify for credit. It also works closely with private banks, often providing a junior loan in conjunction with the bank's senior debt. The *Regional Technology Corporation (RTC)* helps connect technology-based companies to key resources to support their success, primarily by serving as a broker and referral agent. It maintains a database of 2,000 members, largely technology professionals, to support these referrals and to provide a network that can respond to email queries from companies on specific needs or problems. RTC also publishes a newsletter, holds information and networking events, and supports three business networks for biotechnology, information technology, and communications firms. Finally, the region's four chambers of commerce play an important supporting role for business development services. Three chambers host SBDC counselors and all are an ongoing information and referral resource for both new and established firms. Chambers hold networking events that facilitate informal mentoring and business relationships and provide group purchasing to help lower business costs. Finally, they provide important promotion and visitor services for the tourism industry.

Service Strengths and Challenges

A comprehensive set of services exists for Northern Tier entrepreneurs with good collaboration among service providers. Firms in all three countries have access to individual counseling, formal business education, a range of short-term training options, and assistance to securing capital. More specialized technical assistance is available for food processing, exporting, and government contracting. Gap financing is available from the WMEF, the FCCDC, state programs, and some local governments. Their financing programs helped several entrepreneurs manage cash flow difficulties as their businesses grew, and helped another acquire a building to support its expansion plans. Moreover, there are well-established referral relationships and collaboration among services providers. Chambers, CDCs and city and state economic development staff regularly refer firms to SBDC counselors.

Berkshire Enterprises, CDCs, and chambers work with community colleges and the SBDC to co-sponsor training classes and workshops, often extending their geographic coverage. Services are particularly strong in helping individuals interested in starting a business and assisting new firms overcome problems and become established enterprises.

For example, two entrepreneurs without business backgrounds reported that training and individualized counseling was critical to developing their financial management skills and referrals to consultants that helped them establish good accounting systems. Most organizations report that approximately two-thirds of their clients are in the pre-start-up and start-up phase. Finally, small business development services are well utilized with no excess capacity in the system. Virtually all organizations report demand that exceeds available staff resources. SBDC counselors report two- to four-week waiting lists for appointments. Community nonprofits indicated the need for more capacity to conduct outreach and provide individual assistance to entrepreneurs.

Despite these strengths, some geographic and service gaps exist. Geographic gaps exist in the Athol/Orange and Northern Berkshire sub-regions:

- Without a CDC, both areas lack a local presence to identify and connect entrepreneurs to state and regional services. While Berkshire Enterprises and the Franklin County CDC partly address this need, they are not there on a daily basis to build awareness for their services and gain the trust of local entrepreneurs.
- The Athol/Orange area does not have office hours from a SBDC counselor.

Four gaps in specialized business development services emerged from interviews with entrepreneurs and business development practitioners:

- ***Specialized industry expertise is difficult and costly to secure.*** Most business counseling and training addresses general business issues and skills, but many firms have special needs and problems particular to their industry. The general business experience and knowledge of SBDC and CDC staff cannot address this need for industry expertise.
- ***Market development assistance is limited.*** While some general training and counseling are available to help firms market their goods and services, there are not specialized services to help firms identify and capitalize on new domestic markets (the SBDC does have a special unit to provide export assistance). Since market and sales growth is necessary to create jobs, this appears to be an important service gap.
- ***Services often emphasize pre-start-up and start-up firms and may be overlooking opportunities to help established firms grow.*** Some observers felt that services and outreach are not well targeted to existing businesses, but these firms are better job-growth targets since they have existing strengths, capacities and customers upon which to build.
- ***Staff capacity to provide regular and sustained assistance.*** More proactive and sustained advice or coaching can be very helpful to entrepreneurs that lack a strong business background or that are managing challenging growth or adjustment periods. Regular and sustained counseling supports good decision-making and guides entrepreneurs to the appropriate resources. SBDC and CDC staff occasionally provide this role, but it is costly and time consuming to provide. In the current environment where demand exceeds supply and business development staffs are over-extended, it is especially difficult for staff to take on this role.

Another need expressed by some small business lenders and technical assistance providers is appropriate capital sources for entrepreneurs. Despite strong regional small business loan programs that work closely with local banks to finance small businesses, some entrepreneurs need more patient capital than is currently available. Businesses in their early growth stages and experiencing rapid growth need long-term capital without regular debt payments to use as much cash flow as possible to fund their growth. Many of these firms do not meet the requirements of angel and venture capital equity investors but might benefit from a type of debt with deferred payments and additional return to investors from royalties or success fees.

Practitioners and some firms also mentioned that entrepreneurs' attitudes can be an obstacle to securing assistance. Owners are unlikely to seek assistance when their business is growing since they believe they are managing it well, even if they are missing opportunities or not applying best practices. Many small enterprises are also unwilling to pay for training or technical assistance and are skeptical about its true benefits.

During interviews, entrepreneurs and technical assistance practitioners were positive about new initiatives to address service gaps and expand business development assistance. A few firms and program staff believe existing services provide the resources and information needed by new entrepreneurs and existing firms. However, most supported and saw value in additional services, especially to connect firms to industry experts and mentors, and to support market expansion. Entrepreneurs typically had a de facto coach via an existing business development organization, private consultant, or mentor. Nonetheless, firms expressed a strong interest in ITA services, referrals to qualified industry experts and specialized consultants, and assistance with market development and sales growth. For example, one company is facing a complex new challenge of how to provide product performance guarantees to secure orders from some large firms. Another entrepreneur, who is seeking new growth opportunities after recent stagnant sales, would benefit from both ITA-based market research and more in-depth market development assistance. Front-line business counselors consistently saw value in these services and had clients that would use and benefit from them.

Best Practices and Models

Through a review of information on entrepreneurial development programs, several program models and practices were identified that have the potential to address gaps in and heighten the impact of existing services. This section summarizes several promising models.

Economic Gardening. Littleton, Colorado, initiated this model in 1987, which seeks to identify and foster local growth companies that are the most likely sources of new jobs. A core tool of economic gardening is using information technology assistance (ITA) to help firms evaluate their competition and customers, identify new market and sales opportunities, and resolve business problems. Economic development personnel subscribe to several priority databases and information services and use them to address information and research needs of local firms on a fast turnaround basis (usually a few

days to two weeks). ITA services are usually proactively marketed through individual visits to CEOs at high growth companies identified by referrals or research. Examples of ITA uses include providing supporting analysis for business plans and financing applications, identifying and mapping customers (and executive contacts) that meet a firm's criteria, detailing research on specific customers and competitors, and finding specialized suppliers or vendors.

Market Development. Several programs focus services on helping businesses expand their markets, as the most direct way to generate expanded sales and jobs. The Mott Foundation, for example, funded nine organizations to help small entrepreneurs expand their market access. These organizations provided diverse services that included: (1) training on product development, marketing, and overcoming personal barriers to success; (2) technical assistance to evaluate, improve, and develop products; (3) direct marketing assistance to access trade shows, create web-based sales venues, and serve as a sales representative; and (4) help to overcome regulatory, licensing, certification, or production barriers. Key lessons and best practices from these programs include: organize services around a common industry or customer group; use industry and product design experts to provide assistance; help firms to establish product lines (not single products); provide one-on-one assistance to help entrepreneurs develop/improve products and overcome supply side barriers; and commit resources to track industry and market trends.

Business Coaching. With this approach, sustained and regular guidance is provided to help entrepreneurs successfully start up a new enterprise or manage growth of an existing one. The coaching role provides support, feedback, and guidance to help entrepreneurs address management needs and issues that arise in their firm, partly by helping them access the right resources. SBDC counselors and CDC staff often serve this role, but with less regular contact and in a reactive mode, when a firm faces problems. A business coach takes a proactive role, meeting or speaking regularly with the entrepreneur and staying involved for an extended period of time. Since this service is costly, it would need to be targeted to firms with strong growth prospects.

Web-based Services. A number of organizations use the Internet to supply information, advice, and peer support to entrepreneurs. In western Massachusetts, the RTC is pioneering this approach through its member directory and email query service. The state MassMeansBusiness site is also applying this tool to firm site selection and financing searches. Minnesota Rural Partners operates a more comprehensive web technical assistance service, called BizPathways, established with a federal Technology Opportunities Grant. It allows entrepreneurs to establish a customized "pathway" for their businesses and link to information and technical assistance resources tailored to the specific business development step or issue. Other features include free expert email answers to questions ("Ask an Expert"), a list serve, an online bulletin board, and monthly email newsletters.

Enterprise Facilitation. This is a grassroots approach to entrepreneurial development developed by George Sirolli and supported by the Sirolli Institute. It uses a community board to oversee entrepreneurial development efforts, establishes a resource

network available to support entrepreneurs, and hires a full-time staff person to serve as a business coach and to link entrepreneurs to local programs and resources. An important element of the Sirolli approach is an evaluation of the entrepreneur's motivation and skills needed to succeed, and building his or her capacity to address management weaknesses. Although several aspects of the enterprise facilitation approach already exist in the Northern Tier, this approach provides a way to formalize entrepreneurial support systems, broaden community support for this work, and enhance skills and knowledge of business development staff.

Recommendations

Establish a Northern Tier Economic Gardening Program

A Northern Tier Economic Gardening Program would foster economic development by offering specialized value-added services to established entrepreneurs and firms with strong growth prospects, addressing geographic service gaps, and expanding outreach to build awareness of services and trusting relationships with targeted enterprises.

The following recommendations outline the four components of this proposed initiative:

- *New business development services* would be established on a regional basis throughout the Northern Tier. These services would include: (1) an **information technology service** to provide customized business research assistance based on the economic gardening ITA model; (2) a **database network of industry experts**, both within and outside the region, that can provide advice and consulting to firms in key Northern Tier industries. This database would be developed and managed by one organization, but accessible to all business development organizations and member firms via web access; and (3) **market development services** to assess and assist firms in identifying and reaching new markets with strong potential to generate sales and job growth. These services might begin with general aid in assessing market opportunities and developing the capacity to capitalize on them with industry-specific projects formulated later as needs and opportunities are better understood.
- *A regional matching grant pool* to help firms access specialized services or technical assistance to support promising growth opportunities. These funds might also subsidize fees for young firms to join an industry association.
- *An active business outreach programs* in each sub-region (particularly in the Athol/Orange area) would be established to market the new services (and existing ones) and to build stronger relationships with key growth firms. Training and financial support would be provided to establish a calling program led by the regional chamber of commerce and/or nonprofit business development

organization. The outreach program also will help compensate for the absence of CDCs serving northern Berkshire County and the Athol/Orange area.

- ***Program location and staffing.*** The new regional services would be housed and administered at an existing organization, perhaps a community college or Franklin County CDC, but overseen by a board that represents economic and business development organizations across the Northern Tier. Two new professionals would be hired, one specializing in IT research and the second in market development. These staff would have a regular presence in each sub-region and be available to meet at an entrepreneur's business to ensure that services are accessible.

An estimated annual budget to implement these recommendations is \$250,000, as follows:

- \$130,000 for new staff;
- \$20,000 for database and information service subscriptions;
- \$25,000 for the regional technical assistance pool;
- \$75,000 to help underwrite local business outreach programs.

One-time costs would include computers and printers for the new staff, initial database and web site development, and business outreach training. These items might add another \$25,000 to \$50,000 in one-time costs, but donated goods and services could offset these expenses.

Expand Northern Tier Youth Entrepreneurship Programs

Youth are a critical resource for the Northern Tier's future and an important source of entrepreneurial talent. However, there are few formal opportunities for them to gain the skills and knowledge to operate a business. YES is a successful model of a youth entrepreneurship program in the Northern Tier that provides a strong foundation for expanding opportunities for teens to gain these skills and to explore business ownership as a career opportunity. Community colleges and regional small business development programs should work closely with YES to develop a plan to expand youth entrepreneurship programs throughout the Northern Tier and to broaden awareness and marketing of the expanded services.

Develop New Financing Options for Entrepreneurs

Although a strong small business financing system exists in the Northern Tier, two additional initiatives should be pursued to expand the range of financial products available to growing entrepreneurs and to increase the local supply of flexible capital. These initiatives include:

- Create a new fund to channel regional investment capital to small businesses. This fund would provide a means for local residents, businesses, foundations, religious congregations, and others to invest in the local economy. These local investments would be pooled and loaned to small firms through a seasoned regional small business lender to supplement lending by private banks and financial institutions. Many examples of such community-based business loan funds exist across the county, including the Cascadia Revolving Fund in the Pacific Northwest and the Delaware Valley Community Reinvestment Fund.
- Develop a patient small business debt product that offers deferred debt repayment to growing small business with strong prospects to repay the financing in the future with some form of “equity kicker.” This product would provide an equity-like source of financing that could be repaid from company cash flow rather than through a company sale or public stock offering. The goal would be to offer a market- or near market-rate source of financing to firms capitalized by private financial institutions and investors. Some additional research and analysis may be needed to work out the details of a product that will match the needs of both firm and potential investors.

The Western Massachusetts Enterprise Fund is the appropriate organization to lead implementation of these recommendations since it provides related small business lending throughout the region and is already working on the second item.

HEALTHCARE SECTOR

Description of the Sector

The region's healthcare industry is both a major employer and an important contributor to the region's quality of life. The sheer size of the healthcare industry means it has to be taken into account in any workforce development strategy. It also offers a wide range of occupational opportunities from the very low- to the very high-skilled. And while this should theoretically provide many potential career ladders for workers, in practice it has been hard for low-skill workers to bridge the gap between low-paying and higher-paying occupations because of educational barriers.

There are approximately 8,000 healthcare jobs in the Northern Tier region. The industry is divided into three major segments: 1) hospitals, which includes general medical and surgical hospitals and psychiatric and substance abuse hospitals; 2) ambulatory care facilities, which includes medical and dental offices, community health centers, and home care services; and 3) nursing and residential care facilities, which includes nursing homes, residential mental health facilities, and community care facilities for the elderly. Ambulatory care has been the fastest growing segment of the industry.

In terms of occupational structure, there are three primary occupational groupings: health diagnosing and treating practitioners, healthcare technologists and technicians, and healthcare support occupations. The first and most highly skilled is health diagnosing and treating practitioners, which includes physicians, registered nurses, physicians' assistants, and highly-skilled allied health occupations such as radiation and respiratory therapists. All of these positions require a bachelor's degree or higher. Registered nurses are by far the largest single occupation in this category. The second category, health technologist and technicians, includes higher-skilled occupations that typically require an associate's degree. The third grouping, healthcare support occupations, incorporates many of the entry-level and lower-skill occupations involving housekeeping, food preparation, maintenance, and some direct patient care. Many of these occupations require only a high school degree or equivalent, while some require certificates or associate degrees.

The largest individual employers in the region are three hospitals, North Adams Regional Hospital, Heywood Hospital in Gardner, and Franklin Medical Center in Greenfield. Between them, these institutions have approximately 2,200 full-time and part-time employees. North Adams Regional Hospital and Franklin Medical Center are units of larger healthcare systems, North Adams-based Northern Berkshire Health Systems and Springfield-based Bay State Health Systems, respectively. The region's fourth hospital, Athol Memorial, is a much smaller facility. Other major regional healthcare employers include long-term residential care and rehabilitation facilities, and these can be found in communities throughout the region, including Athol, Gardner (three facilities), Greenfield (three facilities), North Adams, Shelburne, Sunderland, Turners

Falls, and Williamstown (two facilities). Other significant employers are two home healthcare providers, Gardner Visiting Nurse Association, and the Visiting Nurse Association and Hospice of Northern Berkshire in North Adams.

Trends in the Sector

The employment outlook is favorable for many occupations in the healthcare sector from the lower to the higher end of the skill spectrum. Healthcare employment in the state and region has continued to increase over the last few years, even as the economic downturn has led to job losses in other industry sectors. While the healthcare industry is largely recession-proof, other factors have led to the strong employment picture. Some analysts note that the retreat from strict models of managed care has increased demand for appointments, tests, and surgery, leading to some employment growth. The wave of hospital consolidations that occurred during the '90s has passed for the moment, and institutions that cut employment have begun to add new workers. Perhaps more important over the long-term is the continued aging of the population. This has both led to increased demand for healthcare services and accelerated the pace of retirements in the existing workforce.

The strongest growth has occurred in the ambulatory care segment of the industry, driven by a trend toward more preventive care, and shifts away from inpatient, institutionalized care to outpatient and home-based services. Hospitals and long-term care facilities are expecting to see slower growth. Declining Medicaid and Medicare reimbursement rates are placing particularly severe budgetary pressures on long-term care facilities, but also have hurt the region's hospitals, as has the growing shortfall in the state's uncompensated care pool.

Nationally, the federal Bureau of Labor Statistics estimates that employment in healthcare occupations will grow by almost 30 percent between 2000 and 2010, about twice the rate of growth for non-healthcare jobs. While growth in Massachusetts may be lower than in higher-growth states, it should still be considerable.

Much of the recent discussion about workforce shortages in healthcare has centered around nursing. This is by far the largest single largest occupation in the healthcare industry. The shortage of skilled nurses is particularly acute and is expected to worsen. The Joint Commission on Accreditation of Healthcare Organizations reported in 2002 that there were 126,000 unfilled nursing positions nationwide. Representatives of the region's three largest hospitals report moderate shortages of nursing staff, and particular difficulty finding more highly trained nurses, both those with bachelor's degrees and those with specialized skills, such as critical care. They also have difficulty filling positions for less desirable second or third shifts. In addition to skilled nurses, the region's hospitals also report shortages in skilled technical positions, including radiological technicians, surgical technicians, medical laboratory technicians, and respiratory therapists. While the scale of hiring needs for these positions is not high, the difficulty of filling the positions can result in staff shortages for several months or even years.

These shortages have driven up wages, caused employers to offer signing and referral bonuses (one hospital reports offering signing bonuses of \$2,500 dollars for registered nurses and up to \$15,000 for radiological technicians), and led to efforts to improve working conditions. It has also led to efforts to recruit non-traditional workers and to promote career ladders for lower-skilled workers. In spite of these efforts, hospital human resource policies have not traditionally been very supportive of advancement for lower-skill workers, and have been slow to change. Some of the career ladder programs funded with government and philanthropic funding have yet to produce significant numbers of promotions.

Lower-skilled positions such as nursing assistants and home health aides are not as difficult to fill as skilled nursing and technical positions, but tend to have higher turnover. While this creates opportunities for lower-skilled, entry-level workers, it also reflects the low pay, difficult work schedules, and high physical and emotional demands of this work.

Another area of shortage that may be particularly acute for rural regions such as the Northern Tier is emergency medical technicians (EMTs) and paramedics. The director of the healthcare education programs at Greenfield Community College reports that volunteer fire departments and ambulance services have had difficulty finding emergency personnel with the required or desired certifications.

Many of the fastest growing healthcare occupations are those in the low-to-moderate skill category. A recent study by the Bureau of Labor Statistics, which projects occupational job growth nationally between 2000 and 2010, included seven healthcare occupations among the top 10 in expected percentage growth. All are low- and moderate-skilled occupations. They include, in order of projected growth, medical assistants, home health aides, physical therapist aides, occupational therapist aides, veterinary assistants, dental assistants, and pharmacy technicians.

Despite these favorable trends for employment, the healthcare industry faces many uncertainties. Rising costs of technology, labor, pharmaceuticals, and malpractice insurance, along with reduced federal reimbursement rates, declining healthcare coverage, growing public health risks, and other factors, are all placing increased pressures on the healthcare system. These could have implications for industry employment trends in the future. The region's hospitals note, in particular, that declining reimbursements rates and other financial pressures have forced them to pare their workforces to a minimum and eliminate reserve staffing. This can result in near-term shortages and increased pressures on remaining staff when resignations occur.

An emerging concern in the industry both nationally and regionally is the aging of the skilled healthcare workforce. The Joint Commission on Accreditation of Healthcare Organizations predicts a shortage of 500,000 registered nurses by 2020, and the U.S. Health Resources Administration projects that the shortage could be as high as 800,000. Representatives of the three major hospitals in the Northern Tier noted that the average age of their nursing and skilled allied health workforce is increasing, and that a large cohort of workers will reach retirement age in the next 5-15 years. They are concerned

that there will not be enough appropriately credentialed workers graduating from the region's higher education institutions to replace retiring workers.

Key Organizations/Programs/Resources

The region has a number of programs, as well as partnerships, that provide education and training in healthcare occupations. Many of these programs and partnerships receive funding and support from the region's Workforce Investment Boards (WIBs): The Berkshire Regional Employment Board, the Franklin/Hampshire Regional Employment Board, and the North Central Regional Employment Board. The WIBs do not provide training directly, but they often provide leadership, program recommendations, and funding from state and federal sources. Some of the state-initiated career ladders programs, for example, are often administered through the regional WIBs.

Post-Secondary Education

Most of the post-secondary education and training programs in healthcare occupations are offered by the region's two community colleges and three voc-tech schools. These include several nursing programs and a limited number of medical specialty programs.

- **Registered nursing.** Both Mt. Wachusett Community College (MWCC) and Greenfield Community College (GCC) offer associate degree programs for registered nursing (RN). MWCC also offers joint admissions programs with Framingham State, Worcester State, and UMass Lowell to enable nursing students to continue their nursing studies and obtain a bachelor of science in nursing. MWCC also offers an LPN-RN bridge program. MCLA also has healthcare-related programs.
- **Licensed practical nursing.** Both MWCC and GCC offer certificate programs for licensed practical nursing (LPN). Montachusett Regional Voc-Tech School in Fitchburg, which serves the Gardner and Athol areas, also offers an LPN program.
- **Certified nursing assistant.** Charles H. McCann Voc-Tech School in North Adams, and Franklin County Technical School in Turners Falls offer CNA programs. Some of the larger nursing homes also offer CNA training.
- **Medical technology.** Massachusetts College of Liberal Arts in North Adams offers a bachelor of science in biology with a medical technology concentration in affiliation with Berkshire Medical Center in Pittsfield. This includes specializations in cytotechnology and general medical technology.
- **Allied health specialties.** MWCC offers an associate degree program for physical therapy assistants, and a certificate in Phlebotomy. McCann and Montachusett voc-techs both offer surgical technician certificates. GCC offers certificate programs for emergency medical technicians and paramedics.
- **Medical and dental assistants.** McCann and Montachusett voc-techs both offer certificate programs for medical and dental assistants. Also, MWCC offers an associate degree program in medical assistance.
- **Medical office.** MWCC offers a certificate program for medical office assistants.

- ***Alternative healthcare.*** MWCC and GCC offer certificates in massage therapy and MWCC offers an associate degree in complementary healthcare.

These program offerings are somewhat limited relative to more urban regions of the state. Post-secondary schools in nearby communities, such as Springfield and Worcester, offer a much wider range of programs. Northern Tier residents who want to obtain higher-level education (e.g., bachelors or masters degrees in nursing) or certain technical specialty degrees (e.g., respiratory therapy, occupational therapy, pharmacy technology, radiology, medical imaging) must attend schools outside the region.

Educational Partnerships

In recognition of the limited resources and programs at any one institution, higher education institutions in the region are increasingly entering into partnerships with other institutions, both inside and outside the region, and with employers. Among some of these partnerships are the following:

Inter-institutional Partnerships

- Through the Western Massachusetts Community College Consortium, four community colleges, Greenfield, Berkshire, Holyoke, and Springfield Technical, jointly market their healthcare education programs through a joint website that includes program listings, career information, and job search links.
- McCann Voc-Tech has entered into an articulation agreement with Berkshire Community College to offer associate degrees combining general education credits at BCC and technical credits for surgical technology, dental assisting, and medical assisting at McCann. It is negotiating a similar agreement with Greenfield Community College.
- GCC and Holyoke Community College have an enrollment agreement for HCC's pharmacy tech and radiological tech programs, whereby GCC provides general education courses and HCC provides the technical courses. Enrollment agreements are less ironclad than articulation agreements because transfers are not guaranteed, and are only on a space-available basis.
- GCC and Berkshire Community College have an enrollment agreement for BCC's physical therapy assistant program.
- MWCC has an enrollment agreement with Holyoke Community College for its pharmacy tech program and with MassBay Community College for its radiological tech program.
- GCC shares a tech prep coordinator with Holyoke Community College.

Education/employer Partnerships

- GCC, Franklin Medical Center, and three extended care facilities received a state Nursing Career Ladders Initiative (NuCLI) grant to provide support services for incumbent workers in nursing programs or pre-nursing programs. Assistance is also available to non-employee students. The program offers encouragement and support, and professional tutoring and remediation on clinical skills. It has served

almost 40 students in its first phase and is now entering a second phase. The program does not cover tuition expenses.

- Heywood Hospital collaborates with Mt. Wachusett Community College and LaChance Nursing Home on the Pathway Program. The program trains incumbent workers in nursing and radiological technology. WCC provides the educational programming and case management while the employers pay part of the tuition expenses and provide space for clinical rotations. The program is also subsidized by NuCLI funding. MWCC partners with Mass Bay Community College for the radiological technology program because it does not have its own program in this field. Eighty-five workers enrolled in the program initially, and 67 have completed it or remain enrolled. While the program is considered very successful by both the college and the employers, it is expected to terminate when the federal grant period is completed because Heywood Hospital is unable to continue funding it.
- Mt. Wachusett Community College works with 14 regional employers to support incumbent workers who wish to further their education in the nursing field. The program is funded by a grant from the federal Health Resources and Services Administration. Over 100 students have taken courses through the program, which is in its first of three years. In general terms, the partnership that MWCC has with employers is very strong, very effective, and quite comprehensive. In some ways it provides the region with a model of public-private sector collaboration (a full description of the partnership activities that the College engages in is beyond the scope of this report, but is available from the College).

Career Literacy

As noted earlier, major healthcare employers are concerned about the supply of new skilled healthcare workers to replace retiring workers. Employers and post-secondary institutions have made some efforts to partner with the region's K-12 schools in promoting career literacy in the healthcare field. However, these efforts have been informal and limited in school.

- Heywood Hospital works with the school-to-work coordinator in the Greater Gardner School District to place high school students into unpaid internships.
- MWCC healthcare educators give talks to high school students on healthcare careers as part of tech prep initiatives.
- The Mass. College of Liberal Arts recently received a grant to work with the North Adams schools to provide teachers with a year of education in science and the teaching of science.
- Franklin Medical Center partners with the Greenfield Public Schools to organize field trips to the hospital to expose students to healthcare careers.
- North Adams Hospital staff have gone to a few of the surrounding high schools to make presentations about healthcare careers.

Strengths/Gaps in Resources

The region's greatest strength in its healthcare education infrastructure is the quality of its existing higher education programs. The programs provided by its two major higher education institutions, GCC and MWCC, are highly regarded by employers. Nonetheless, the region faces a number of barriers to meeting the workforce needs of healthcare employers and providing healthcare employment opportunities for residents.

There is limited capacity in nursing programs. The most serious immediate problem is the limited capacity of the region's nursing programs. MWCC reports recently sending out 300 letters of rejection to nursing program applicants for the fall term. GCC, where nursing students are admitted on a rolling admissions basis, reports at least 250 students waiting for slots to open in its nursing program. There are three critical barriers to expanding capacity in nursing programs. The first barrier is a shortage of qualified teachers. Nursing instructors must have a master's degree and nurses with this level of education are in very high demand as practitioners. With practicing nurses at this education level earning two or three times what a teacher earns, it is very difficult to attract these individuals to teaching positions. The second barrier is a shortage of appropriate laboratory facilities at the institutions. Additional lab space would have to be built in order to increase program capacity. And the third barrier is the insufficient availability of clinical rotation sites at healthcare institutions, which cannot support additional nursing staff to supervise clinical trainees. Addressing these barriers will require both additional collaboration among employers and educational institutions, and additional funding.

There is limited program capacity for technical specialty occupations. Another gap in resources is the limited number of programs within the region in technical specialty occupations such as radiology and respiratory therapy, and the lack of higher-level nursing programs. The level of demand for these programs within the region is not likely sufficient to justify the development of new certification or degree programs in these areas.

There is a lack of a support system for residents. In terms of helping more lower-income and lower-skilled individuals to pursue skilled, well-paying position in healthcare, a stronger support structure for these individual is lacking. Both educators and employers note a number of barriers that hinder lower-skilled individuals from entering the healthcare field or moving from a lower-paying to a higher-paying position. These include the difficulty of raising tuition and fees for educational programs, lack of access to quality childcare and transportation, the need for more basic educational and life skills training, and the need for emotional support structures.

Human Resource practices have not kept pace with more progressive trends. Another issue is employer human resource practices. Even the employers interviewed for this project acknowledged the need to review and revise their human resource practices to better accommodate employee career development. This includes providing shorter and more flexible work schedules, enabling employees to keep their health insurance while

enrolled in educational programs, and more generous and flexible tuition subsidy programs,

Partnerships are productive, but limited. While educational institutions and employers have engaged in a number of partnerships, educators and employers alike acknowledge the need for more widespread and creative partnering arrangements. This would include more articulation agreements among educational institutions, more joint distance learning programs, sharing of facilities such as lab space, and utilizing more practitioners in clinical and teaching functions. Among educational institutions, more attention needs to be paid to structural barriers to collaboration.

There are research gaps and deficiencies. Another difficulty for higher education institutions is the lack of sound projections of future occupational demand on which to base educational programming. This had led in some cases to the development of programs that were not in demand among employers. Educators and employers need to work collaboratively to better align educational capacity with future workforce needs.

There are weaknesses in career literacy programs. In terms of long-term workforce development, a final issue is the weak involvement of employers and higher educational institutions in career literacy efforts aimed at increasing the pipeline of qualified workers in the future. As noted earlier, the efforts in this regard are limited and uncoordinated.

Best Practices and Models

The Northeast Ohio Health Care Employment Network

The Network is a comprehensive employer-led initiative recently established to address healthcare industry workforce needs in a three-county region of northeast Ohio. The initial impetus for the initiative came from the Mahoning and Columbiana Training Association, the workforce investment board serving two of the three counties. Recognizing the importance of the healthcare industry to the region and critical staffing shortages in nursing and other health occupations, the WIB director took the lead in organizing a Regional Healthcare Workforce Summit. With funding and in-kind support from major employers, higher education institutions, economic development organizations, and local governments, a steering committee was established with over 40 representatives of industry, workforce investment boards, career centers, economic development organizations, local government agencies, higher education institutions, other training providers, organized labor, and community-based organizations.

In preparation for the Summit, a study of healthcare industry employment and related workforce development resources was completed. The study helped to identify critical issues to be addressed at the Summit. The Summit, held in October 2002, was attended by about 250 participants, including employers, educational institutions, other workforce service providers, and government. About one-third were employers. The Summit agenda included presentations by regional industry leaders and healthcare

workforce experts, and a set of breakout session at which participants discussed a range of critical industry workforce issues.

Based on issues identified in the research and at the Summit, the Summit organizers completed a Workforce Development Action Plan in early 2003. The plan is composed of four major strategic initiatives, each with a set of goals, objectives, and action steps. The four strategic initiatives are: 1) enhancing image and communication to increase recruitment of new workers; 2) addressing skill development and career advancement; 3) supporting worker retention; and 4) strengthening collaboration among key stakeholders.

The healthcare Network has responsibility for implementing the Action Plan. The Network is governed by a 15-member Employee Advisory Council and staffed by a paid coordinator. During the first half of 2003, it formed action teams to work on two of the strategic initiatives, career pathways, and collaboration. It recently piloted a program involving career development in medical office occupations.

Oregon Health Care Sector Employment Initiative

In 2001, the Oregon Workforce Investment Board undertook the *Oregon Health Care Sector Employment Initiative* to alleviate skills and staffing shortages in the healthcare sector. The sector was selected because it had the potential for high job growth, and it faced high turnover, and an aging workforce. The goal was to identify the demands of the industry that were not being met and to develop strategies to assure an adequate supply of appropriately skilled workers and jobseekers in targeted occupations facing critical worker shortages.

A *steering committee* made up of key stakeholders was established to direct the initiative and to review the work of three “strategy teams” that identified issues and proposed strategies in their respective areas of focus. A *workplace issues team*, composed of employers, healthcare organizations, labor organizations, and representatives of regulatory boards, addressed workplace conditions and regulatory issues that pose barriers to healthcare employment. An *employment strategy team* composed of WIBS, workforce development providers, state agencies, labor economists, CBOs, employers, and labor representatives, addressed recruitment, retention, and advancement issues. And an *occupational training and education team*, composed of representatives of K-12 systems, higher education institutions, private career schools, and state training programs, addressed issues around educating and training healthcare workers, including capacity, delivery methods, and recruitment.

The process of developing and implementing the strategy involved five steps: 1) conducting research and analysis; 2) convening stakeholder teams to identify issues, barriers, opportunities, and best practices; 3) drafting a strategic action plan; 4) holding a summit to get public comment and build support; and 5) implementation—developing curriculum, designing programs, building resource plans, etc.

Action recommendations included: 1) increasing capacity in the educational system to meet training needs; 2) increasing accessibility to training by expanding

delivery methods, e.g., through distance learning and simulation centers for clinical training; 3) maximizing student mobility through articulation agreements, common curriculum, and clear and enhanced career pathways for students and incumbent workers; and 4) maintaining quality with stable investment in programs and student assistance.

Higher Education Consortium of Central California

The Higher Education Consortium of Central California (HECCC) was established in 1981 as a distance-learning consortium of a state university and four community colleges to cooperatively provide educational services for a widely dispersed student population. The new HECCC partnership led to the creation of a Regional Learning Network, which began to broadcast interactive upper division courses from one of the member colleges. Although the focus of this program was not specifically targeted to healthcare, it is a good example of a collaboration among higher educational institutions.

The success of the Regional Learning Network allowed HECCC the opportunity to expand beyond distance learning in pursuit of other collaborative efforts, including articulation agreements, curriculum issues, joint degree programs, staff/faculty development, and student recruitment/retention. The 1980s also saw the creation of one of the first baccalaureate programs to be formed as the result of a joint effort between two-year and four-year institutions of higher learning.

In the 1990s HECCC expanded its focus to address issues such as pre-collegiate skills, library technology, electronic transcript transmittal, and marketing. Due to the large shared student transfer population and the common goal to serve the local educational needs, California State University Stanislaus and Modesto Junior College initiated a Dual Admissions Program in 1998. The agreement, inclusive of all HECCC members, provided for HECCC community colleges and CSU Stanislaus to admit entering college freshmen to both institutions simultaneously.

HECCC membership expanded in 1998 when a second state university, the newly formed University of California at Merced, officially joined the partnership. In 1999, CSU Stanislaus, UC Merced, and Merced College joined together to form a progressive inter-segmental collaboration, the Merced Tri-College Center. In 2000, the members moved to increase their resource allocations to the Consortium, appointed a full-time executive director, and began strategic planning to intensify and maximize the expansion.

The California Health Careers Resource Consortium

The California Health Careers Resource Consortium is a statewide resource center that provides health careers educational opportunities for all students in the state, through a variety of methods such as individualized technical assistance, professional development programs, career path marketing materials, and summer Educator Internship Institutes. Since 1992, the Consortium has created a number of K-12 career health careers path models that build upon health careers standards as well as academic standards, and span all educational segments from K-adult.

Recommended Strategies

The availability of an adequate supply of appropriately skilled workers is critical to the health of this industry.

Develop an Industry Cluster Approach to Healthcare Training

A highly organized industry cluster approach may be the most appropriate response to the significant workforce needs of this industry. A comprehensive regional initiative would be designed to build on existing activities, increase their scope and scale, utilize existing resources more effectively and efficiently, tap additional resources, and more fully engage employers.

Based on initiatives in other regions, and the needs and issues already identified in the Northern Tier, a regional initiative might include the following components:

- ***Improve recruitment of healthcare workers:*** Undertake regional outreach and recruitment activities; target non-traditional workers (gender, race, ethnicity, age); conduct career awareness and development activities for K-12 students; develop skills assessment tools; develop and disseminate occupational demand information; expand contextual adult basic education, occupational training and work readiness programs, and provide support services.
- ***Increase educational capacity:*** Expand and improve facilities, (classrooms, distance learning, clinical sites), address faculty shortages, develop partnerships among learning providers and between providers and employers; expand and simplify articulation agreements; develop new funding mechanisms.
- ***Facilitate career development efforts:*** Make training more accessible and flexible; structure educational programs to support mobility and career pathways; provide support services.
- ***Enhance retention and work environment:*** Increase employer-supported professional development opportunities; improve work environment; restructure internal human resource policies and practices to build career ladders.
- ***Advocate for more supportive public policies:*** Improvements in labor market data; increased support for school-to-career initiatives; reforms in state higher education policies; increased flexibility in state training programs.
- ***Underwrite educational expenses for lower-income residents:*** Secure funding to provide additional financial aid for lower-income residents seeking education in the healthcare field (e.g., establishment of a **Tuition Fund** by the region's community foundations).

The initiative should build on recent and ongoing regional efforts, including a number of enrollment and articulation agreements developed by local higher education institutions with other institutions in the region. Successful models elsewhere in New England and throughout the U.S. can also inform the initiative. In Boston, healthcare

institutions and partner organizations have established a number of career ladders programs. And, in Shelton, Connecticut, Griffin Hospital is known as an international model for advanced human resource practices.

Partners in this initiative should include the region's three workforce investment boards, its three major hospitals, employers representing the extended care and ambulatory care segments in the industry, all of the region's voc-tech and post secondary institutions, and unions representing healthcare workers. In addition, community-based organizations should be engaged to expand the pipeline of non-traditional workers. They can play a particularly important role in recruitment for educational programs and in providing supportive services to participants.

The region's workforce investment boards could start this process by initiating discussions with healthcare employers, training providers, and other key stakeholders about the need for and potential shape of this type of initiative. If sufficient interest were expressed, it could establish a working group to oversee the implementation process.

Once leadership is engaged, the effort should focus on broadening the stakeholder group and identifying key issues. This can be accomplished through holding a regional summit with a specific agenda. The outcome of the summit should be a set of issues for further convening of a broader set of stakeholders and commitment of stakeholders to participate in a more formal working group to oversee the initiative.

Establish a Western Massachusetts Healthcare Education Consortium

As noted above, Greenfield, Berkshire, Holyoke, and Springfield Technical community colleges have already joined together to form the Western Massachusetts Community College Consortium, which jointly markets the schools' healthcare education programs through a shared website (MCLA could also be included as a partner). This is a positive first step that can potentially be built upon through the establishment of additional joint programs, the involvement labor, and other educational institutions. Among the activities that could be considered include:

- the development of more articulation agreements and joint degree programs;
- joint faculty development and initiatives to address faculty shortages;
- development of a formal distance learning collaborative to expand and improve the quality of distance learning programs;
- development of a more formalized career literacy program that is directed at high school students—it should include an informational website, CDs, videos, publications, speakers' programs, job shadowing, internships, and scholarship programs;
- research on regional trends in healthcare employment and coordination of plans for capacity adjustments.

Other institutions should be invited to participate, including MCLA, Mt. Wachusett Community College, baccalaureate degree granting institutions with

healthcare education programs, including UMASS Amherst, Springfield College, and American International College, and regional voc-tech schools.

The participating institutions should draw from best practices outside the region and national expertise in developing the consortium. One potential source of assistance is the Association of Consortium Leadership (ACL). ACL is a national association that provides a forum for higher education professionals involved in cooperative programs and guidance in creating and strengthening partnerships. It serves as a reference center for advice and information about all aspects of inter-institution cooperation involving higher education institutions. It offers a number of publications and provides consulting services to groups seeking expertise in starting or evaluating cooperative programs.

MANUFACTURING SECTOR

This memorandum summarizes the key characteristics of manufacturing industry in the Northern Tier and suggests strategies for supporting and sustaining manufacturing firms and the workforce in the region. In this, the memo also reviews the services and public sector programs operating in the Northern Tier designed to support manufacturing and the education and training needs of the workforce. Also, the memo refers to some model programs around the country that have addressed one or more of the conditions presented in the Northern Tier.

Description of Sector

Like much of the rest of the nation, manufacturing and manufacturing employment in the Northern Tier has experienced significant change, much of it reflecting the difficulties of a mature, relatively high cost industrial region. Although large manufacturing companies still operate in the region (e.g., Starrett, Erving Paper, Nichols and Stone, and Excelsior Printing), many of the older and larger firms are gone. These larger firms—in paper, electronics, machinery and metals, furniture and wood products—either moved to other locations or closed after many years in the region. In Greenfield, Gardner, and in North Adams, the list of departed manufacturing firms is marked by the empty mill and factory complexes, some of which now find reuse in commercial and cultural activities, and as sites for small- and medium-sized manufacturing firms.

In spite of this, the manufacturing sector remains a key part of the regional economy; about 8,000 people worked in the region's manufacturing firms in 2001 (accurate figures are very difficult to obtain because parts of the Northern Tier falls within three different labor markets, and manufacturing employment in smaller communities is often suppressed for confidentiality reasons). In the Northern Tier, manufacturing employment, as a percentage of total employment, is significantly larger than for the state as a whole. In Franklin County, manufacturing jobs contributed roughly 36 percent of the total payroll in the county. In the Northern Tier as a whole manufacturing contributes approximately 25 percent of the total wages. Clearly, the sector is a significant component of the Northern Tier economy.

The make-up of the manufacturing base in the Northern Tier is comprised principally of food manufacturers, wood products and furniture manufacturers, paper manufacturers, plastics companies, fabricated metalworking firms, and computer and electronic manufacturing firms. The principal occupations in these manufacturing firms include: machinists, electronic assemblers, printing machine operators, molders, machine tool cutting setters, computer programmers, maintenance technicians, and welders. The wages in these occupations range generally from \$8.00 an hour to \$17.000 an hour,

depending on the level of skills of the worker and the type of manufacturing plant in which the worker is employed.

The manufacturing base in the region is comprised principally of smaller firms of well below 100 employees, and firms that are locally-owned. As noted above, there are still several somewhat large firms in the region (Yankee Candle, Starrett, Excelsior Printing, etc.). In Franklin County, 70 percent of the manufacturing firms are headquartered (i.e., locally-owned) within the county. The small size of firms and the preponderance of local ownership are important characteristics for this region. While most of the traditional firms—such as tool manufacturing and paper making—are diminished or gone from the region, the surviving firms that grew around them have found other markets and customers for their products and services. The diversity of these manufacturing firms in the region now accounts for some of the stability (and even slight recent growth) in the stable percentage of manufacturing employment over the last 19 years.

The markets served the by the region’s manufacturing companies are generally regional and national in scope and not global.² Based on interviews and focus groups with manufacturing firms, few reported international sales and most stated that their companies were part of a niche market. For example, a cable tie manufacturer in Gardner reported strong growth in a regional northeast market but also stated that while its costs were competitive with overseas commodity producers, it would be difficult to compete in a broader market arena. The company’s strength was in its ability to serve a regional market with a high quality, low cost product.

Other manufacturers echoed these observations. One manufacturer of wood products for the furniture industry reported that smaller, local companies in the furniture business could only stay in business by moving to niche markets and smaller batch productions of high quality goods. This company and others in the consumer furniture business could not compete with either overseas or lower cost domestic manufacturing. Yet these companies and others who commented for this research remain committed to maintaining operations in this region.

Niche markets have benefited local companies in the Northern Tier in several ways; the ability to produce in a niche means:

- a relatively reliable marketplace;
- good market intelligence;
- lower costs of reaching a target group of customers;
- less reliance on marketing to new customers;
- less cost-competition from a large number of competitors.

² Exceptions to this concentration on local markets certainly exist in some of the specialized metalworking and electronic related firms in the region. Some of the firms in the region have a global market; however, these are not a large number.

In addition companies that produce for a niche market—whether that market is furniture or high frequency electronics—tend to know and are known by their customers.

Targeting a niche market and serving a known customer base does not mean the manufacturing companies in the Northern Tier are not competitive in either technology or in organization. Almost all the firms in our focus groups, from paper converters to electronics suppliers, report implementing strategies to remain price and product competitive. They invest in new technologies, implement organizational practices such as lean manufacturing, and make every attempt to remain in a competitive position within their markets. An important characteristic of operating within a niche market is that it makes possible strategic use of technology and organization to conform to known parameters in a known market. And these manufacturers are part of a global marketplace for information and technology. Much of their information on technology comes from national and international industrial shows ranging in location from Chicago to Cologne and Hamburg. Nearly all locally-owned companies of moderate to larger size are reliant on a sophisticated Internet and communications connection with customers and suppliers. Their market intelligence, when required, comes from nationally marketed data suppliers and from customers who provide input on product and on innovation.

Finally, a very salient characteristic of manufacturing in the Northern Tier is the knowledge of and identification that owners and managers of local companies have with their communities. Even the handful of relatively new companies are very much members of their civic and economic communities. They know the other companies in their immediate areas because they are members of the communities, active in the social networks, and interested in the health of the cities and towns. This is also a source of business intelligence and support; information on ways to improve or save on costs of doing business is regularly exchanged through these connections. The importance and potential opportunities of these community-based business networks in the regional economic infrastructure should not be underestimated; communication among these companies occurs regularly on business and community issues. Occasionally, interaction and communication are formally organized, as is a small group of manufacturers meeting somewhat regularly in the Gardner area. More often now, however, this inter-firm communication is informal despite the fact that all of the companies in focus groups and in interviews stated this communication was essential.

To summarize, the manufacturing economy in the Northern Tier exhibits the following key features:

- significant regional employment and economic impact;
- relative stability in overall employment;
- small- to medium-sized, locally-owned firms of less than 100 workers;
- access to regional and national niche markets;
- strong investment in competitive technology, market intelligence, and organization;
- significant and strong inter-firm communication within communities.

Key Organizations, Programs, and Resources

The workforce and economic and workforce development infrastructure in the Northern Tier is well integrated in the region. Examples of these resources include: the planning and economic development staff of the Franklin Regional Council of Regional Governments; town community and economic development offices in Greenfield, Shelburne Falls, Athol, Adams, Turners Falls, and Gardner; business and planning services of the Small Business Development Centers; the Family Business Center at UMASS; the Franklin, North Berkshire, and Greater Gardner Chambers of Commerce; the business development services, financing, and incubator support of the Franklin County Community Development Corporation; WIB one-stop centers. In addition, the region's eastern edge sustains a unique facility (through Mt. Wachusett Community College) in the Applied Manufacturing Center at Ft. Devens industrial park. Finally, the state-level programs have some presence in the area (Mass Office of Business Development and the Massachusetts Manufacturing Extension Program) and are often accessed through other more local organizations. None of the manufacturing companies in the focus groups or interviews reported obtaining services through the Manufacturing Extension Program. The following provides an overview of these services.

Community Colleges

The Northern Tier contains rich educational resources across the region. No part of the Northern Tier is isolated from a post-secondary institution ranging from Williams College, the Massachusetts College of Liberal Arts, Berkshire Community College, Greenfield Community College, and Mt. Wachusett Community College on the east. Moreover, the University of Massachusetts and the Five College Consortium support this educational mix in a variety of ways ranging from industry support services to research and baccalaureate education in engineering and technologies.

It is the community colleges in the region, however, that are playing a significant role in offering resources for manufacturing and education for the workforce; the University of Massachusetts and the other four-year colleges in lower Franklin and Hampshire counties have an indirect and limited impact on firms in the Northern Tier. The community colleges offer the most direct and sustained impact on manufacturing in the region.

Each community college in the region has offered or now offers programs targeted to manufacturing firms and the manufacturing workforce. Each of these has a slightly different flavor and somewhat differentiated programmatic emphasis. These are:

- **Greenfield College** offered the Metalworking Education and Training program that successfully offered technical courses for entry-level as well as incumbent workers; unfortunately, marketing and usage of this program has declined to the point where it exists in name only.
- **Mt. Wachusett Community College** has established and staffed the Devens Applied Manufacturing Center that contains training classrooms, computer labs, and a newly established lab space with training equipment. The Center just began operations at

Devens and is somewhat focused on the area to the east of the Northern Tier, but the center is offering a range of services to manufacturing firms and can also support entrepreneurial start-up firms. In conjunction with the College and contract service providers, the Center is offering courses in materials sciences, hydraulics, machine maintenance (mainly plastics), and supervisors. Programs include certifications in purchasing (APICS), lean manufacturing, and management. The College maintains a basic education facility next to the Center and, in combination with the Center's technical training, can offer a broad range of courses. While equipment is still being installed in the lab spaces, local companies and the College are supplying new and nearly new manufacturing equipment that will be used in training for the plastics, processing, and paper industries.

- ***Berkshire Community College***, which is establishing an office in North Adams, supports the Berkshire Applied Technology Council. The BATC is an industry led group (currently a 501(c)3) that organizes training programs for the incumbent workforce, as well as advocates for school-based programs to support science, technology, and math education. The BATC has been successful in obtaining a number of larger grants to carry out its programs, and the Berkshire Community College has made a substantial commitment to its support.

Under the leadership of its board of business representatives, the BATC has been active in developing a long-term focus on developing and maintaining a skilled technical workforce in the county. Its major effort (and funding) has involved a U.S. DOL grant in Applied Engineering and Information Technology Training program. This program focused on incumbent workers in the plastics and paper industry and gave participants opportunities to gain certification in applied engineering and credit toward an associate's degree. Interestingly, the Council is now pursuing programs that promise long-term impact by reaching into secondary and elementary schools to encourage math and science education, and programs targeting women interested in technical careers. These latter programs are good examples of how industry led organizations will often propose programs that have longer term promise.

- ***All the community colleges*** through their offices of continuing education, life-long learning, or business and industry services offer incumbent worker training programs and have participated actively in the Commonwealth's Workforce Training Fund to provide training to area companies or consortia of manufacturing companies.

Most importantly, nearly all the manufacturing companies we spoke with had relatively high opinions of the services offered by their local community colleges. Partly, this represented manufacturer's regional identification and civic pride—they identify with the local college. Partly this represents the fact that (aside from vocational high schools) the community college is the only educational resource nearby. But it mainly reflects the experience that when the manufacturers needed services for their companies they were able to turn to the community college and receive a satisfactory response.

Workforce Investment Boards and Public Training Resources

Workforce Investment Act programs, one-stop centers (Berkshire, North Central, and Franklin/Hampshire SDAs) and the employment services associated with them are well used by employers in the region primarily as a source of new hires (either directly or through the temporary programs). The WIA offices have been able to secure federal grants to carry out training programs for disadvantaged, dislocated, and some incumbent workers. These require extensive planning and long lead times that are not necessarily how smaller companies organize their training needs.

The Berkshire County Regional Employment Board, the North Central Regional Employment Board, and the Franklin/Hampshire Regional Employment Board serve the Northern Tier and perform the functions of administering one-stop employment services, administering training grants, and, importantly, coordinating workforce development with economic development. The latter has become a particularly important function of many WIBs as they work to build resources and strategies for economic growth.

These employment boards also are involved with the Commonwealth's Workforce Training Fund through technical assistance in grant-writing, advocacy, and assisting with implementation. In Franklin/Hampshire alone the REB has overseen nearly \$2 million in funding to companies (not totally in manufacturing) that has involved 3,600 employees. These grants cover training topics of standards certification (ISO, QSR), team building, general manufacturing skills, and very specific advanced skill programs for new equipment or processes. Although the WTF has supplied considerable funding to Northern Tier companies, the program operation has earned the disfavor of many the companies and local agencies and maintains a reputation for arbitrary decisions, bureaucratic delays, and burdensome procedures.

Utilities

The Western Mass. Electric Company has been very active in helping manufacturers in its service area. The principal service is a program called Process Review to Increase Manufacturing Efficiency, or PRIME. PRIME has been in existence for three years, and its goal is to reduce manufacturing costs and enhance production efficiencies. The primary target of the Program is manufacturers who are WMECO customers. The Program is provided at no cost to interested companies. This year, staff from the PRIME Program are working with 26 manufacturers throughout the WMECO service area.

The Program is designed in such a way to help companies:

- lower costs through reduced electrical consumption;
- improve manufacturing production efficiency;
- improve profitability;
- reduce environmental waste by-products; and
- enhance workforce development and retention.

The Program has had a profound impact on several companies: one mattress manufacturer increased its production threefold after working with PRIME staff; a metalworking company that was on the verge of closing was able to turn its operation completely around; another Western Massachusetts firm that was scheduled to be closed and merged with a plant in the Midwest remained open because of increased efficiencies, and the Midwest plant was closed instead and moved to Western Massachusetts; and, yet another company reduced its landfill waste stream by 80 percent.

Local/Regional Planning and Economic Development Services and Programs

- The Franklin County Community Development Corporation has been intensively involved with small manufacturers since its inception. It developed a nationally-recognized metalworking network of companies that existed throughout the 1980s. Currently, the CDC houses several small manufacturing firms, it offers a broad range of management and technical assistance to companies, as well as financing, and it recently opened a commercial kitchen facility that allows specialty food producers and area farmers the opportunity to process their food products.
- The towns of Greenfield, Adams, Athol, Montague, and Gardner all have community and/or economic development staff that work closely with local manufacturers on a number of important issues including industrial park development, zoning and permitting, financing, networking, and workforce. The towns also prepare strategic economic development plans that often have manufacturing retention as one of the core goals. These community development offices are critical to the long-term viability of the region's industrial base.
- The Planning Office of the Franklin Regional Council of Governments produced a very comprehensive report in 2003 entitled, *An Inventory and Analysis of Industrial Park Properties in Franklin County*. The report catalogues all industrial land in the county, provides a detailed description of the county's six industrial parks, identifies land that could potentially be developed for industrial purpose, and then identifies barriers and opportunities for further industrial development. The Planning Office and the COG staff also oversee the county's Comprehensive Economic Development Study (CEDS), which has a major emphasis on manufacturing retention and expansion.
- The region's four chambers of commerce, the North Berkshire, North Quabbin, Franklin County, and Greater Gardner chambers, have all had significant involvement in supporting the region's manufacturing base. Each of the chambers plays a lead role in industrial recruitment and marketing, advocates for the industrial base in state and federal legislative matters, and serves a formal and informal networking function that allows small firms the chance to identify business needs and opportunities.

Challenges

Nearly every person, from the private or public sector, who commented for this research reported that the region posed significant challenges for successfully and competitively operating a manufacturing company in the Northern Tier. Similar comments can be heard whenever and wherever manufacturing companies are asked to comment on challenges they face; in the Northern Tier, however, the number of company owners and managers who mentioned the challenges takes it to a higher level of significance. The following points briefly address the major challenges raised in discussion and focus groups. These are echoed in other regional studies and economic planning documents.

- ***Lack of quality new or reusable industrial space:*** Many individuals stated that some of the recent growth of companies in the region was due to the availability of low-cost quality industrial space in industrial parks and “Brownfield” sites. Yet, they also noted that these sites were filling or nearly filled and that finding good quality space was becoming difficult. Too few good industrial sites exist in the region. Several communities are developing new and expanded industrial parks and are in the process of developing reuse plans for older industrial sites. Manufacturers now see limitations to their growth because of lack of space; some are forced to use multiple, somewhat inconvenient, sites for manufacturing and warehousing because no good large sites are available.
- ***High costs of doing business:*** Healthcare and utility costs are major concerns among manufacturing companies. Some firms reported purchasing electrical power from Canada but still paying heavy utility costs compared to other locations. Many firms reported using electric and gas company energy audits and implementing energy saving programs; these help but do not solve the high energy costs conditions in the Northeast. Healthcare, particularly in the smaller companies, represents a growing (crushing) burden for employers. Increasingly, employers pass cost increases and a portion of the healthcare costs onto the employees. They note however that this has the effect of causing some workers to leave and causing employers to hire less qualified workers.
- ***Transportation costs and reliability:*** The cost of transportation and the reliability of access into and out of the region are two concerns of manufacturers. On the north-south axis a limited number of firms are served well by Route 91; however, this roadway does relatively little to support companies that fall along the east-west length of the Northern Tier. The latter firms depend on access to Route 2 and this road is increasingly a challenge. Everyone applauds the construction work begun in Erving but notes that the rest of the corridor is often congested with commuter traffic east of Erving. Manufacturers in Central Franklin County are concerned that some of the bridges have deteriorated and re-construction, traffic re-routing, or closure will cause havoc in their businesses.

Transportation limitations increase per unit costs and detract from any advantages gained through productivity or technology improvements. These costs are another

concern of manufacturers around transportation. One larger, commodity producer in Gardner reported that the company had an annual payroll of \$7 million and paid \$1.2 million in transportation costs. These high costs force company management to spend a considerable amount of time on finding the lowest possible carriers; they also felt it made reaching distant markets uncompetitive.

- ***Low level of skills, education, and qualification in the regional labor force:*** Employers express a mixture of sympathy and resignation with the manufacturing workforce. The sympathy comes from concern over the perception of the declining numbers of skilled jobs in traditional industries and their replacement by lower-skilled, lower-paying positions. The resignation comes from the perception that entry-level workers do not have the skills required to function in competitive environments. They note that employers now draw a semi-skilled manufacturing workforce from a relatively low-wage population whose living situations are sometimes fragile. This contributes to high turnover and lack of skill building. Several employers report they have turned to strategies of investing in new technologies that do not require highly-skilled workers because they believe that the workforce does not contain the required skills or the aptitudes. One employer noted that when a local tool making company began hiring skilled workers after years of downsizing the company could not find workers with a similar skill set.

A surprising number of employers, a clear majority in the focus groups, reported relying on regional temporary agencies for “temp to hire” employees. This strategy reduces upfront commitments to employees and reduces the total costs of hiring employees. The temporary agencies recruit, screen, test, and hire workers for all but the most skilled production positions in many companies. After a period of time, which can last up to a few months, the employee is either hired or terminated. Often, the temporary agencies work closely with WIA programs and WIA one-stop offices to recruit unemployed workers and support recipients.

Population statistics for the region tend to support some of the employers’ concerns about the workforce. The region has a lower educational attainment level than the state as a whole, a higher high-school dropout rate, fewer young people, and a higher rate of poverty in the region than for the rest of the state. These characteristics (and others presented in different reports for the Northern Tier research) present a picture of a population in a relatively fragile economic position and a relatively low reservoir of skills in the population.

Manufacturers characterize the labor supply as one of chronic skill shortages in which new more highly-skilled workers and workers with appropriate work habits are not in sufficient supply. Neither the high schools nor vocational schools are supplying workers with enough skills to adequately fill employer needs. At the same time, no single employer or group of employers could generate large numbers of new hires. Growth is occurring relatively slowly in manufacturing companies and hiring occurs in relatively small numbers in any community or in any single occupation. The low numbers make it difficult for school systems to support the costs of technical programs that may require equipment.

- ***No overall coordination of services:*** In spite of there being a number of service and resources devoted to manufacturing in the region, it appears that these organizations

operate within a silo environment in which there is considerable vertical expertise and effectiveness but less horizontal coordination and integration of resources. Planning for land use and industrial parks, for example, takes place outside of coordination with educational or workforce development services (the Devens site is the outstanding exception to this). Coordination always requires additional staff time and efforts, which are in short supply in thinly funded economic development offices. However, the integration of support services and planning for manufacturing firm growth may prove beneficial to firms.

Best Practices and Models

There are many examples of industry alliances from which to learn. Around the country, regional or industry-specific alliances are forming to develop an agenda for manufacturing support and to then mobilize and coordinate resources. These alliances are often independent organizations led by an industry group.

- In the southwest Pennsylvania region, **New Century Careers** (NCC) is an example of a region-wide manufacturing training and skills development program, one that is focused on small- and medium-sized manufacturers. The program uses a network of vocational schools and community colleges to provide entry-level and incumbent worker training. A manufacturing council oversees the development of NCC's training programs—it informs NCC staff and training providers in the demand for workers and training, and it helps recruit workers for participation in the training programs. The Program also makes productive use of a database of area residents, which allows staff to tailor all marketing and promotional materials in a very effective fashion—in fact, the marketing strategies of this program have received national attention and recognition. More than 1,500 workers have been trained in the NCC program to date.
- In Milwaukee, Wisconsin, the **Wisconsin Regional Training Partnership** is a successful alliance of industry, labor, community colleges, and community organizations whose goal is workforce development and sustainable economic communities. The WRTP is one of the oldest and most successful industry networks in the country, and has gained significant national attention for the quality and effectiveness of its training programs. Manufacturers in the greater Milwaukee area are heavily involved in the design of all training programs.
- The **Manufacturing Technology Center**, in Wytheville, Virginia, is a collaboration of five community colleges in the southwestern Virginia region. The community colleges are Mountain Empire, New River, Southwest Virginia, Virginia Highlands, and Wytheville. The Center was created to help nurture and strengthen the region's base of small manufacturing firms. The colleges believed that only a collaborative approach would be able to address the needs and challenges of small companies. The center provides a number of services:
 - Mobile Learning Unit for on-site training and technology assistance;
 - Lean Manufacturing training;
 - CAD/CAM instruction;

- Product/Process Development;
 - Plant Layout and Design assistance;
 - Industrial Health and Safety instruction; and
 - Technical Assistance in Environmental Compliance.
- In Maryland, the culinary industry has joined with the Anne Arundel Community College to create a **Culinary Institute** within the college that integrates technical assistance to companies, entry-level training programs, degree programs, occupational certifications, and incumbent worker training into one set of services. The industry has defined the programs and services they need. Now, the college plans to organize other programs for industry in a similar manner.

Recommendations

Develop a Consortium of the Region's Community Colleges and Technical Schools to Serve as a Focal Point for Manufacturing Training

Each of the community colleges could learn from one another; and it seems that the Applied Technology Council that is affiliated with the Berkshire Community College offers some very interesting approaches to working with local industries. Given the composition of manufacturing in the region (it is relatively homogeneous in size and scale across the region), the community colleges and the manufacturing firms and workers they serve could benefit from a higher level of regional coordination and sharing for curriculum, classes, equipment, and resource development.

The community colleges in the Northern Tier, perhaps in conjunction with MCLA, could be nodal points for organizing and strengthening networks of manufacturing support. They could offer:

- consistent and reliable manufacturing education across the region;
- coordinated content for portable credentials in manufacturing programs;
- manufacturing business support (technical assistance); and
- entrepreneurship and management education.

As part of this effort, we strongly recommend that the Regional Employment Boards be involved, because they have played an important role in workforce issues related to manufacturing, and will to continue to do so in the future, and that the Planning Office of the FRCOG be involved as well because of its knowledge of and investment in manufacturing in the region. We further recommend that the Northern Berkshire Community Coalition, the Franklin Community Action Corporation, and the North Quabbin Community Coalition be engaged to some degree because these community-based organizations are advocates for many of the people that a manufacturing training

program would be targeting, and these organizations could be valuable sources of support in marketing and recruitment for a training program.

Organize a More Coordinated Effort to Ensure that the Northern Tier Can Take Full Advantage of the State's Manufacturing and Technology-related Resources

The region should organize itself to take advantage of the resources that the state offers around manufacturing retention and expansion. In other words, rather than pursue these resources piecemeal, or on a town-by-town basis, the region should present more of a united front and work cooperatively together. The Commonwealth's Regional Competitiveness Council has proposed a number of initiatives for economic development that, when implemented, could help develop a higher degree of coordination and services within regional economic development offices. (See, for example, the reports of the Berkshire Regional Competitiveness Council of April 30, 2004.) A Northern Tier coordinated approach to these initiatives should start now in order to secure as much of the potential resources as possible. These initiatives include: Emerging Technology Fund, John Adams Innovation Institute, and Technology Transfer Center proposed for the University of Massachusetts, and a refocused Workforce Training Fund.

Capitalize on the Region's Manufacturing Capabilities and the Current Interest in Alternative and Renewable Energy and Products

The Northern Tier's history of manufacturing innovation, use of natural products in paper and wood, and now an interest in sustaining both environmental quality and the economy, suggest potential development of an alternative materials and alternative energy initiative. In fact, both in North Adams and in the Applied Manufacturing Center in Fort Devens, interest exists for the exploration of these areas in the search for alternative energy supplies and for the development of products from alternative materials. Linking the research capabilities of area colleges and the university with the entrepreneurial programs in the region may form an excellent seedbed for the development of this important area. Some of the firms in the region are already producing products in the alternative energy field. We believe this forms a subtle, yet potentially very productive, development area.

Also, there could be a significant opportunity to build on the idea of Eco-Industrial Development. An **Eco-Industrial Development** effort promotes sustainability by bringing manufacturers together into an industrial ecosystem and central location that aspires to both environmental quality and economic growth. An example of this kind of undertaking is the Fairfield Ecological Business Park in South Baltimore. It is a 1,300-

acre site with 60 large and small businesses centered around joint pollution prevention, waste reduction strategies, and R&D for materials substitution and replacement.

Build on and Enhance the Existing Manufacturing Networks in the Northern Tier, and Consider a More Formal Leadership Structure

First, many manufacturing company managers and owners in the region report that a major source of information about technology, business conditions, and a source of assistance in times of need are the other manufacturers in the immediate area. For some, the interaction is more formalized in meetings of up to several manufacturing companies who share common concerns. A group of companies in Gardner associated with furniture and wood products meets somewhat regularly to assess business and to support one another. Mostly, however, the interaction between manufacturers is less structured and may take place in a variety of venues. In Turners Falls, a handful of major employers meet on a variety of crosscutting issues. They have helped one another with short-term problems and unexpected calamities. The company owners and managers in the towns of the Northern Tier know one another, know generally about each other's companies, and they are often friends.

These informal networks of companies arise primarily because of geographic and social proximity of the participants and they arise more or less spontaneously. The networks are rooted in the social organization of their communities. Significantly, they form independently of any economic development or publicly-sponsored support programs that have as a goal to help companies work together or to join networks. As we interviewed manufacturers across the Northern Tier we were struck by the extent of the informal network connections between firms. They were built upon longevity of the companies in the community, upon the community participation of the owners and managers, and through the close-knit nature of communities in the Northern Tier. These are small companies in small communities; their communication networks and mutual support efforts run very deep.

We believe these networks are very important and can be strengthened by creative application of resources, and by encouraging the leadership within these groups. These can be vehicles for distributing information, for encouraging programmatic collaboration, and for providing resources that the companies need to sustain and grow their operations. These can become learning networks in which companies can become better at marketing, technology applications, and possibly group services.

Support for these networks can be channeled through existing organizations in the communities or through the community colleges. The goal is not to create new structures that compete with what exists, however. The goal is to strengthen the organic networks, identify the help they need, and help them find ways to access the assistance and resources.

In the longer-term, leadership from Northern Tier industry is a critical element in linking the public and private sectors. The informal networks described above will be excellent vehicles for promoting learning between and among firms. However, in crafting an agenda and in helping agencies respond to industry needs, the industry must develop effective leadership and a platform to craft an agenda. In interviews with manufacturers, despite their goodwill toward the public sector programs, manufacturers still lacked a clear agenda of what they needed and seemed to adopt a somewhat benign passivity toward voicing needs or development initiatives.

The experience of the Applied Technology Council in the Berkshires, and similar programs of industry alliances around the country, suggests that more formally organized industry leadership can make a significant difference in development. The Berkshire Applied Technology Council, an industry group that was initiated in 1998, has sustained the active involvement of companies since then and has carried out several programs of training with area schools to develop the entry-level and incumbent workforce skills in manufacturing. The Council develops an agenda based on industry perception of short- and long-term needs and then mobilizes resources to address the agenda.

We believe the Applied Technology Council formation and development process could have relevance for the whole Northern Tier. Over the long-term, we would envision formation of an organization of industry leaders—perhaps forming a *Northern Tier Manufacturing Council*—that would grow from the informal networks of manufacturers in their communities. This will take some time but will yield a natural leadership core of interested and committed industry representatives. We would suggest convening an informal council, with facilitation, to develop this idea and a timetable for working with local companies, identifying leadership, and developing the foundation discussions for a regional manufacturing council. The process, if similar to other efforts around the country, could take up to two years to arrive at a core leadership group, vision, and charter.

RENEWABLE ENERGY SECTOR

Sector Description

The Renewable Energy Sector encompasses those companies and organizations involved in recovering, for productive use, the energy content of resources that are not depleted over time. Resources typically defined as renewable include:

- solar energy;
- wind energy;
- naturally flowing water (hydropower);
- biomass energy from landfill gas, forest, and agricultural byproducts;
- ground-based geo-thermal energy.

These resources provide alternative energy sources to non-renewable energy supplies such as oil, natural gas, coal, and other fossil fuels. Renewable energy is considered by many to be a cornerstone of a sustainable society—that is, a society that has a healthy economy and environment over many generations.

Renewable energy companies and organizations within the region include:

- ***Education and training institutions*** such as Williams College, Massachusetts College of Liberal Arts (MCLA), Greenfield Community College, Mount Wachusett Community College (MWCC), and the University of Massachusetts, Amherst.
- ***Nonprofit public education and advocacy organizations*** such as the Center for Ecological Technology with offices in Pittsfield and Northampton and a strong presence in North Berkshire County, the Cooperative Development Institute in Greenfield, Co-op Plus of Western Massachusetts in Northampton, the Northeast Sustainable Energy Association in Greenfield, the Berkshire Renewable Energy Collaborative, and the Biomass Energy Resource Center in Brattleboro, Vermont. In many instances the organizations in this category are finding it necessary to create or function like project developers or retail service providers in order to achieve their objectives in the renewable energy sector.
- ***For-profit*** companies including:
 - ***Commercial Developers/Facility Owners and Operators*** — companies in this category include EnXco, the company developing the 30 MW Hoosac Wind Farm in the towns of Florida and Monroe; US Gen-New England, the owner of several hydro dams on the Deerfield River; and Tractebel Power, the Belgium-based international energy company that owns the biomass fueled 17 MW Pinetree Power Station in Westminster. None of these companies are located in the region. However, they all have projects or activity in the region.
 - ***Equipment Manufacturers*** — there are no equipment manufacturers currently located in the Northern Tier, although there is a company in Princeton, Biomass

Combustion Systems, that designs and constructs wood energy systems. The Energy Source website lists 50 renewable energy manufacturing companies in Massachusetts, including several PV module manufacturers and a manufacturer of wind energy measurement and data logging equipment.

- *Consulting, engineering, permitting, and public relations service providers* — companies in this category include Hill Engineering, located in Dalton, which is providing engineering and permitting services for the Hoosac Wind project; Margo Jones Architects, Inc. in Greenfield; Treefrog Landscapes in Shelbourne Falls; and Turtle Island Design in Montague.
- *Retail product and service providers* — such as Berkshire Photovoltaic Services (BPVS) in North Adams and Pioneer Valley Photovoltaics Cooperative in Greenfield, as well as Western Massachusetts Electric Company.
- **Government Entities** such as Williamstown, the town of North Adams, the Gill-Montague School System, the town of Princeton, and the city of Fitchburg, all of whom are engaged in alternative or renewable energy activities and projects.

Industry Trends

Renewable energy is cited by a wide range of sources as being the fastest growing source of new electricity generation in the world. The wind and solar industries are experiencing double-digit growth rates annually and significant technology advancements and investments are being made in the use of biomass. The Department of Energy (DOE) and its National Renewable Energy Laboratory are making significant investments to increase the use of renewable energy.

The renewable energy industry has the solid support of federal agencies, with many providing significant funding opportunities for research and development activities as well as to those interested in using renewable resources as an alternative energy source. The Department of Energy has stated its commitment to the development of renewable sources of energy, and the National Renewable Energy Laboratory leads DOE's efforts to secure an energy future for the nation that is environmentally and economically sustainable. Other federal agencies actively promoting and supporting the development of renewables are the Department of Agriculture and the U.S. Forest Service, among others.

States throughout New England are actively pursuing development of renewable energy projects. For example, the Vermont Department of Public Services has indicated that it is in Vermont's best interest to increase the amount of electricity obtained from renewable resources. Similarly, the state of Connecticut, like Massachusetts, has a systems benefit charge and has been an active investor for several years in renewable energy projects in Connecticut and throughout New England. In fact, Connecticut Innovations, the state's lead agency for renewable development, is an investor in the Hoosac wind project in Florida and Monroe.

The presence of wind, biomass, and hydro resources in the Northern Tier has and will continue to drive activities to develop commercial and demonstration renewable

energy projects throughout the region. Other than those found offshore, the north Berkshires has the most significant wind resources in the Commonwealth. The hydraulic features of the Deerfield, Connecticut, and Blackstone rivers have a long history of being harnessed for power generation. And, with a significant percentage of the state's forest resources located in the Northern Tier, there is a strong interest in biomass energy.

Solar Energy

Solar energy is the most popular form of renewable energy. It is also one of the most expensive. The solar photovoltaics (PV) industry has experienced dramatic growth in recent years with annual sales currently near \$5 billion and projected to increase to \$30.8 billion by 2013. Much of this growth has been supported by government policies and funding in countries such as Germany and Japan, U.S. states like California, as well as remote applications where it is not possible to connect into a centralized electric system. Massachusetts has provided close to \$15 million to support the installation of PV systems and to promote the growth of PV manufacturing companies in the Commonwealth. In 2001, there were 164 solar installations in Massachusetts. Today, that number has expanded to more than 350 systems with more scheduled for installation over the next two years.

One of the earliest uses of photovoltaics in the region is the Gardner Photovoltaics Demonstration Project. This cluster of residential and institutional PV systems was installed in 1985. The goal of the project was to test the effectiveness of PV systems in residences as a supplemental source of power. Of the 30 original residential installations, 27 are still operating. PV systems are also still up and running at the Levi Heywood Memorial Library, a Burger King restaurant, Mt. Wachusett Community College, and Gardner City Hall.

Chris Kilfoyle, BPVS president, feels that while the return on a PV investment is still relatively long, the population willing to make this investment is growing substantially, as a larger percentage of the general public develops a better understanding of the correlation between PV installation, sustainability, and environmental stewardship. He feels industry growth within the region will be directly related to the publicity and public awareness that is generated, and the extent to which the labor force is trained in the metrics of energy. While the need is greatest for electricians, there is a need across all of the building trades. He cites the work of the Center for Environmental Studies at Williams and the recent efforts of MCLA to establish an environmental program with a renewable focus as good examples of needed training programs (MCLA will also be an educational site for photovoltaic panels, and is exploring the possibility of developing a weather station).

Wind

Wind turbines use the velocity of the wind to generate electricity. Wind turbines can be built to serve the individual energy needs of a home or farm, a municipal wastewater treatment facility, or for the sale of generated electricity into the power grid. The American Wind Energy Association (AWEA) estimates that the cost of wind-

generated electricity has dropped more than 80 percent since the early 1980s. A modern, state-of-the-art, utility scale wind turbine can generate electricity for 4 cents per kilowatt-hour, which is nearly competitive with fossil fuels. AWEA and other organizations supporting the development of wind resources have documented the economic benefits wind farms have provided to communities, including the provision of steady income through lease or royalty payments to landowners. Additional income is generated from one-time payments to engineering and permitting firms and construction contractors during installation, and from payments to maintenance personnel on a long-term basis. Wind farms also expand the local tax base.

Based on information available from the state of Minnesota, which ranks fourth in the nation in installed wind capacity, approximately 1.4 construction jobs are created for every megawatt of wind capacity that is installed and .28 jobs per megawatt are supported annually for the operation and maintenance of the turbines.

The state of Vermont has estimated that 63 percent of the jobs created during the development phase of wind projects are business service jobs, with 8 percent being wholesale and retail trade, 7 percent eating/drinking and lodging, 5 percent within the finance, insurance, and real estate industry, and 17 percent being spread amongst other industries. The state's estimates for the construction phase are 38 percent construction, 26 percent wholesale and retail trade, 10 percent business services, and 26 percent other industries.

Analysis done by state and national organizations indicates that wind is an economically and technically viable resource for power generation in the hills of western Massachusetts, both along the coastal areas of the state and off the shore. There is also a significant amount of wind development activity occurring along the Vermont mountain ridges, to the north of this region. In fact, the only commercial scale wind farm in operation in New England is located about an hour north of North Adams in Searsburg, Vermont.

Some of the highest speed winds along the corridor have been recorded in the towns of Florida and Monroe, along the mountain ridges proposed to be developed by EnXco as part of a 30 MW wind farm. Wind speeds are also favorable for development in the eastern part of the corridor in Ashburnham, Gardner, and Fitchburg. In fact, the town of Princeton has had a wind farm since 1984. It is also worth noting that the second largest wind turbine in the Commonwealth is located just south of the Northern Tier region, on Mount Tom in Holyoke. This 250 kW turbine is owned by the University of Massachusetts and used by the University's Renewable Energy Research Laboratory for research and educational purposes.

While the largest single expense incurred during the development of a wind farm is for the turbines, which are manufactured outside of the Commonwealth, many of the professional services required for development and much of the site-related work and electrical and mechanical equipment can be purchased locally. In addition, much of the labor needed to construct access roads, prepare the sites, install the turbines, and connect to the transmission system can be local. During operations, staff include specially trained

electricians and mechanics. Materials required during operations, with the exception of replacement blades, can largely be purchased locally.

Biomass

Biomass offers the benefit of providing a dependable, year round source of energy. In many cases, projects offer large thermal energy users a cost-effective alternative to fossil fuels, making this type of renewable resource historically attractive to energy intensive industrial facilities such as paper mills. Because wood byproducts have greater value today than they did 20 years ago, economically most of today's projects need to put the thermal energy to productive use as well as generating electricity, typically by utilizing combined heat and power technology.

Biomass projects, which historically have used combustion technologies, have struggled with the issue of air emissions. In addition, some have raised concerns about the impact of increased use of wood byproducts could have on the forestry industry. To overcome these challenges, the technology is moving toward low emission gasification systems and production of a bio oil product. In response to the forest practices concerns, biomass experts strongly contend that use of wood byproducts for energy production actually promotes good forest management practices.

Forestry services and wood products have historically been an important industry sector for the Northern Tier region and there are significant amounts of accessible biomass resources in the region. Forest production is concentrated in the western part of the state in Worcester, Franklin, Hampshire, Hampden, and Berkshire counties. Of the 40 active sawmills in Massachusetts, 15 are located in the Northern Tier. The Massachusetts Department of Conservation and Recreation lists 195 harvesters in the three Northern Tier counties. The Massachusetts Biomass Energy Working Group estimates that there are approximately 2.48 million tons of biomass generated in the state annually, and that the forests of Massachusetts could provide another 1.93 million tons per year, beyond what is currently being harvested, on a sustainable basis. An added benefit of the Northern Tier region is that Route 2 provides good access to these resources as well as serving as a transportation corridor for distributing this renewable resource to potential users.

Two operating biomass energy generation facilities are located in the region, at Mount Wachusett Community College and the Pinetree Power Plant in Westminster. One demonstration project is currently in the planning and permitting phase and will be located at Heyes Forest Products in Orange. The demonstration project uses a foreign technology and could become a model for U.S. commercialization. Additional projects are also in the early developmental phase, including one involving an existing manufacturer located in the Erving area.

Joe Smith, Director, Mount Wachusett Community College, Forest and Wood Products Institute anticipates the biomass industry will experience rapid advancements in technology over the next 5 to 10 years, which will spur industry growth and mainstream acceptance of biomass as a renewable resource. He views the Northern Tier as the "wood

basket” of the Commonwealth and feels that biomass energy is a fundamental component of future sustainable forestry management practices. While most of the equipment needed for today’s biomass combustion systems is readily available, there is a need for more research and development work on the air emission control systems, particularly for the larger systems subject to the more stringent state air regulations. This type of research must be done in conjunction with operating systems and presents opportunities for MWCC and the region to serve as a national testing facility.

Hydro

Hydropower represents 7 to 12 percent of the nation’s electricity and, according to the Idaho National Engineering and Environmental Laboratory, is the largest renewable energy source in the United States. Hydropower provides a relatively low-cost renewable source of electricity that can be developed on a small to vast scale. Historically, large hydroelectric facilities have been used to meet demands for peaking power and to minimize overall power production costs.

Although hydropower does not discharge pollutants into the environment, it is not free from adverse environmental effects. Efforts to reduce environmental problems associated with hydropower operations, such as providing safe fish passage and improved water quality, have received considerable attention in the past decade. Yet, there are many unanswered questions about how best to maintain the economic viability of hydropower while also protecting fish and environmental resources. Many agencies and utilities across the country are actively pursuing research and development programs to improve the environmental performance of hydroelectric facilities. Permitting of hydroelectric projects is also very complex and can take many years.

Hydroelectric potential is very site specific, requiring specific volumes of water and vertical drop in the stream bed. Dams harnessing the energy content of flowing water have been built along the rivers in the Northern Tier for many years. Historically, these dams contributed to the economic vitality of the region, powering the mills that were a fundamental part of the region’s industrial base. Many of these dams are no longer used to generate power; some have been removed. Some of the remaining dams have the potential to be rebuilt. As the market for renewable energy increases, the economic feasibility of renovating these dams improves.

The largest hydroelectric complex in the region is the Bear Swamp Project. US Gen-New England owns another five operating hydroelectric facilities on the Deerfield River. Limited information is available about the existing dams in the region and their potential for development. While the location of existing dams may not have changed, the condition and feasibility for being re-powered likely has changed.

While it is difficult to identify the magnitude of potential for hydropower development in the region, a sense of the opportunity can be obtained from a literature review. The U.S. Hydropower Resource Assessment for Massachusetts, published in July 1995 by the Idaho National Engineering Laboratory, identified 22 dams in Franklin County as having undeveloped potential. Its assessment found that one dam was

developed with current power generation, but total hydropower potential had not been fully developed; 16 had some type of developed impoundment or diversion structure but no developed hydropower generating capacity; and five were undeveloped.

An example of the development potential of such locations is the Pepperell Hydro Company that is rehabilitating an existing hydroelectric power plant at the former Pepperell Paper Mill on the Nashua River in East Pepperell, Massachusetts. The facility has been operating one turbine set rated at 0.6 megawatts (MW). The company is currently rehabilitating two additional turbine/generator sets to expand facility output by 1.3MW, plus upgrading control systems and safety equipment.

Key Organizations, Agencies, Programs, and Resources

There is a wide range of businesses and organizations that have played key roles in developing the Northern Tier renewable energy sector. Some of these are true pioneers and have been working in this industry for many years. Others are relative newcomers or have recently changed or expanded their role in this industry.

Educational Institutions

Williams College. The Center for Environmental Studies at Williams College provides students with the opportunity to learn how environmental issues are interconnected with many traditional fields of study. Core courses include: Humans in the Landscape, Ecology, Environmental Planning and Analysis, and The Environment, the Individual and Society. Center faculty are always looking for ways to link student projects and courses to living applications in the community and region. The wealth of natural resources in the region has contributed to the amount of student and faculty attention given to this sector. Student projects have ranged from investigating the feasibility of retrofitting historic hydro dams in the North Berkshire area to surveying community resident attitudes about the potential development of a wind farm. Efforts have also included a proposal for development of a commercial scale wind farm on college-owned land. Faculty from the Center have been involved in renewable activities for many years, through independent research projects, class projects, and participation in a wide range of local, regional, state level and national forums, committees, and advisory groups.

Mount Wachusett Community College, Wetmore Center for Innovation and Technology, Forest and Wood Products Institute. The Institute was founded in 1996 to assist private industry in the creation, maintenance, expansion, and marketing of forest and wood products and to conduct education and training programs for the primary and secondary wood products industry and the general public. The mission of the Institute is to improve the utilization of the renewable forest resource of Massachusetts. The Institute is actively involved in improving markets for locally-grown and produced forest products and finding new ways to improve the health of the Commonwealth's forests, preserve open space, and enhance local economies. The Institute assisted in the formation of a wood products cooperative and has taken a leadership role in promoting

biomass energy. The Institute has recently completed a one-year pilot program investigating the feasibility of developing a biomass-based curriculum and establishing MWCC as a national biomass training facility for foresters, facility operation and maintenance staff, and energy service providers. This could lead to a two-year curriculum offered through the natural resources program at the college. As this program develops, MWCC may look to partner with one or more four-year educational institution.

MWCC recently was awarded a \$950,000 grant from the U.S. department of Energy to install a newer version of the modular cogeneration unit that will be incorporated as a combined heat and power (CHP) installation in the College's new child care facility.

Through a turnkey arrangement with an energy service provider, MWCC began using a \$4.3 million biomass power plant in November 2002. Congressman Olver secured \$1 million from the Department of Energy towards the capital cost of this project. This biomass hydronic facility uses wood chips for fuel in a gasification process and replaced the college's costly electric heating system. The plant consists of a fuel feed system, an 8 million BTU boiler, an emission control system, and a computerized energy management system. This system provides power to the entire campus. In addition to saving the college money on heating costs, 100 percent of every dollar spent on biomass fuel remains in the local economy. With the installation of this and other projects, MWCC's Forest and Wood Products Institute is becoming an important center for demonstration and promotion of alternative energy sources.

The *Center for Energy Efficiency and Renewable Energy* and its *Renewable Energy Research Laboratory (RERL)* are located at the University of Massachusetts in Amherst. RERL can, and in a number of instances already does, have a role in helping:

- projects get developed in the region;
- build the skills needed to develop educational and training programs; and
- advocate for investment by state and federal as well as private entities within the Northern Tier.

RERL promotes education and research in renewable energy technologies and is funded primarily by the Massachusetts Renewable Energy Trust, the Massachusetts Division of Energy Resources, and the National Renewable Energy Laboratory. It is used extensively by these organizations to support research and outreach activities in New England. RERL is one of the primary technical assistance providers used by the Massachusetts Division of Energy Resources and Renewable Energy Trust. While RERL's current efforts focus chiefly on wind energy, it has the technical expertise to address all renewable technologies. Many of the professionals in Massachusetts and New England in the renewable sector began their careers in work-study programs with RERL.

Complementing these activities, the *Massachusetts College of Liberal Arts (MCLA)* has an Environmental Studies program that consists of courses (e.g., Forest Environments, Ecology, Energy and the Environment), field-based research, and training experiences for students. It is the only four-year college in the region that offers a BA in Environmental Studies. The College also has established a work-study program with a

local renewable energy company, and it partners with Stamford Elementary School on weather and wind energy internship programs for students. Most recently, *Greenfield Community College* piloted a Sustainable Energy Course. GCC ultimately would like to use this course as a foundation for establishing one or more training and certification programs for specific renewable energy/sustainability job sectors.

Utilities

Western Massachusetts Electric Company (WMECO) is a major supporter of several of the educational and training initiatives in the region. WMECO recently provided a grant to Greenfield Community College to develop its pilot sustainable energy class. Another grant was given to Rural Development, Incorporated to work with Franklin County Technical High School to develop a renewable energy technical training program for electrical and plumbing students. WMECO and its partners are also exploring opportunities to enhance the development of the PV market in Massachusetts, including the potential for recruiting a manufacturer to the region and improving the training opportunities available to electricians and builders in the region.

WMECO's economic development staff view renewable energy as a growth industry within the company's service territory, citing bio diesel and PV as having the greatest potential for growth. They feel this potential is enhanced by the mindset of their customers and the communities within their service territory. They cite the Discovery Center in Turner Falls and the Energy Park in Greenfield as examples of how communities in their territory have embraced sustainability and the importance of increasing the use of renewable energy. As the demand for renewable energy increases there will be a corresponding increase in need for trained technical skills. As a result, they view their recent investments with area educational institutions as an economic development investment, as each is helping to develop critical resources needed to realize and sustain anticipated growth within the renewable energy sector.

Nonprofit Education and Advocacy Organizations

Surveys such as the statewide public opinion research survey conducted by Opinion Dynamics for Massachusetts Technology Collaborative (MTC), a local government survey conducted by the Massachusetts Municipal Associations, and a consumer survey conducted by the Cooperative Development Institute, indicate there is strong support for the concept of increasing the use of renewable energy among residents, businesses, and local governments along the Route 2 corridor. This strong proactive ethic is supported by several established organizations, including:

- The *Northeast Sustainable Energy Association in Greenfield* (NESEA) is a regional membership organization focused on promoting the understanding, development, and adoption of energy conservation and renewable energy technologies. NESEA's members are the professionals and practitioners involved in energy conservation and renewable energy fields. These include architects, builders, engineers, and educators, as well as government officials. Its efforts include organizing, developing, and

conducting workshops, conferences, and training programs for its membership and is under contract to various state and federal agencies. Its overall objective is to use education to create market opportunities for its members.

Geographically NESEA's programs and activities are focused on the northeast, from Washington, D.C. to Maine, and extend west through New York. Currently, only a small portion of its work is local to Greenfield, Pioneer Valley, and the Northern Tier. About a third of its work is targeted to activities and organizations within Massachusetts, driven largely by several contracts it currently has with the Massachusetts Technology Collaborative's Renewable Energy Trust. The rest of its work is more regional (i.e., northeast) in nature or directly with other states, such as New York.

- The ***Center for Ecological Technology*** (CET) in Pittsfield and Northampton educates the general public and communities about the need for alternative energy sources. This past year, Congressman Olver helped secure a \$99,000 USDA grant for CET for an educational campaign to reduce waste and toxic chemical use in rural communities in western Massachusetts. CET's mission is to "research, develop, demonstrate, and promote technologies that have the least destructive impact on the natural ecology of the Earth." CET is also the administrator of the Berkshire Renewable Energy Collaborative (see below). CET has provided "behind the scene" assistance on many of the public sector renewable energy activities in Berkshire County, including the integration of alternative energy sources into the design and construction of the Williamstown Elementary School and the renovation of the North Adams Public Library.
- ***Co-op Plus of Western Massachusetts*** in Northampton is a consumer-owned cooperative organized to create and maintain an economically, environmentally, and socially sustainable energy future, locally rooted and responsive to the needs of its members and the community. Co-op Plus secured a \$700,000 earmark in the FY03 Energy and Water Bill for renewable energy research and development.
- The ***Cooperative Development Institute*** in Greenfield provides training and other business-related services to cooperatives throughout the northeast. In October 2002 and 2003, Congressman Olver helped secure a \$300,000 USDA grant for CDI for its core mission of creating and strengthening rural cooperatives in the northeast.
- The ***Berkshire Renewable Energy Collaborative*** (BREC) is an informal and diverse group of educators, environmental leaders, community planners, industry representatives, nonprofit organizations, governmental representatives, and private citizens interested in increasing the use of renewable energy in the Berkshires with the goal of creating a more balanced and healthy environment. BREC facilitates local dialogue, factually assesses issues, responds to local interests and concerns, and meets the ongoing need for information and technical assistance at all levels, including communities, institutions, businesses, and individuals.
- ***Biomass Energy Resource Center*** (BERC) is serving as the quasi project developer for the biomass demonstration project at Heyes Forest Products. BERC, located in Montpelier, Vermont, is a nonprofit organization established to assist in the development of biomass energy projects across the U.S. and around the world.

BERC helps communities, schools, and colleges, state and local governments, businesses, utilities, and farms make the most of their local energy resources. In 2003, the U.S. Forest Service provided a grant to BERC to identify potential biomass projects in Vermont and Massachusetts. One aspect of the work was the inventorying of potential industrial users of the thermal load to be generated from a combined heat and power biomass project. A proposed site and energy user, located on Route 2 in the Erving area, were identified and predevelopment work is in progress.

Additionally, BERC has identified 71 other existing industries along the Route 2 corridor that have energy loads that might be suitable for using biomass. Four are considered users with large loads of 3 MW or greater, 32 have loads of 1-3 MW, and 53 would be considered small users with loads of 500 kW to 1 MW.

- Another type of nonprofit institution interested in renewables is the *Massachusetts Museum of Contemporary Art (MASS MoCA)*, which is interested in installing solar energy panels on the roofs of many of its 28 buildings. It is estimated that this installation could generate a megawatt of electricity and would be one of the largest single installations in the state. This project has the potential to give the region a major presence in PV development in the northeast, and possibly nationally as well, establishing MASS MoCA as an arts/eco-industrial site. MASS MoCA began exploring the installation of photovoltaics in response to extremely high energy costs. If developed, the system would be linked to educational exhibits at the museum as well as activities at neighboring educational institutions such as MCLA and Williams College. MASS MoCA has established a renewable energy exhibit and will be one of five locations on a Clean Energy Tour being sponsored this summer by the Massachusetts Renewable Energy Trust. The Tour will visit MASS MoCA on October 8th and 9th with renewable energy workshops and exhibits.
- *Rural Development, Incorporated* works throughout Franklin County to develop and maintain low- to moderate-income housing and constructs 12 new housing units throughout the county each year. This past year, Rural Development evaluated its existing housing prototype to determine the potential for incorporating renewable energy into the standard design. It is also constructing four pilot homes totaling 5,000 square feet that will include energy efficient measures and PV systems. These pilot homes will be used to inform future modifications to Rural Development's standard home prototype.
- It is also worth noting that two of five state-sponsored *Renewable Energy Content Institutes* being held this summer are sponsored by Northern Tier organizations. The first will be held at Fitchburg State College, the second is being sponsored by NESEA. The purpose of the institutes is to show teachers innovative ways to incorporate renewable energy into science and math curricula.

Government Entities

A number of government entities in the region have supported the renewable energy sector by developing renewable energy resources to meet their energy needs and simultaneously by creating living educational models demonstrating the benefits of renewable energy and its role in a sustainable community and economy. In each case,

these projects have provided business opportunities for renewable energy consulting, engineering, and retail development. Examples include the integration of renewables in the construction of a new elementary school in **Williamstown**, the renovation of the **North Adams Public Library**, and the construction of a new middle school and high school in the **Gill-Montague school system**. **The Franklin County Technical School District** has also investigated the feasibility of integrating renewables into its construction plans.

The Princeton Municipal Light Department is in final planning to replace eight small windmills installed in 1984 with two new 1.5 MW turbines. PMLD has contracted with Community Energy, a national wind developer and green power marketer, to build and operate the new wind turbines.

Other examples of community support for renewables include the **Energy Park** in the heart of downtown Greenfield and the **Great Falls Discovery Center in Turners Falls**. Both are publicly owned and illustrate the harmony between use of renewables and maintenance of a sustainable environment.

For-profit Businesses

There are a number of private sector businesses and organizations in the Northern Tier renewable energy sector. Some of these are true pioneers and have been working in this industry for many years. Others are relative newcomers or have recently changed or expanded their role in this industry. All illustrate the diverse and struggling nature of this industry as well as the correlation between the use of renewables and the development of economic opportunities.

- ***Bear Swamp Project, Florida***, is the largest hydropower installation in the region. The Bear Swamp Hydro-electric complex was completed in 1974 and is located on the Deerfield River in Rowe and Florida. The facility was developed by New England Power Company to meet the expanded peak load periods when New England's electricity consumers place the heaviest demand on the system. The facility consists of an underground pumped storage generating station and two conventional hydroelectric stations with a combined maximum capacity of 625 megawatts.
- ***Berkshire PhotoVoltaic Services, Adams*** (BPVS) is a retail company designing and installing photovoltaic systems in the Berkshires and Pioneer Valley. In 1997, the company's gross revenue was under \$100,000. In 2003, gross revenues were about \$200,000 and are projected to be \$300,000 in 2004. In addition to its independent work, BPVS is a partner and primary subcontractor to WMEC and CET. BVPS is also working closely with MCLA in the development of their environmental science curriculum, environmental lecture series, and work study program.
- ***Center for Ecological Technology, Pittsfield & Northampton*** (CET). In the past year, CET has established two new business units that move it more towards being a retail service provider. The first is as a retail supplier of green power. The second is a partnership with BVPS to install PV systems on agricultural and cultural facilities in

the county. CET received a \$400,000 earmark in the FY03 Energy and Water bill to help support its solar energy efforts.

- ***Heyes Forest Products, Orange.*** A combined heat and power biomass gasification system will be constructed and demonstrated at Heyes Forest Products, a sawmill, and dry kiln facility. The project will use biomass gasification to produce “gas” from woody biomass that will run an internal combustion engine with generation capacity of 112 kW.
- ***EnXco Wind Project, Florida and Monroe.*** EnXco, an international wind development company based in California, has proposed developing a 19-20 turbine, 30 megawatt, commercial wind farm in the towns of Florida and Monroe. This project has been in development for several years with construction projected for 2004 or 2005. In December 2003, Massachusetts’ top environmental official ruled that this project does not need to go through a state environmental impact review. While this decision has created some debate, this decision has allowed the developer to proceed with final design and permitting of the project. Each turbine will generate up to 1.5 megawatts of electricity that will be sold to New England utilities.
- ***Massachusetts Innovation Center, Fitchburg.*** The Center is an ambitious redevelopment project of a 300,000-square-foot mill building in Fitchburg to create a home for the North Central Charter School, as well as office, retail, and residential space. The Center will feature numerous green building elements including reuse of building materials, an innovative stormwater management system, and a ground-coupled heat pump. The Center will include 48.6kW of solar photovoltaics to meet a significant amount of the building’s electricity needs.
- ***Pioneer Valley PhotoVoltaics, Greenfield.*** PV2 is a new cooperative committed to the design and installation of solar hot water heaters and PV panels. While its initial goal was to establish an assembly plant for PV systems in Pioneer Valley, it has since modified its business plan to focus on building its installation business. PV2 has partnered with Co-opPlus of Western Massachusetts to enhance the marketing of its systems and to build on its foundation of serving worker-owned cooperatives. PV2 is working with the city of Greenfield to request an FY05 earmark to fit the Greenfield Fire Station with photovoltaics and to create a Fire Training Center in Greenfield to train fire fighters nationwide on photovoltaics. PV2 has been assisted by the Franklin County Community Development Corporation and is currently located in the CDC’s incubator facility.
- ***Renewable Oil International (ROI),*** a developer based in Alabama and Ontario, has received a \$499,886 grant from MTC to scale up, construct, and demonstrate a 10-dry-tons-per-day Advanced Fast Pyrolysis Biorefinery Plant at a demonstration site in Chesterfield. While Chesterfield is not located in the Northern Tier, this project is worth noting for several reasons. First, this project was originally proposed to be located at a sawmill in Royalston. Unfortunately, the host company went out of business. Second, the developer, ROI, continues to have discussions about future projects with other sawmills and wood product businesses located in the Northern Tier. Third, the technology being used is representative of some of the newest developments in the biomass industry, moving away from the direct combustion of the wood by-products. The project will use ROI’s pyrolysis technology to convert

woody biomass into BioOil, a liquid fuel. Pyrolysis is a chemical reaction process where the biomass input is cooked rapidly in a high temperature oxygen free environment. The resulting BioOil will be tested in internal combustion engines and a combustion turbine.

- ***US Gen-New England*** owns several operating hydroelectric facilities on the Deerfield River. US Gen-New England purchased these dams from New England Power Company in 1998. With US Gen now bankrupt, it is likely that these dams will be sold. The Vermont Renewable Power Supply Acquisition Authority is one of the entities considering buying an interest in some of these dams. The Authority's interest is driven in large part by the state of Vermont's desire to increase the amount of electricity used by Vermont consumers that is generated from renewable sources.
- ***Western Massachusetts Electric Company*** (WMECO) and its parent company, Northeast Utilities (NU), have a long history of supporting the development of renewable energy in western Massachusetts. For many years, NU has provided funding to the Renewable Energy Research Laboratory at the University of Massachusetts. WMECO is participating in a MTC subsidized program offering its residential customers the opportunity to purchase PV systems at half the cost. The modules for this program are being provided by RWE Shott, a module manufacturer located in Billerica. Installation services are provided by BVPS.
- ***Pinetree Power Station, Westminster***, is an operating 17 MW wood and landfill gas-fired power plant delivering electricity to Fitchburg Gas and Electric. The plant has been in operation since 1992. The facility burns whole tree chips derived locally from forest management and land clearing operations, clean recycled pallet wood, and landfill gas generated in the city of Fitchburg landfill.

State Policy and Funding Influences

In 1997, as part of the Electric Utility Restructuring Act, the Legislature directed the Massachusetts Division of Energy Resources (DOER) to “establish a renewable energy portfolio standard (RPS) requiring all retail electricity suppliers in the state to provide retail customers with an electricity product containing a minimum level of electricity generated from “new renewable energy sources.” The minimum required amount of new renewables started at 1 percent in 2003 and increases to 4 percent in 2009. DOER estimates that 450 GWh (one gigawatt-hour equals one million kilowatt-hours) would be needed to meet this requirement in 2003 increasing to 1,968 in 2009. As a consequence, a host of renewable development activities are occurring throughout Massachusetts and New England in response to the state's RPS and retail electric providers are actively seeking contracts with new generating capacity to meet this requirement.

The **Massachusetts Renewable Energy Trust** was created in 1998 by the Legislature as a component of this restructuring to promote the development of renewable energy in the Commonwealth. The Trust is administered by the **Massachusetts Technology Collaborative** (MTC), a state quasi-public economic development agency. The Trust is funded through a surcharge on the rate charged for

electricity sold by investor owned utilities in the state. The Trust develops and administers grants and loans as well as other types of incentives on an ongoing basis.

The goals of the Trust are to:

- identify and reduce barriers to the development and growth of a viable renewable energy market in Massachusetts;
- leverage additional funds from private companies, nonprofit organizations, and agencies to augment expenditures and grants from the Trust; and
- maximize public benefits to ratepayers by supporting projects that create new high-tech jobs, produce clean energy, and boost energy efficiency in schools, homes, and businesses.

Virtually all of the renewable energy development work going on in the region has received some level of funding from the Trust, including the MWCC and demonstration biomass projects, the Hoosac Wind project, and the PV installation programs of WMECO and CET among others. NESEA, the Berkshire Renewable Energy Collaborative, and the Cooperative Development Institute are examples of other organizations in the region that have received funding assistance from the Trust. Others, such as MASS MoCA, are currently seeking funding from MTC and the Trust. In most, if not all, funding situations, the Trust funds only a portion of a project's cost requiring projects to secure other public and private funding commitments.

In addition to the Trust, there are three ways that MTC's renewable energy programs and initiatives can be used to assist the region capture renewable energy opportunities. These are by:

1. Supporting the commercial development of renewable resources in the region.
2. Supporting the efforts of Northern Tier communities, residents, and businesses to use renewables as an energy source.
3. Supporting research and development and business expansion activities of renewable energy companies located in the region.

Three other recent **actions by the state** indicate a continuing support for renewables. These were:

1. The formation of the Massachusetts Sustainability Program by Executive Order in July 2002 to help state agencies minimize the environmental impacts of their operations and activities and to promote innovative sustainable practices in Massachusetts.
2. Four rulings or opinions issued since December 2003 by state agencies in connection with various renewable energy projects proposed within the Northern Tier. The Administration has used each of these to reiterate its support for the development of renewable energy.
3. The May 6, 2004, unveiling by Governor Romney of the Commonwealth's Climate Protection Plan, which includes encouraging the construction of green

schools and buildings and removing barriers to and encouraging the development of renewable energy.

Challenges to Economic Growth

When considering the opportunities available for economic growth within the renewable energy sector, it is important to keep in mind that, in spite of the years of work many have put into the field and the rapid growth that is being experienced, this is still a relatively immature industry. Four challenges were identified that could affect the region's economic opportunities.

- ***Small and fragmented nature of business interests.*** Many of the businesses in this sector are still very small and many are in the startup phase of development. In addition to the instability this creates, it is difficult for small businesses to have the time to seek out training or opportunities for collaboration, or consider and act on the broader economic development potential associated with their business. This sector also includes a wide range of business and technology interests and, thus, the industry tends to be very fragmented, with each business working strictly within its own area rather than broadly across the renewable energy sector.
- ***Weak economic development leadership.*** While there is a range of organizations and companies within the region working to develop renewable energy resources and business interests, no organization in the economic development arena has emerged as a regional leader or appears to have the capacity to take on this role. A few of the energy-related organizations have capacity, but not in economic development.
- ***Environmental dilemmas.*** While there are numerous environmental benefits associated with using renewable energy resources rather than fossil fuels, renewable energy projects are not without their own set of environmental concerns. For example, wind facilities are typically located on ridge-tops and thus alter the landscape and aesthetic features of a region; hydro facilities alter stream flow; the combustion of biomass can affect air quality.
- ***Low level of public understanding.*** Every stakeholder interviewed indicated that one of the most persistent barriers to industry growth is the public's limited understanding of long-term economic benefits and social benefits of renewables, as well as the role renewables can have in securing our energy future, reducing dependence on foreign sources of fossil fuels, and enhancing the sustainability of our environment. There also is a lack of understanding of how far the industry has come and how this has reduced some of the historical concerns about various technologies. At the same time, most industry representatives acknowledge that public understanding and acceptance is improving and project that within 5-10 years renewable energy development will be much more widely accepted.

Recommendations

The Northern Tier has the renewable resources needed to anchor development of this sector. These resources, including the amount of forested land, the tall mountains, and extensive river systems, are a natural part of the character of the region. There are economic opportunities that the region should pursue, particularly given the fact that the renewable resources within the region are likely to be developed and renewable energy is a growth industry in Massachusetts, New England, nationally, and globally.

Host a One-day Information and Strategy Session with Federal, State, and Regional Leaders and Stakeholders

An event like this could underscore the importance of the Alternative and Renewable Energy activity that is occurring in the Northern Tier. It would serve several purposes:

- Inform officials on the federal and state levels of the wealth of Alternative and Renewable Energy projects and programs that are going on in the region; solicit their advice on best practices around the country that could enhance this sector's performance and economic potential in the Northern Tier; and secure their recommendations on the kind of funding that could have a significant impact on the sector in this region.
- Position the Northern Tier as a laboratory of Alternative and Renewable Energy activity that, with the right coordination and resources, could evolve into model of commercialization and economic development.
- Highlight all of the cross-cutting synergies and applications that are taking place that enhance the sector's economic role in the region (e.g., the synergies between Alternative and Renewable Energy and Manufacturing cost reductions, and the synergies noted elsewhere between Art and Renewable Energy).
- Lay the foundation for all of the Recommendations that are listed below.

Invitees to this event would include: federal officials from HUD, DOE, and Rural Development; state officials from the Office of Technology and Business Development and the Renewable Energy Trust; leaders from the businesses, organizations, and educational institutions noted above; municipal and regional planners; utility companies; and leaders from home builders and realtors associations. The event would be structured around small groups that meet on specific topics and issues.

Create a Stronger Economic Development Developing Leadership Capacity

No single organization has emerged with the capability to take on the leadership for overall development of the sector. It is recommended that either a new regional renewable energy economic development entity be established or that an existing economic development organization within the region be approached about developing the expertise needed to help this sector achieve greater economic and commercial potential. The role of this entity would be to:

- market resources and monitoring development activities;
- advocate and build support for use of resources;
- foster public education about the economic benefits associated with developing renewable energy resources;
- encourage collaboration—research, demonstration, and development efforts;
- assist organizations secure state and federal grants and private sector funding;
- provide business incubation assistance to new companies.

There are several resources within the region that are critical to this sector and its future growth and should be involved in developing the needed leadership (see above). In addition, the Massachusetts Technology Collaborative is an important resource as an ally and funding source for this sector. It can also be an important partner in developing the academic/training programs within the region and providing general economic development support for the region's efforts.

Develop the Region's Role as a Leader in Renewable Energy Education and Training

There is a clear opportunity for the region to build on the efforts of the academic institutions and NESEA to train the future renewable energy industry workforce in New England as well as nationally and internationally. It is important to note the number of academic institutions in the region that have taken advantage of the proximity of renewable resources and industry activity to create study programs and curriculum. As more projects, such as the wind farm in Florida and Monroe and the installation of a PV installation at MASS MoCA, are developed, this living laboratory environment will be further enhanced. It is an added benefit that NESEA, a nationally recognized training organization, is located in the region and RERL, a nationally drawn upon research facility, is located within easy proximity. By linking these organizations together and actively promoting the development of curriculums and training programs, the region has the opportunity to realize a return on this investment in the short-term as well as over time.

There also appears to be significant interest in developing a PV training center in the region. Several industry representatives indicated they are investigating the feasibility of establishing a PV training center in the Greenfield area for electricians and builders. A PV company in the Greenfield area is exploring a potential partnership to develop a national PV training center for firefighters. And, MASS MoCA has proposed developing a research and training center to be developed in connection with the installation of up to a megawatt of PV systems on the museum's roofs. Development of one or more of these training centers would enhance the region's role as a center for renewable energy and sustainability education and training. It may be beneficial for these groups to combine their efforts, creating one regional PV training center.

Nancy Hazzard, Interim Director of NESEA, feels that training and education provides its members with the opportunity to expand their businesses. She also feels that as NESEA and other organizations raise public awareness about the role of renewables in a sustainable economy, economic opportunities will continue to emerge allowing them and their members to grow. While NESEA has had only limited interaction with other educational organizations in the Northern Tier, she feels that with leadership all of the organizations would find new business opportunities and ways to enhance the educational programs they offer. NESEA's members are an added resource and potential customers for the students and professionals trained by the various academic institutions.

Position the Region as a National Center for Biomass Technology Development

Another area of potential economic growth is development of the biomass industry. Growth in this sector offers the added benefit of enhancing the existing forestry and wood product industry as well as building a new industry sector. The Forest and Wood Product Institute at Mount Wachusett Community College is becoming a national demonstration and training center for the biomass industry. The current round of demonstration biomass projects present the region with the unique opportunity of hosting the development and commercialization of new technology of national and possible global significance. The region is also positioned to benefit from the significant investments the U.S. Departments of Energy and Agriculture are making to advance the use of and biomass technologies. Efforts that can help build this sector include strengthening the linkages between the various biomass activities, enhancing the link with good forest management, increasing awareness of the work in this sector, and facilitating the opportunities for those involved in the demonstration projects to build their businesses in the region.

It is recommended that a Regional Biomass Business Development Coalition be established to:

- facilitate coordination between and recognition of the significant amount of biomass related activity occurring in the region;
- promote the region's biomass potential;

- promote the linkage between biomass use and good forest management practices;
- market the region as a regional, national, and international center for biomass technology development; and
- respond to industry needs and opportunities as the demonstration projects in the region proceed.

Tim Maker, Director of BEREC, believes the current biomass activities present the region with the opportunity to benefit from the applied research and development activities associated with these demonstration projects and to potentially host one or more manufacturing facilities. He cautions, however, that the potential for the region to benefit from these efforts will be affected by the fragmented nature of the biomass industry and the fact that, currently, the greatest demand for these emerging technologies is in other parts of the country, such as the west. Tim points out that there is a company in Vermont that is one of two manufacturers in the country that supply biomass heating systems for schools. This company's location was driven, at least in part, by the state of Vermont's program encouraging schools to use wood to meet their heating needs. For the past several years, BEREC has been trying, without success, to recruit a biomass manufacturing company from Canada to locate in either Vermont or Massachusetts.

Investigate the Opportunity to Develop the Greenfield/Gardner Area as a Regional Manufacturing and Distribution Hub for Renewable Energy

There are indications that Greenfield could be geographically situated to serve as a regional distribution hub for wind and PV equipment manufacturers, as well as a potential hub for the commercialization and manufacturing of emerging biomass technologies. Greenfield offers a lower cost of labor and space when compared to the metropolitan Boston or New Haven or Hartford areas as well as access to an interstate transportation system accessible to Vermont, Connecticut, eastern New York, and western Massachusetts. This potential, linked with the potential for the region to become a regional training center for renewable energy, offers the greatest opportunity for creating jobs and increasing the income of the region's residents.

Industry stakeholders interviewed for this project generally felt that it would be difficult to convince manufacturers to locate within the region. However, several named Greenfield as the logical location for developing an equipment distribution center from which manufacturers can serve New England. As examples, they cited the need for wind turbine manufacturers to maintain a supply of spare parts to service the wind farms proposed for western Massachusetts and Vermont; and the need for European inverter manufacturers to establish a laboratory to meet U.S. testing requirements in order for them to break into the U.S. marketplace. It was also mentioned that a regional distribution center would help reduce the local impact of the current global shortage of PV modules. The attractiveness for the region, and the Greenfield area, to manufacturers

could be enhanced by developing the region as a center of excellence for training and testing of equipment.

This potential was further identified by a range of public and private stakeholders, representing a variety of renewable technologies. The presence of NESEA, a regional WMECO facility, the Franklin County Community Development Corporation (which was cited by several interviewed for the work they have done with biomass and PV companies), and the Greenfield Community College make Greenfield's potential even more exciting and worthy of further investigation.

The WMECO economic development staff feel that over the next five to ten years there will be increased acceptance of all facets of renewable energy development in New England, driven by increased public understanding of the importance of such development and the acceptance of the first generation of projects developed. This increase in acceptance will bring with it an increase in demand for equipment and the need for the international manufacturers of this equipment to establish a New England or northeast presence in the general proximity of development activities.

Not to be overlooked is the role renewable energy can play in establishing the region as a center for sustainable economic development and eco-industrial growth. The use of renewable energy is typically considered a fundamental part of the interrelated economic, social, and environmental systems that constitute a sustainable community, providing a healthy, productive, and meaningful life for present and future community residents. Many companies are actively seeking locations and environments allowing them to promote their support of sustainability and resource use that minimizes the impact on the environment. The integration of energy efficiency and use of locally generated, renewable energy as well as the purchase of green power are one way of accomplishing this objective.

Explore the Potential of Hydropower

To a lesser degree, redevelopment of some of the dams in the region may offer the ancillary benefit of stimulating redevelopment of abandoned or under utilized mills. It is recommended that a comprehensive inventory and assessment be conducted of the dams in the region, such as that which has been proposed by the Berkshire Regional Planning Commission.