

Upper Valley Workforce Needs Assessment



Green Mountain Economic Development Corporation

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Introduction

Whether their products are machine tools, statistical models, or healthy patients, local employers face a common challenge: finding skilled workers. The Upper Valley Workforce Needs Assessment investigates this challenge. Labor data and employer feedback are used to identify obstacles to matching local talent with well-paid, knowledge-intensive, and high-growth local jobs. Informed by this assessment, the Green Mountain Economic Development Corporation (GMEDC) is already collaborating with industry and academia to launch and expand workforce development initiatives that address actual needs.

This report describes the assessment methodology and findings as well as related initiatives. The first section of the report explains the procedure used to assess demand for skilled labor in three local industries. Part two details major insights emerging from the assessment. The final section describes new initiatives and existing resources to address skill gaps.

The Upper Valley Workforce Needs Assessment was conceived and carried out by the White River Junction-based GMEDC with funding from the Vermont Department of Labor.

Methodology

The Upper Valley Workforce Needs Assessment follows a unique four-step methodology that includes a quantitative analysis of existing labor data and a qualitative analysis of feedback from employers. The methodology is inspired by the *Skillshed Analysis: Guide to Identifying Your Workforce Skills*, which was developed by a consortium of Midwest workforce development agencies in 2009. The methodology used in the Upper Valley Workforce Needs Assessment is outlined in the chart below and described in the pages that follow.

Chart: Upper Valley Workforce Needs Assessment Methodology



1) Define the Geographic Focus

The mix of Vermont and New Hampshire license plates found in employee parking lots around the Upper Valley demonstrates the bi-state nature of the regional workforce. Commuting pattern data show that Upper Valley workers regularly cross state lines for employment. Nearly 10% of workers in Windsor County, Vermont reside in Grafton or Sullivan County, New Hampshire.¹ 19% of the 56,839 workers in Grafton County drive in from Vermont.² Many workers travel to jobs concentrated in the border zone.

Map: Where Jobs are Located in Windsor, Orange, Grafton, and Sullivan Counties

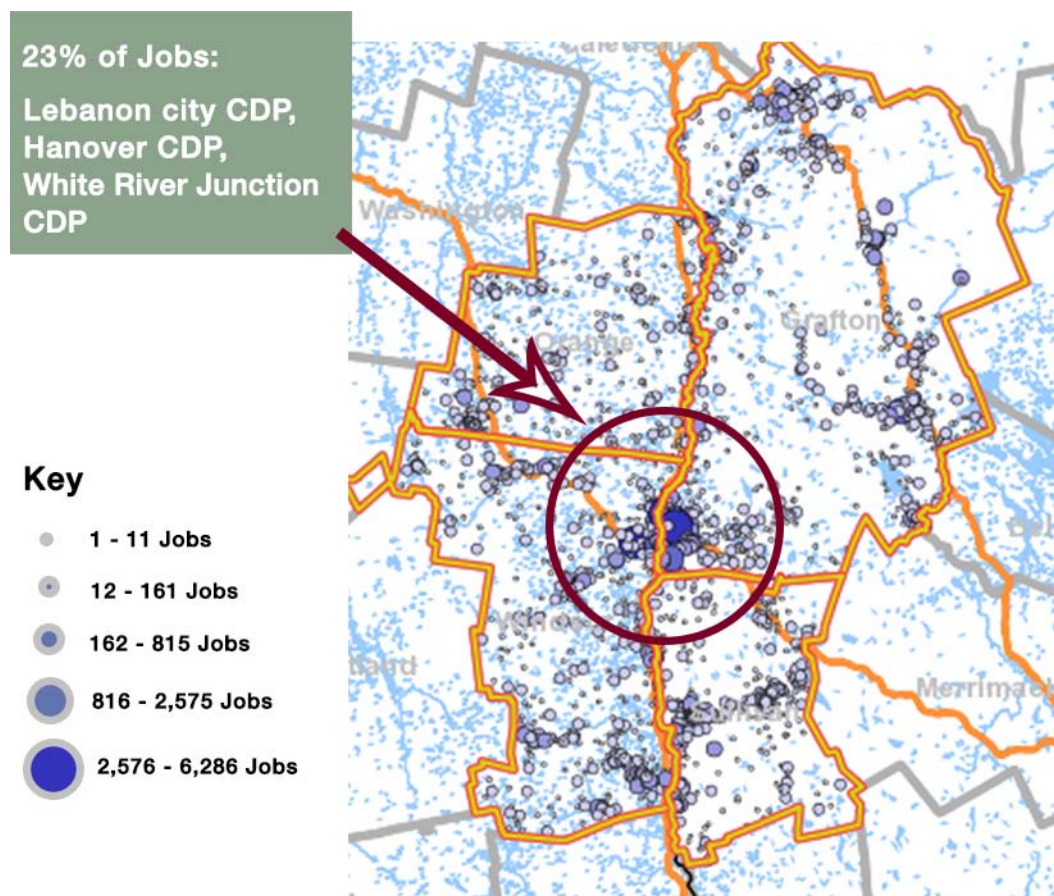


Image and Data Source: *Work Area Profile. Where Workers are Employed Who Live in the Selection Area.* OnTheMap, U.S. Census Bureau, 2013. <http://onthemap.ces.census.gov/>.

Note: The U.S. Census defines a Census Designated Place (CDP) as “the statistical counterpart of incorporated places.” CDPs provide data for settled concentrations of population that are identifiable by name but are not legally incorporated under the laws of the state in which they are located.

¹ *Vermont Economic and Demographic Profile Series 2012.*

² *Grafton County Commuting Patterns 2006-2010.*

Employer feedback further demonstrates that state lines do not restrict the local workforce. 40% of the 700 employees at the largest Vermont-based Upper Valley employer reside in New Hampshire; 45% of the more than 6,000 employees at the largest New Hampshire-based employer reside in Vermont.

The Upper Valley Workforce Needs Assessment considers portions of both Vermont and New Hampshire to reflect the borderless nature of the regional workforce. Industry wage and employment data for the GMEDC Regional Development Corporation Jurisdiction (Vermont) and the Upper Valley-Lake Sunapee Regional Planning Commission Area (New Hampshire) were used to prioritize industries for further analysis.

Maps: Geographic Statistical Areas Included in the Industry Prioritization Exercise

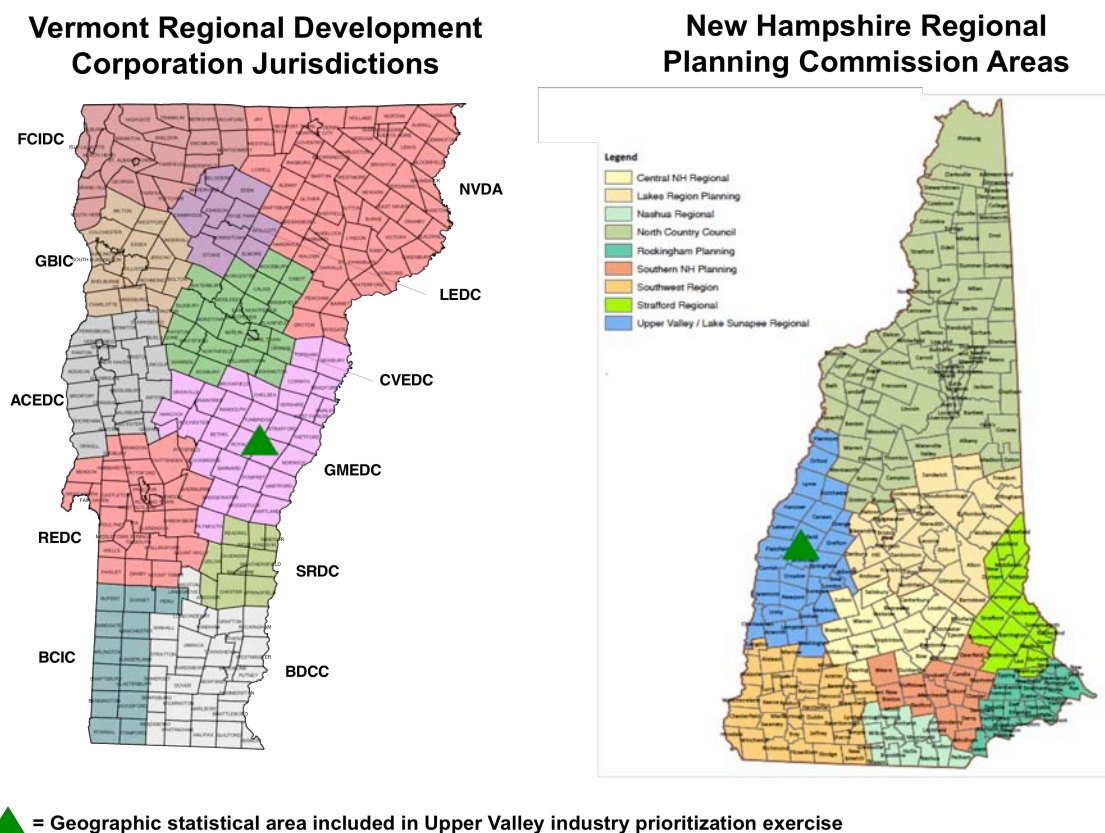
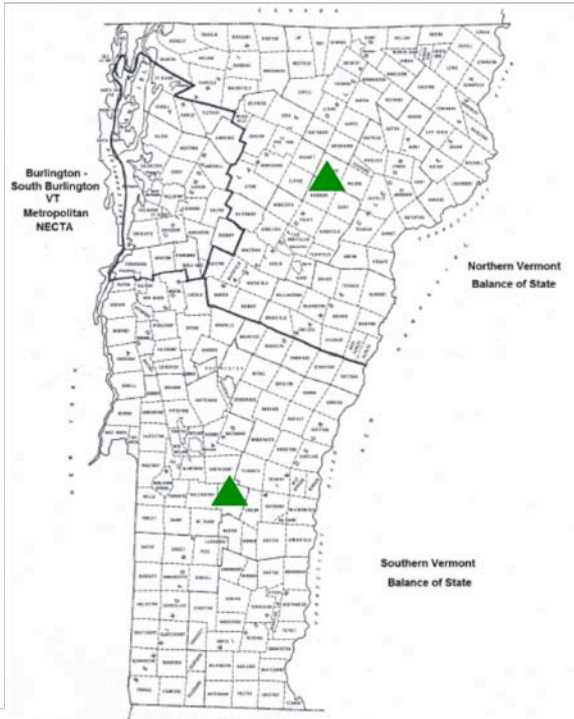


Image Sources: Department of Economic Development, Vermont Agency of Commerce and Community Development; Labor Market Information Bureau, New Hampshire Employment Security.

Occupational data for Northern Vermont Balance of State (BOS) and Southern Vermont BOS as well as the Claremont and Lebanon-Hanover Occupational Employment Wage Areas were used to identify top jobs within the prioritized industries.

Maps: Geographic Statistical Areas Included in the “Top Jobs” Identification Exercise

Vermont Occupational Employment Statistics Areas



▲ = Geographic statistical area included in Upper Valley “top jobs” identification exercise

New Hampshire Occupational Employment Wage Areas

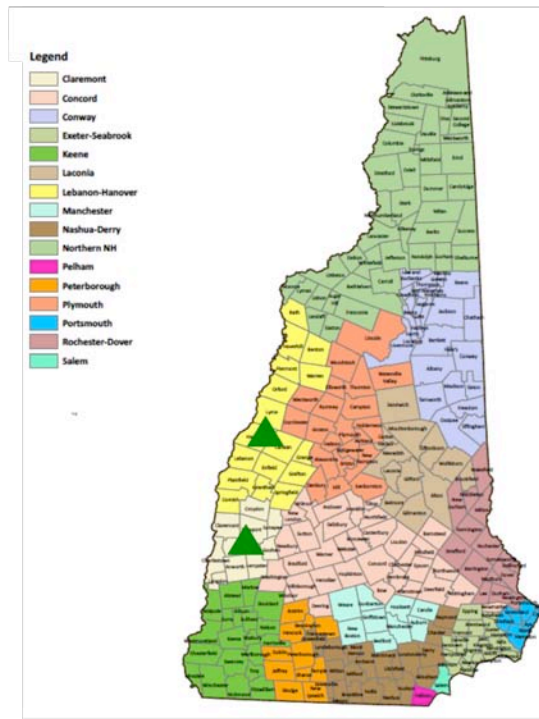


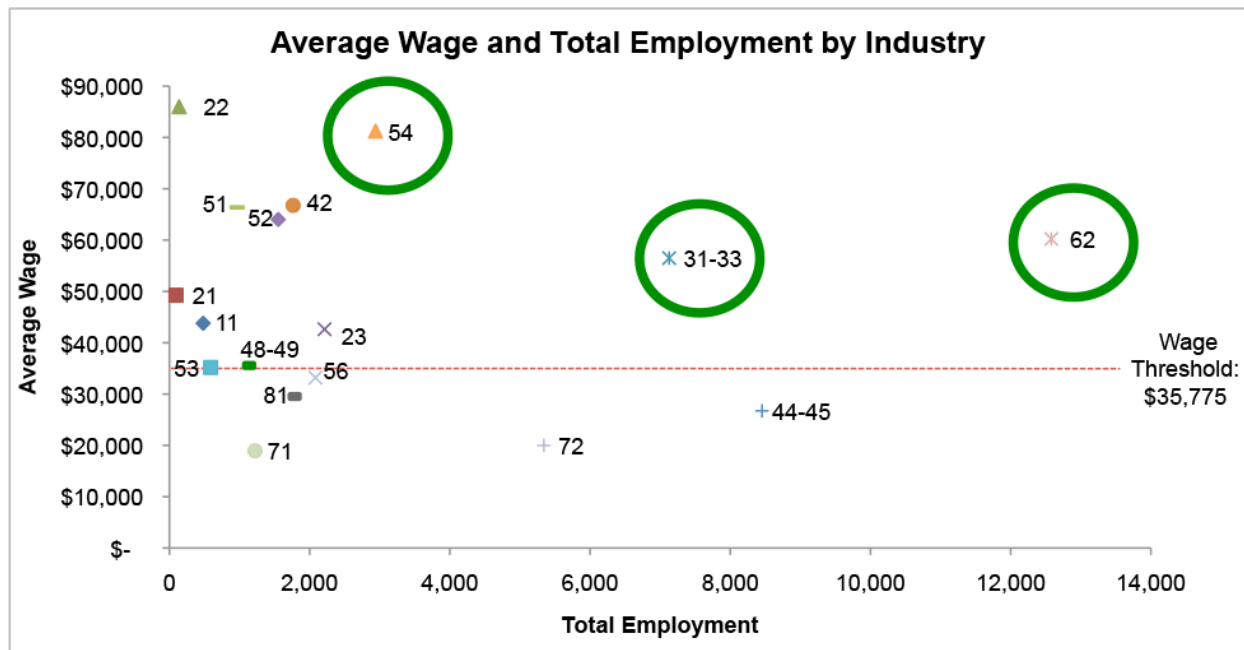
Image Sources: Economic & Labor Market Information, Vermont Department of Labor; Economic and Labor Market Information Bureau, New Hampshire Employment Security.

Appendix I contains a list of towns in the geographic statistical areas used in this report.

2) Prioritize Industries for Further Analysis

Data for total employment and average annual wage by industry were used to prioritize a subset of three industries from a list of 17. The “Management of Enterprises” and “Education Services” industries were left out of the prioritization exercise due to limited data. A wage threshold of \$17.20 per hour or \$35,775 per year, twice the minimum wage, was set for this needs assessment. The following graph compares Upper Valley industries according to average annual wage and total employment.

Graph: Average Annual Wage and Total Employment by Industry



Key to NAICS Codes:

11: Agriculture, Forestry, and Fishing	44-45: Retail Trade	56: Administrative and Waste Services
21: Mining	48-49: Transportation and Warehousing	62: Health Care and Social Assistance
22: Utilities	51: Information	71: Arts, Entertainment, and Recreation
23: Construction	52: Finance and Insurance	72: Accommodation and Food Services
31-33: Manufacturing	53: Real Estate and Rental and Leasing	81: Other Services Except Public Administration
42: Wholesale Trade	54: Professional, Scientific, and Technical Services	

Data Sources: 2012 Covered Employment & Wages for the GMEDC Jurisdiction, Economic & Labor Market Information, Vermont Department of Labor; 2012 Covered Employment & Wages for the Upper Valley-Lake Sunapee Regional Planning Commission Area, Economic and Labor Market Information Bureau, New Hampshire Employment Security.

Notes: Total employment refers to combined total employment for the GMEDC Jurisdiction and the Upper Valley-Lake Sunapee Regional Planning Commission Area. Average annual wage refers to the combined weighted average annual wage of the GMEDC Jurisdiction and the Upper Valley-Lake Sunapee Regional Planning Commission Area.

Health Care and Social Assistance, Manufacturing, and Professional, Scientific, and Technical (PST) Services were prioritized for further analysis due to the industries' relatively high total employment and average annual wages. Industries with average annual wages below the wage threshold, such as Retail Trade and Accommodation and Food Services, were not prioritized despite high total employment. Additional information about the three prioritized industries is available in Appendix II.

3) Identify "Top Jobs"

The third step of the quantitative analysis involved identifying "top jobs" within each prioritized industry. Top Jobs meet four criteria, which are described in Appendix III.

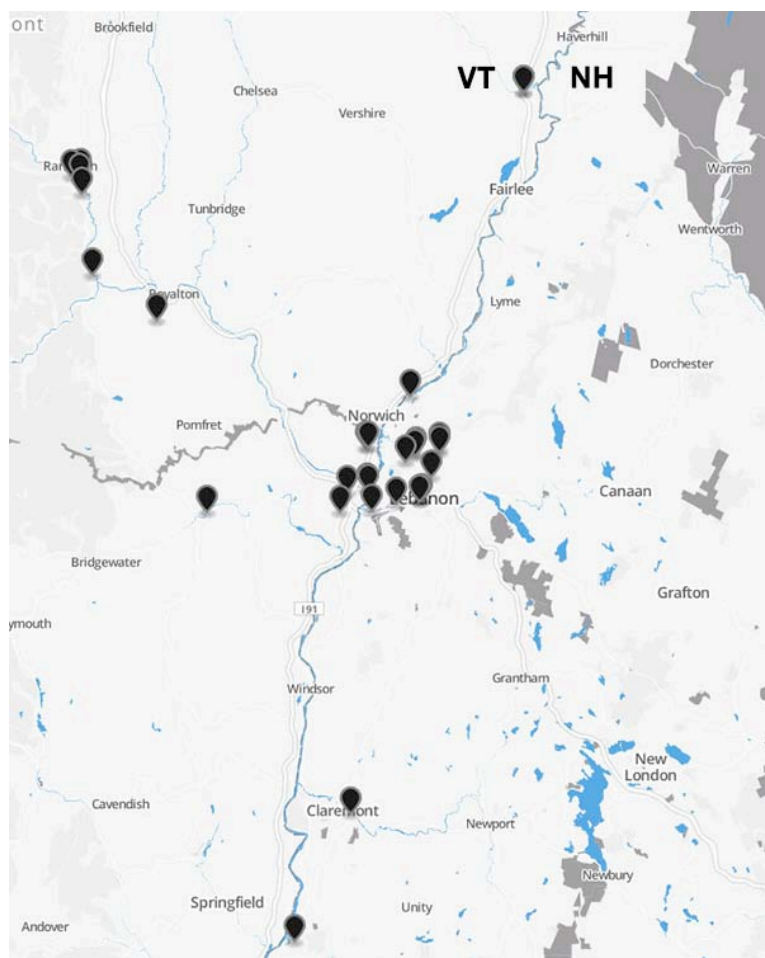
- Median hourly wage of \$17.20 or more
- Knowledge intensity ranking of 3 or greater
- Low/moderate or better short-term growth projections
- Demonstrated local demand

Preliminary lists of top jobs in each industry were created based on this analysis. The lists were reviewed with local companies and organizations during employer interviews.

4) Interview Local Employers

Between October and December 2013 the GMEDC interviewed 26 employers representing more than 12,000 Upper Valley employees. A list of interview questions is available in Appendix IV. Interviewed employers are among the largest local employers in their industry. Seven employers in the Health Care and Social Assistance industry were interviewed, ten in Manufacturing, and nine in PST Services. An equal number of Vermont and New Hampshire-based employers were interviewed. The following map shows the locations of the interviewed employers.

Map: Locations of the Interviewed Employers



Findings

The local labor pool is limited and recruiting outsiders to the area is difficult. Thus, regional employers are inclined to grow their own talent. The Upper Valley Workforce Needs Assessment found that this reality creates opportunities for workers and employers, but it also creates challenges such as connecting young people with local careers and preparing employees for management roles. The assessment also highlighted industry-specific issues and identified well-paid, knowledge-intensive, and high-growth jobs in Health Care and Social Assistance, Manufacturing, and PST Services. Both overarching and industry-specific findings are described in this section of the report.

Overarching Findings

Interviewed employers in each prioritized industry face a common challenge: attracting skilled workers to the Upper Valley. Interviewees reported that non-local recruits often find the region too cold, too rural, or too white. The high cost of housing, reportedly lower pay in comparison to metropolitan areas, and concerns about limited opportunities for trailing spouses or single adults were also cited as recruiting obstacles. The ideal hire tends to be a qualified local. An HR Director summarized an attitude shared by many when she said, “We love locals.”

“Only once have we recruited from far away. The risk [of taking on a new person] is high enough.”

– CEO, PST Services

Yet, local workers do not always possess the technical or soft skills required for a job. Interviewed employers reported spending six months or more recruiting computer programmers, industrial mechanics, lab technicians, engineering managers, and other skilled employees. Recruiting difficulties have spurred some employers to onboard promising but inexperienced young workers through on-the-job training, and to fill management openings via internal promotions. This “grow our own approach” is not without challenges.

Importance of Connecting Classroom Learning with Future Careers

If a young person leaves the Upper Valley it is difficult to recruit them back to the region. If a young person works in a low-paying industry for an extended period of time, it is difficult to retrain them for a skilled manufacturing or health care position. To take advantage of well-paid, knowledge-intensive, and high-growth local jobs, local youth must be aware of these jobs and the skills and experiences they require.

Middle and high school students may not realize that an entry-level job with a local manufacturer could lead to an international career with management responsibilities, or

that a passion for developing computer games could be a match for an entry-level programming job at a local software developer. Limited knowledge of Upper Valley career opportunities may spur students to lose interest in necessary classes such as Geometry or Geography, or accept dead-end jobs after leaving school. Such decisions could hamper their future chances of successfully switching to higher-paying jobs in other industries. As one Director of Quality Management Systems explained, *“If someone’s been working in fast food for ten years, I can’t train them to be a technician. They don’t have the attitude or the math skills to work on the factory floor.”*

“Even my own son didn’t know that there’s cool stuff happening in here.”

– CEO, Manufacturing

Education reforms in Vermont and New Hampshire are emphasizing connecting classroom learning with future careers. A new Vermont law will require every student in seventh through twelfth grade to have a personal learning plan (PLP). PLPs are intended to help students and teachers tailor each student’s education to support their individual career goals. The New Hampshire Department of Education is encouraging local school districts to support extended learning opportunities (ELO). An ELO is an outside-the-classroom activity such as an apprenticeship, internship, or independent study that promotes the acquisition of knowledge and skills.

Education and industry appear in agreement on the importance of connecting classroom learning with future careers, making the present an opportune time to strengthen and expand programs that accomplish this goal.

Emphasis on On-the-job Technical Training

Only a handful of companies reported easily recruiting technically skilled young workers. These companies tend to be involved in targeted education feeder programs. Involvement ranges from serving on the boards of local education institutions, to recruiting at colleges and universities located in cold climates, to operating externships with area technical and vocational schools.

A larger number of interviewed employers reported spending months or even years trying to fill positions. After long searches for technically skilled employees, some employers created their own feeder programs and now provide structured on-the-job technical training. Five manufacturers offer apprenticeship programs. Apprentices are hired for a fixed period, during which they are paid to learn certain skills through courses and experiential learning on the factory floor. Upon successful completion of the apprenticeship, participants are often guaranteed a job at the sponsoring manufacturer. Unfortunately, multiple manufacturers noted that some apprenticeship candidates lack the basic math skills and character traits needed to succeed in the program.

Preceptorships are being introduced at a local health care provider that has struggled to find nurses with acute care experience. The health care provider is hiring inexperienced nurses with advanced degrees, and then partnering them with an experienced nurse preceptor. The trained preceptor teaches and supervises the new hire for an extended period. Another example of a structured on-the-job training program comes from the PST Services industry. A regional biotech firm created a pre-doctoral program that offers recent graduates several years of practical experience before they return to academia for doctoral studies. The pre-doc program helps the firm maintain a steady pipeline of inquisitive and hard-working research associates.

Several interviewed employers noted that their technical skill needs are always evolving. This necessitates quickly training current employees or recent hires to develop new skill-sets. Providing this training in-house, however, can be costly and inefficient for small employers.

“We’re on the verge of saying ‘These are the people we need’, but when we go to find them, they won’t be there and we’ll have to train them internally.”

– VP of Operations, Health Care

Need for Management Skills

Promoting from within is a standard practice at Upper Valley organizations. Yet, the shift from supervisee to supervisor is not always easy. A common refrain among interviewed employers is, “A great _____ is not always a great manager.”

The largest interviewed employers provide in-house leadership training for new managers. Small- and mid-size employers often lack the scale to develop and maintain a comprehensive internal management-training program. More than half of the 24 interviewed employers with less than 1,000 local workers indicated interest in outside management training for team leaders and supervisors. Reported areas of need include managing others, giving and receiving feedback, time management, communicating effectively, holding oneself accountable, professionalism, and thinking strategically.

“I wish there was a program in the area that helped develop people from line staff to basic leadership positions. This is a critical bridge.”

– HR Director, Health Care

Industry-Specific Findings

During hour-long interviews employers were asked about workforce challenges and opportunities specific to their industry. They were also asked to review preliminary lists of top jobs in their industry and comment on whether the listed jobs were consistent with their labor needs. The following section summarizes the outcomes of these discussions.

Health Care and Social Assistance

The GMEDC interviewed seven organizations in the Health Care and Social Assistance industry. These organizations operate hospitals, rural health clinics, assisted living communities, home health care services, and community mental health centers. The seven organizations employ more than 8,500 people in the Upper Valley.

Skill demands in Health Care and Social Assistance are changing rapidly in response to health care payment reforms, an emphasis on preventative care, and other factors. Health care providers report a high use of training to re- or up-skill their existing workforce to meet shifting demands.

Solid computer skills are a requirement for employees at nearly every health care organization interviewed, particularly those providing hospital and ambulatory care. Effective use of electronic medical record (EMR) systems is now a job requirement for employees involved in health care delivery at most interviewed employers.

The Upper Valley Health Care industry cluster is more robust than Manufacturing or PST Services in terms of total employment. One cluster benefit is that skilled employees, particularly nurses, have multiple job opportunities in the region. This can result in workers frequently rotating among local employers.

Two employers anticipate a need for more Computer Systems Analysts, an occupational category that includes Informatics Nurse Specialists. These positions require clinical knowledge and IT skills. Tasks may include managing computerized health care systems, collecting and analyzing patient data in order to adjust care, and aggregating and

“The health care environment is really dynamic right now – in one year I’ll be revising what I say today.”

– VP of Operations, Health Care

interpreting medical data for reporting purposes. Three employers mentioned an emergent need for Health Educators. Descriptions of Health Educators varied from health “coaches” responsible for helping patients develop healthy lifestyles, to health “experts” responsible for educating patients about their diseases and medications. Five health care providers indicated that their demand for Registered Nurses is currently not as dire as in previous years. Nevertheless, as one HR Director articulated, providers “... *will never turn away a good nurse.*” Licensed Vocational Nurses (LVNs) are in demand among assisted living and extended care facilities. Licensed Practical Nurses (LPNs) are more likely to be needed at outpatient clinics. Four interviewees reported difficulties recruiting physicians and pharmacists. Reasons include a nationwide shortage of physicians in particular fields such as psychiatry and primary care, and lower pay in semi-rural and rural areas.

The following is a list of Top Jobs in Health Care and Social Assistance identified through the needs assessment:

- Medical and Health Services Managers
- Mental Health Counselors
- Pharmacists
- Family and General Practitioners
- Psychiatrists
- Physician Assistants
- Occupational Therapists
- Physical Therapists
- Nurse Practitioners
- Computer Systems Analysts (including Informatics Nurses Specialists)
- Computer Programmers
- Health Educators
- Medical and Clinical Laboratory Technologists
- Registered Nurses
- Medical and Clinical Laboratory Technicians
- Licensed Practical and Licensed Vocational Nurses
- Medical Records and Health Information Technicians (including Coders)
- Medical Assistants
- First-Line Supervisors of Office and Administrative Support Workers
- Billing and Posting Clerks
- Maintenance and Repair Workers

Detailed information regarding Top Jobs in Health Care and Social Assistance is available in Appendix V.

Manufacturing

The GMEDC interviewed ten companies in the Manufacturing industry. These companies produce items ranging from custom wood products to advanced machines. The ten companies employ more than 3,200 people in the Upper Valley.

“We’re a 24/7 manufacturer. Without a mid-range support staff we don’t have a business.”

– CEO, Manufacturing

Seven of the manufacturers interviewed expressed critical demand for technical-vocational employees. These mid-range positions include mold- and toolmakers, woodworkers, machinists, industrial machinery mechanics, and CNC specialists. The positions do not require a college degree, but do necessitate solid math skills and a strong work ethic. Several manufacturers said that they have stopped trying to find workers with the required technical skills. Now, these employers hire for character and provide new recruits with math and technical skill training via on-site educators or apprenticeship programs.

“In the South we have to make the math aptitude test harder because we have too many applicants. Here we need to make the test easier because no one is passing it.”

– HR Director, Manufacturing

Many manufacturers acknowledged that industry image problems hamper recruiting. An HR Director articulated this problem by stating, *“Many parents saw industry leave Springfield and Claremont and discouraged their kids from manufacturing. They don’t know that manufacturing is different today. Parents have a vision of manufacturing as old, stinky, and yucky.”*

Four employers mentioned difficulties in finding Industrial Production Managers with relevant sub-industry experience; sub-industry experience is difficult to find locally because many area manufacturers are the only local producers in their field. Mechanical engineers are in high demand at five of the ten companies interviewed; this position requires a Bachelor of Science and a practical interest in “taking things apart.” A variety of technical-vocational workers are needed at seven of the manufacturers interviewed.

The following is a list of Top Jobs in Manufacturing identified through the needs assessment:

- Managers, All Other (including Supply Chain Managers)
- Architectural and Engineering Managers
- Software Developers, Systems Software
- Purchasing Agents
- Logisticians
- Computer Programmers
- Electrical Engineers
- Industrial Engineers
- Mechanical Engineers
- Sales Representatives, Wholesale and Manufacturing
- Industrial Production Managers
- Wholesale and Retail Buyers
- Electrical and Electronics Engineering Technicians
- Industrial Engineering Technicians
- Mechanical Engineering Technicians
- First-Line Supervisors of Mechanics, Installers, and Repairers
- Industrial Machinery Mechanics
- Maintenance and Repair Workers
- Computer Numerically Controlled (CNC) Machine Tool Programmers
- Machinists
- Tool and Die Makers
- Welders, Cutters, Solderers and Brazers
- Cabinetmakers and Bench Carpenters
- First-Line Supervisors of Production and Operating Workers
- Computer-Controlled Machine Tool Operators
- Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders

Detailed information regarding Top Jobs in Manufacturing is available in Appendix VI.

Professional, Scientific, and Technical Services

The GMEDC interviewed nine companies in the PST Services industry. These companies provide a variety of services including research and development, software development, data analysis, computer system support, and consulting. The nine companies employ more than 700 people in the Upper Valley.

The skills demanded in this industry tend to be highly specialized. Finding experienced professionals adept in areas such as data modeling or Geographic Information Systems software usually requires recruiting outside the area. Successfully recruited individuals tend to have young families and New England roots; they are attracted to diverse project portfolios and relatively flat organizational structures as well as good local schools. Finding positions for highly specialized professional spouses can be an issue. Recruiting senior employees rooted in their current location is also difficult. Once someone actually moves to the area, however, they usually stay; interviewed employers in the PST Services industry reported very low employee turnover.

It is often the case that a PST Services firm cannot convince new hires to relocate to the Upper Valley. For example, nearly a quarter of the employees at a fast-growing local data management company work remotely. The prevalence of remote workers can result in lower productivity and less collaboration for the company and lost income tax revenue for the Twin States.

“We like to have people come here because our values include collaboration and cross-over technologies.”

– Director, PST Services

PST Services firms require unique skills. A common theme, however, is a strong foundation in STEM subjects (Science, Technology, Engineering, and Mathematics). The following is a list of Top Jobs in PST Services identified through the needs assessment:

- Computer Occupations, All Other (including GIS Technicians and Computer Systems Engineers)
- Biologists, All Other (including Molecular and Cellular Biologists)
- Engineers, All Other (including Chemical Engineers)
- Engineering Managers
- Mathematicians (including Data Modelers)
- Architects, Except Landscape and Naval
- Biochemists and Biophysicists
- Computer and Information Systems Managers
- Management Analysts
- Market Research Analysts and Marketing Specialists

- Accountants and Auditors
- Computer Systems Analysts
- Computer Programmers
- Software Developers, Applications
- Software Developers, Systems Software
- Database Administrators
- Network and Computer Systems Administrators
- Cartographers and Photogrammetrists
- Civil Engineers
- Electrical Engineers
- Industrial Engineers
- Mechanical Engineers
- Chemists
- Sales Representatives, Technical and Scientific Products
- Computer (User) Support Specialists
- Paralegals and Legal Assistants
- First-Line Supervisors of Office and Administrative Support Workers
- Bookkeeping, Accounting, and Auditing Clerks

Detailed information regarding Top Jobs in PST Services is available in Appendix VII.

Initiatives and Resources

Developing local talent begins early. Employers and economic developers must help inform students about local careers and the knowledge and skills that they require. Employers need support in providing technical training for inexperienced or incumbent local workers. Aggregating technical training demand and partnering with local education institutions can enable small- and mid-size organizations to offer their employees relevant and accredited technical training. The best workers may be promoted to management roles one day. Combining the managerial development needs of multiple employers can enable high-quality management training to be offered locally at a reasonable price.

“I call on employers to engage with the educational system at all levels. Open your businesses to our schools. Let our students interact with your employees, so they can see how they use their education every day.”

— Vermont Governor Peter Shumlin, 2013 Inaugural Address

This section details new initiatives and existing resources to develop the workforce through education feeder programs, just-in-time technical training, and management skill development. Contact information for Upper Valley education and training resources, including those mentioned in the following pages, is listed in Appendix VIII.

Education Feeder Programs

An array of well-paid, knowledge-intensive, and high-growth jobs requiring varying amounts of education, training, and experience are available in the Upper Valley. Informing local students, parents, and educators about these opportunities will help students prepare themselves for successful careers within or outside the region.

The Little League of Manufacturing

On February 25, 2014 Upper Valley manufacturers will gather in White River Junction to learn about Whelen Engineering Company, INC’s Little League of Manufacturing and discuss bringing the program to their communities. The Little League of Manufacturing aims to develop the next generation of manufacturing employees by exposing students to the field. Just as professional sports teams develop future recruits by supporting Little Leagues

“You need to start very young to get people to think of manufacturing as a career path.”

— John Olson, CEO, Whelen Engineering Company, INC

and farm teams, Whelen Engineering is inspiring and preparing future hires by partnering with the local school system to offer students a hands-on manufacturing education.

Semester-long high school courses occur on-site at Whelen Engineering. Topics covered range from professional behavior to assembling and testing mechanical and electrical components. Course graduates receive credit for their participation; graduates ages 16 and older are eligible to apply for paid summer internships. Since 2010 more than 100 students have participated in this program. A three-week course for eighth graders was also developed in response to student demand. This mini-course exposes middle school students to modern manufacturing and promotes soft skill development and teamwork. The middle school class culminates in a tour of Whelen Engineering.

John Olson, CEO of Whelen Engineering, partnered with Jacqueline Guillette, an experienced educator, school administrator, and superintendent, to develop the curriculum. The curriculum is offered free to any manufacturer interested in replicating the program. Host-companies support the program by funding employee time to assist with curriculum development and interact with visiting students. Schools pay for instructors and transportation to and from the manufacturing facility. The total cost of three, 45-day *Introduction to Manufacturing Technology @ Whelen Engineering* high school courses was \$14,680 in 2011-12.

The Upper Valley Business and Education Partnership

The Upper Valley Business and Education Partnership (UVBEP) is a nonprofit organization dedicated to enhancing teaching and learning by making educational experiences relevant to students and their futures. The organization fulfills this mission through a variety of initiatives that link local schools and employers.

UVBEP programs include *Learn to Earn*, a series in which local businesspeople discuss their profession and career trajectory with high school students, and *Job Shadow Day*, a regional event in which 700 eighth graders spend a day at one of 200 participating workplaces. UVBEP programs also target teachers. For example, *Summer Externships* place kindergarten through twelfth grade teachers in area businesses for one or two weeks to work on a paid assignment. Employers receive skilled assistance with projects, while educators gain industry insights to integrate into the classroom.

UVBEP programs are partially funded by participating schools. Additional funding comes from local employers, grants, and individual donors.

Career Marketing

Career marketing initiatives such as career brochures, career road shows, and social media campaigns could also connect students with information about future jobs. Designing and supporting career marketing initiatives will require feedback from students, educators, parents, and local organizations focused on education. Following the release of this needs assessment the GMEDC will meet with interested stakeholders to identify career marketing initiatives relevant to local students.

“We need to reach out to them [middle and high school students], we need to market to them, and we need to sell to them.”

– CEO, Manufacturing

Industry career brochures could provide information about top jobs in the industries analyzed through this needs assessment. A description of each job, relevant academic subjects, the median wage, the annual number of openings, and education requirements could be published in the brochures along with a list of local employers and education providers. Appendix IX contains a sample career brochure for Health Care.

Career brochures could be distributed to local students through programs like the UVBEP’s *Regional Career Carnivals* and *Learn to Earn* series or industry career road shows. Information about local careers, video interviews with young professionals and CEOs, and links to career and education resources could also be posted on a Upper Valley career information website or Facebook page.

Just-in-time Technical Training

Apprenticeship programs are an attractive option for employers with immediate demand for technically skilled workers. This section describes two local models for providing just-in-time technical training through apprenticeships. The first model involves aggregating the common training demands of several employers to develop multi-employer apprenticeship programs. Single-employer apprenticeship programs, the second model featured, consist of in-house apprenticeship programs.

Multi-Employer Apprenticeship Programs

Many regional employers lack the scale to create their own apprenticeship programs. Regional Development Corporations and Workforce Investment Boards can help aggregate demand for specialized training and connect employers with education organizations, thereby mitigating the financial and logistical burdens of developing tailored apprenticeships.



Photo: Laboratory Technician Training Meeting, December 12, 2013.

In response to demand for hospital laboratory technicians identified through this assessment, the GMEDC moderated a meeting between two hospitals, three education providers, and the Vermont Department of Labor. The meeting resulted in a follow-up discussion between one hospital and local education providers and a revised recruiting strategy at the second participating hospital. An additional outcome of the meeting was consensus on the importance of developing a feeder program to

expose high school students interested in the health care field to careers in hospital laboratories.

The Advanced Machinist Apprenticeship Program is an example of a multi-employer apprenticeship program currently operating in the Upper Valley. In 2012 GW Plastics, North Hartland Tool, Concepts NREC, New England Precision, GMEDC, and Vermont Technical College (VTC) collaborated to launch a four-year advanced machinist apprenticeship program. 16 apprentices are now in the program. The program emerged in response to local manufacturers' concerns about a lack of young advanced machinists to replace retiring employees.

"The apprentices talk about the course the day after and look forward to it. We're using it as a recruiting tool."

– Timothy Holmes, VP of Engineering, GW Plastics

The apprenticeship program consists of eight courses taught over a four-year period. Apprentices train on the job at their place of employment in addition to completing courses at VTC. Apprentices receive pay increases as they progress through the program. VTC instructors teach courses at locations in Randolph and White River Junction. A new class of advanced machinist apprentices will begin in Spring 2015.

Single-Employer Apprenticeship Programs

Individual employers may also develop apprenticeship programs in partnership with an education organization. Numerous interviewees referred to the Hypertherm Technical Training Institute as the gold standard in Upper Valley apprenticeship programs.



Photo: HTTI Training Area, December 11, 2013.

The Hypertherm Technical Training Institute (HTTI) was founded in 2007 to train unemployed and underemployed individuals to be CNC machine operators at Hypertherm. In the past six years more than 350 operators have been trained at the Institute. 96% of participants are hired as full-time employees.

The nine-week program is open to anyone with demonstrated potential who can successfully complete an entrance exam. Hypertherm pays participants to complete the nine-week program. Hypertherm instructors teach a curriculum developed by the company, which covers skills such as math, blueprint reading, and geometric testing. River Valley Community College provides academic oversight and awards credits. Upon completion of the 28-credit program graduates are halfway to an Associate's Degree. Recent graduates of the

HTTI include a former disc jockey and a former police officer.

The full-time program is offered about three times a year to 16 students per program. Outside companies are eligible to enroll employees in the program when space is available. River Valley Community College coordinates open enrollment for the Advanced Machine Tool Technology Certificate Level II course at the HTTI. The cost of the program for non-Hypertherm employees is \$5,715, excluding books.

Developing Effective Managers

More than half of the interviewed employers reported an interest in management education for employees. This section of the report showcases internal management education programs at two local companies and highlights external management education resources in the Upper Valley.

Internal Management Education Programs

Managers at Maponics, a White River Junction-based map data services company, practice thoughtfully selected management methods. Maponics adopted methods for conducting one-on-one weekly meetings with direct reports, providing feedback, coaching, and delegating work from Manager Tools LLC, a management consulting firm. Maponics administrators trained by Manager Tools LLC instruct their fellow company leaders in the management methods. Managers at Maponics also have access to weekly Podcasts on topics ranging from *How to Stop Gossip to My Direct Report Doesn't Want To Change* and individual support through Manager Tools.

Hanover-based Hypertherm also maintains a comprehensive internal management education program. Program elements include an elective course for associates on *Exploring Leadership at Hypertherm*, a four-day leadership immersion program for externally or internally promoted new managers, and a leadership development certificate series for current leaders. The *Exploring Leadership at Hypertherm* course is particularly innovative in that it offers associates a non-binding opportunity to explore a management-track career. The course includes an overview of the responsibilities of Hypertherm leaders and a self-assessment. A member of Hypertherm's Organizational Development team teaches the course using a mix of lecture and experiential learning. Completion of *Exploring Leadership at Hypertherm* is not required to become a Hypertherm manager. Rather, the course is one of many electives offered to associates in fulfillment of their 24 hours of annual continuing education credit.

External Management Education Resources

Several employers mentioned using local management education resources for employee training. Programs include *Principles of Supervision* at the Community College of Vermont, Communication Workshops at Northern Stage, *Leading from Within* at River Valley Community College, and various leadership programs at Vermont Technical College. Appendix X provides an overview of these programs as well as the *Management Excellence Seminar Series – Upper Valley Program* described below.



Photo: Information Session on the *Management Excellence Seminar Series – Upper Valley Program*, December 4, 2013.

The Center for Professional and Executive Development at Champlain College has trained more than 300 professionals to be more effective managers through their *Management Excellence Seminar Series*. Previously the series was only offered in Burlington, putting it out of reach for many Upper Valley employers. This needs assessment revealed demand for the series in the Upper Valley. In response to this demand, the GMEDC invited Champlain College to introduce their program to local employers. Champlain College will now offer the *Management Excellence Seminar Series – Upper Valley Program* in Norwich in May 2014.

Conclusion

The Upper Valley Workforce Needs Assessment revealed opportunities to cultivate the skills of current and future Upper Valley workers to better match available jobs. In some cases addressing opportunities simply requires connecting supply and demand. For example, in response to a need for management training the GMEDC created an index of local management education resources and invited Champlain College to present their *Management Excellence Seminar Series* to local employers. Responses to other needs assessment findings, such as fast-changing skill requirements in Health Care, the Manufacturing industry's shortage of technical-vocational workers, and the tendency to fill PST Services jobs outside of state borders in lieu of local talent, are less black and white. This report considers possible responses to these challenges, but recognizes that there is not a one size fits all solution.

The needs assessment provides a snapshot of regional workforce development needs in 2014. Yet, the skills that local employers require will change as their markets evolve. The Upper Valley Workforce Needs Assessment should be repeated in three to five years to ensure that workforce development initiatives remain relevant.

The initial goal of this assessment was for the GMEDC to understand the labor needs of local employers. Through the course of the project the GMEDC learned that connecting employers and educators with assessment findings, and more importantly each other, are also key roles for the organization. The GMEDC is open to working with companies, organizations, and educators to test ideas and grow existing programs to address the workforce development needs identified in this report.

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Appendices

I. Towns in the Geographic Statistical Areas

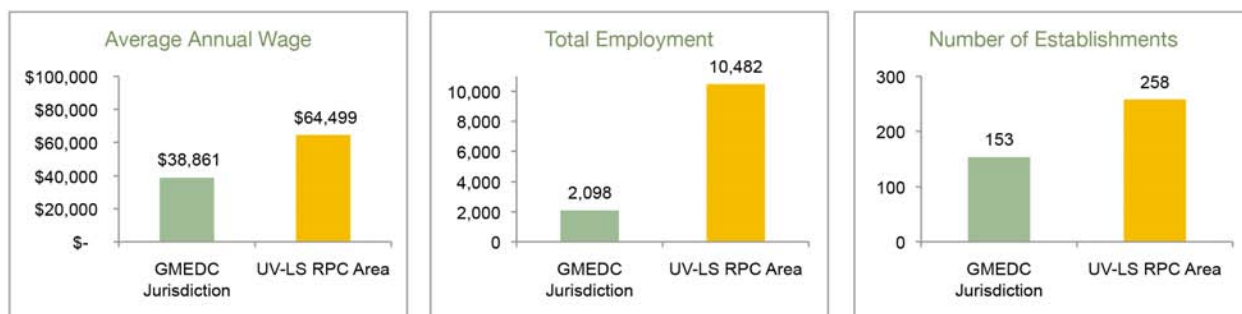
GMEDC Jurisdiction (VT)	Upper Valley-Lake Sunapee Regional Planning Commission Area (NH)	Northern Vermont Balance of State Occupational Employment Statistics Area (VT)	Southern Vermont Balance of State Occupational Employment Statistics Area (VT)	Claremont Occupational Employment Wage Area (NH)	Lebanon-Hanover Wage Area (NH)
Barnard Bethel Bradford Braintree Bridgewater Brookfield Chelsea Corinth Fairlee Granville Hancock Hartford Hartland Newbury Norwich Pittsfield Plymouth Pomfret Randolph Rochester Royalton Sharon Stockbridge Strafford Thetford Topsham Tunbridge Vernshire West Fairlee Woodstock	Acworth Canaan Charlestown Claremont Cornish Croydon Dorchester Enfield Goshen Grafton Grantham Hanover Lebanon Lempster Lyme New London Newbury Newport Orange Orford Piermont Plainfield Springfield Sunapee Unity Washington Wilmot	More than 100 towns in Northern Vermont. A complete list is available online: http://www.vtlimi.info/oesmap.pdf	More than 100 towns in Southern Vermont. A complete list is available online: http://www.vtlimi.info/oesmap.pdf	Acworth Charlestown Claremont Croydon Goshen Langdon Lempster Newport Sunapee Unity	Bath Benton Canaan Cornish Enfield Grafton Grantham Hanover Haverhill Lebanon Lyme Orange Orford Piermont Plainfield Springfield Warren

II. Additional Information about Prioritized Industries

Health Care and Social Assistance

The Upper Valley is home to major hospitals including the Dartmouth-Hitchcock Medical Center in Lebanon, New Hampshire and the Veterans Administration Hospital in White River Junction, Vermont. Together with community hospitals, ambulatory health care providers, nursing and residence care facilities, and social assistance organizations these Health Care and Social Assistance industry anchors employ nearly 13,000 workers in the region. The following graphs compare 2012 Health Care and Social Assistance industry wages, employment, and number of establishments in the GMEDC Jurisdiction and the Upper Valley-Lake Sunapee Regional Planning Commission Area.

Graphs: Health Care and Social Assistance – GMEDC Jurisdiction vs. UV-LS RPC Area

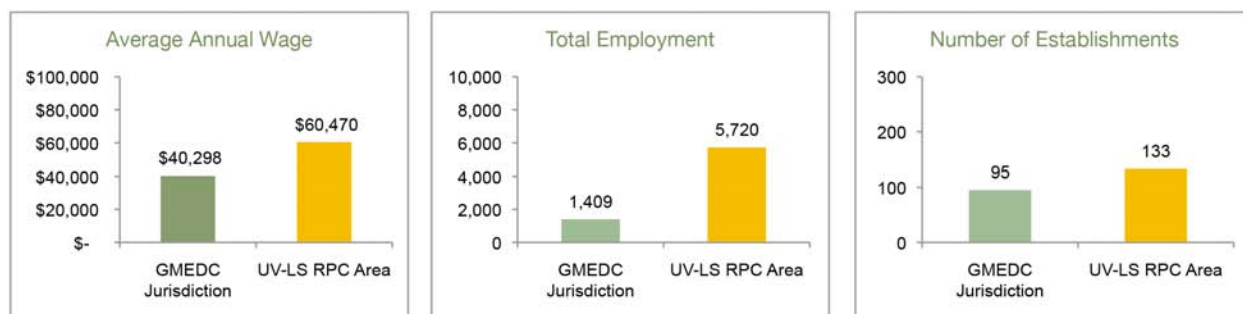


Data Sources: 2012 Covered Employment & Wages for the GMEDC Jurisdiction, Economic & Labor Market Information, Vermont Department of Labor; 2012 Covered Employment & Wages for the Upper Valley-Lake Sunapee Regional Planning Commission Area, Economic and Labor Market Information Bureau, New Hampshire Employment Security.

Manufacturing

Upper Valley manufacturers produce goods that range from machines to processed food. Large manufacturers such as Hypertherm and Whelen Engineering, mid-size producers like NH Industries and GW Plastics, and smaller companies such as Long Trail Brewing Company and North Hartland Tool, contribute to the region's manufacturing mix. Approximately 7,000 workers are employed in Manufacturing in the Upper Valley. The following graphs compare 2012 Manufacturing industry wages, employment, and number of establishments in the GMEDC Jurisdiction and the Upper Valley-Lake Sunapee Regional Planning Commission Area.

Graphs: Manufacturing – GMEDC Jurisdiction vs. UV-LS RPC Area

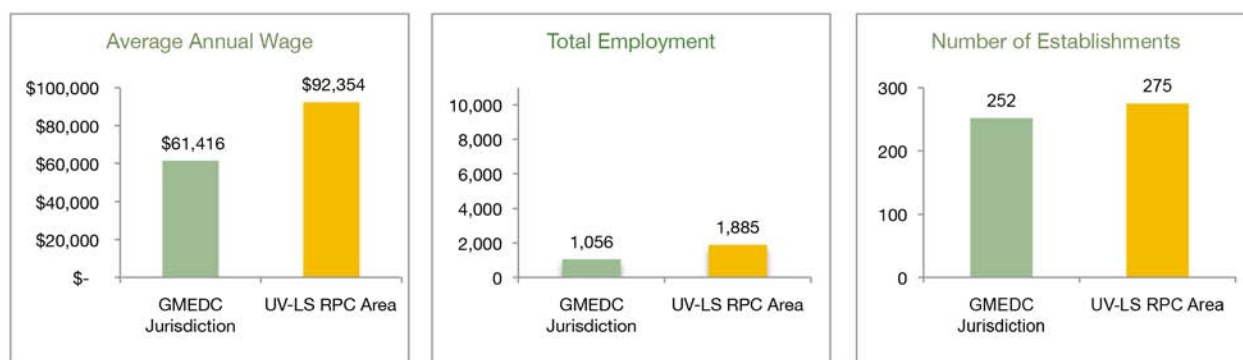


Data Sources: 2012 Covered Employment & Wages for the GMEDC Jurisdiction, Economic & Labor Market Information, Vermont Department of Labor; 2012 Covered Employment & Wages for the Upper Valley-Lake Sunapee Regional Planning Commission Area, Economic and Labor Market Information Bureau, New Hampshire Employment Security.

Professional, Scientific, and Technical Services

The third industry prioritized for further analysis, PST Services, consists of highly specialized companies. Activities performed by establishments in this category include research and development, consulting, advertising, legal advice, design, and accounting. The industry employs about 3,000 workers in the Upper Valley. The following graphs compare 2012 PST Services industry wages, employment, and number of establishments in the GMEDC Jurisdiction and the Upper Valley-Lake Sunapee Regional Planning Commission Area.

Graphs: PST Services – GMEDC Jurisdiction vs. UV-LS RPC Area



Data Sources: 2012 Covered Employment & Wages for the GMEDC Jurisdiction, Economic & Labor Market Information, Vermont Department of Labor; 2012 Covered Employment & Wages for the Upper Valley-Lake Sunapee Regional Planning Commission Area, Economic and Labor Market Information Bureau, New Hampshire Employment Security.

The difference between industry wages in the GMEDC Jurisdiction and in the Upper Valley-Lake Sunapee Regional Planning Commission Area is significant. The GMEDC does not have conclusive evidence to explain this difference. However, a review of industry and occupational data as well as employer interviews suggest that that the difference is not due to significantly higher salaries for the same job New Hampshire. Rather, the difference may be due to the larger scale of enterprises in New Hampshire: more large companies employing multiple high-paid senior employees and specialists may be located in New Hampshire, thereby raising the average industry wage.

III. Description of “Top Jobs” Criteria

Median hourly wage data for the Northern Vermont Balance of State (BOS), Southern Vermont BOS, and the Claremont and Lebanon-Hanover Occupational Wage Areas were collected for each occupation. If the maximum median hourly wage in one of these four areas was greater than or equal to the wage threshold of \$17.20 per hour, the occupation met the wage criterion. For example, in 2012 the median wage of a bookkeeping, accounting, or auditing clerk was \$16.28 per hour in Northern Vermont BOS, \$16.18 per hour in Southern Vermont BOS, \$17.45 per hour in the Claremont Wage Area, and \$17.54 per hour in the Lebanon-Hanover Wage Area. Thus, the maximum median hourly wage of these four areas was \$17.54 per hour and the occupation met the wage criterion.

The knowledge intensity of each occupation was determined by its O*NET Job Zone. O*NET Job Zones are published by the U.S. Department of Labor. Job Zones group occupations into five categories according to education, experience, and training required. Zones range from Job Zone 1, occupations needing little or no preparation, to Job Zone 5, occupations needing extensive preparation. Examples of occupations in Job Zone 1 include furniture finishers and cashiers, occupations in Job Zone 3 include electricians and phlebotomists, and occupations in Job Zone 5 include physicians and lawyers. Occupations with a Job Zone ranking of 3, 4, or 5 met the knowledge intensity criterion.

Occupations that were categorized as having a low average annual short-term growth rate in both Vermont and New Hampshire did not meet the short-term growth criterion. Jobs that were categorized as having low growth in one state and moderate growth in another state or better met the short-term growth criterion. “Low growth” occupations are those with an average annual growth rate less than or equal to 0.5%; “moderate growth” occupations are those with an average annual growth rate between 0.5% and 1.5%; “high growth” occupations are those with an average annual growth rate greater than 1.5%. The short-term growth categories are based on the 2012 average annual short-term growth rate of the 50 fastest growing occupations in Vermont (0.7%)³ and the even distribution of approximately one-third of listed jobs into each of the three categories.

The fourth criterion for top job status was demonstrated local demand. An occupation met the demonstrated local demand criterion if a minimum of 50 people were employed in the position in Northern Vermont BOS, Southern Vermont BOS, and the Claremont and Lebanon-Hanover Occupational Wage Areas combined. If insufficient total employment data was available current job postings were considered. Occupations listed as currently open on the career website of at least one major local employer also met the demonstrated local demand criterion.

³ *Vermont Short Term Occupational Projections: 2012-2014.*

IV. Questions for Employer Interviews

1. How many people are employed at your Upper Valley location(s)?
2. Briefly describe your primary products.
3. Which jobs are the most difficult to fill?
 - a. Why are these jobs vacant? (Examples: business growth, turnover, retirements)
 - b. What skills are required for these jobs?
 - c. What is the starting wage offered for these jobs?
 - d. How many people are currently employed in these jobs?
 - e. How many positions are open?
 - f. How many new positions will open in the next two years?
4. What positions, if any, have you given up trying to fill locally?
5. What external developments will have the biggest impact on your company's demand for skilled labor in the coming years?
6. The GMEDC created a preliminary list of "top jobs" in your industry based on regional wage data, knowledge intensity rankings, short-term job growth projections for Vermont and New Hampshire, and demonstrated local demand (*an initial list of "top jobs" in your industry will be provided during the interview*).
 - a. Which occupations are consistent with your company's labor needs?
 - b. Which occupations don't belong on the list?
 - c. Which occupations should be added to the list?
7. What training and education does your company offer?
8. What industry-wide skills development initiatives would most help your company?
9. What industry-wide skills development initiatives would not be helpful?

V. Top Jobs in Health Care and Social Assistance

SOC Code	Job Title	Knowledge Intensity	Median Hourly Wage				Total Employment				VT Total Annual Openings	NH Average Annual Openings
			No. VT	So. VT	Cla.	Leb-Han	No. VT	So. VT	Cla.	Leb-Han		
11-9111	Medical and Health Services Managers	5	\$38.14	\$34.90	na	\$50.38	140	210	na	270	30	34
21-1014	Mental Health Counselors	5	\$15.02	\$20.61	na	\$22.73	190	120	na	30	28	26
29-1051	Pharmacists	5	\$57.75	\$63.62	\$61.44	\$61.63	140	230	30	80	26	81
29-1062	Family and General Practitioners	5	\$78.80	\$77.04	na	na	100	60	na	na	10	56
29-1066	Psychiatrists	5	\$68.22	\$86.18	na	na	20	40	na	na	4	56
29-1071	Physician Assistants	5	\$40.41	\$43.85	na	na	40	100	na	na	6	8
29-1122	Occupational Therapists	5	\$33.23	\$32.92	na	\$34.25	40	130	na	60	7	21
29-1123	Physical Therapists	5	\$33.42	\$35.73	na	\$37.06	120	260	na	100	26	29
29-1171	Nurse Practitioners	5	\$47.43	\$37.99	na	na	90	90	na	na	na	na
15-1121	Computer Systems Analysts (incl. Informatics Nurses Specialists)	4	\$34.23	\$39.84	na	\$35.25	50	40	na	70	10	104
15-1131	Computer Programmers	4	\$24.93	\$31.49	na	\$31.91	30	20	na	50	na	51
21-1091	Health Educators	4	\$26.61	\$21.33	na	na	60	70	na	na	12	11
29-2011	Medical and Clinical Laboratory Technologists	4	\$28.55	\$29.43	na	\$28.79	na	140	na	30	8	9
29-1141	Registered Nurses	3	\$28.28	\$29.05	\$27.42	na	1,180	2640	210	na	229	327
29-2012	Medical and Clinical Laboratory Technicians	3	\$17.89	\$18.30	na	na	60	100	na	na	7	14
29-2061	Licensed Practical and Licensed Vocational Nurses	3	\$20.75	\$19.51	\$22.83	\$22.09	310	620	120	170	54	90
29-2071	Medical Records and Health Information Technicians (incl. Coders)	3	\$17.68	\$17.75	na	\$19.56	90	210	na	130	16	20
31-9092	Medical Assistants	3	\$15.41	\$16.37	\$15.43	\$14.81	90	280	40	70	15	21
43-1011	First-Line Supervisors of Office and Administrative Support Workers	3	\$24.00	\$22.21	\$19.69	\$21.59	570	810	120	430	62	252
43-3021	Billing and Posting Clerks	3	\$15.39	\$15.90	na	\$17.11	220	340	na	150	22	42
49-9071	Maintenance and Repair Workers	3	\$17.21	\$16.46	\$17.87	\$18.87	760	1,100	90	260	69	122

Sources: 2012 Occupational Employment and Wages, Northern Vermont BOS, Southern Vermont BOS, Economic & Labor Market Information, Vermont Department of Labor; 2012 Occupational Employment Statistics, Claremont Wage Area, Lebanon-Hanover Wage Area, Economic and Labor Market Information Bureau, New Hampshire Employment Security; Job Zones, O*NET OnLine, 2013; Occupational Projections: Short Term 2012-2014, Economic & Labor Market Information, Vermont Department of Labor; Employment Projections: Short-Term Occupational Projections, 2012 Q4 to 2014 Q4, Economic and Labor Market Information Bureau, New Hampshire Employment Security; Employer interviews.

Notes: Occupational data is not industry specific. The abbreviation "SOC" refers to the Standard Occupational Classification system, which is used by Federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. The abbreviation "No. VT" refers to the Northern Vermont Balance of State Occupational Employment Statistics Area. The abbreviation "So. VT" refers to Southern Vermont Balance of State Occupational Employment Statistics Area. The abbreviation "Cla." refers to the Claremont Occupational Employment Wage Area. The abbreviation "Leb-Han" refers to the Lebanon-Hanover Occupational Employment Wage Area. The abbreviation "na" indicates that data is not available.

VI. Top Jobs in Manufacturing

SOC Code	Job Title	Knowledge Intensity	Median Hourly Wage				Total Employment				VT Total Annual Openings	NH Average Annual Openings
			No. VT	So. VT	Cla.	Leb-Han	No. VT	So. VT	Cla.	Leb-Han		
11-9199	Managers, All Other (incl. Supply Chain)	na	\$44.90	\$31.18	\$37.45	\$44.55	130	70	40	290	34	288
11-9041	Architectural and Engineering Managers	5	\$47.91	\$45.30	na	\$55.32	40	40	na	70	na	25
15-1133	Software Developers, Systems Software	4	46.78	na	na	\$44.15	na	na	na	40	8	70
13-1023	Purchasing Agents	4	\$24.96	\$21.74	\$23.21	\$28.23	130	150	30	70	18	38
13-1081	Logisticians	4	na	\$26.61	na	na	0	20	na	na	na	12
15-1131	Computer Programmers	4	\$24.93	\$31.49	na	\$31.91	30	20	na	50	na	51
17-2071	Electrical Engineers	4	\$35.06	\$35.60	na	na	40	190	na	na	10	32
17-2112	Industrial Engineers	4	\$33.26	\$34.59	na	\$34.91	70	150	na	60	8	32
17-2141	Mechanical Engineers	4	\$33.13	\$34.35	\$36.00	\$38.11	50	110	90	210	1	58
41-4012	Sales Representatives, Wholesale and Manufacturing	4	\$24.74	\$25.94	\$31.37	\$23.94	440	880	80	220	106	265
11-3051	Industrial Production Managers	3	\$34.70	\$41.45	na	\$46.39	100	170	na	40	17	27
13-1022	Wholesale and Retail Buyers	3	\$20.71	\$20.66	na	\$21.69	60	170	na	30	14	24
17-3023	Electrical and Electronics Engineering Technicians	3	\$21.12	\$20.82	na	\$24.74	40	60	na	30	na	20
17-3026	Industrial Engineering Technicians	3	na	\$21.16	na	na	na	50	na	na	2	8
17-3027	Mechanical Engineering Technicians	3	na	\$23.02	na	\$24.67	na	10	na	90	2	8
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	3	\$27.64	\$27.05	\$31.16	\$32.44	270	380	50	110	28	68
49-9041	Industrial Machinery Mechanics	3	\$17.89	\$21.19	\$19.98	\$23.70	70	200	30	30	20	58
49-9071	Maintenance and Repair Workers	3	\$17.21	\$16.46	\$17.87	\$18.87	760	1,100	90	260	69	122
51-4012	CNC Machine Tool Programmers	3	\$18.45	\$20.31	na	na	40	30	na	na	3	41
51-4041	Machinists	3	\$15.44	\$22.02	\$18.06	\$23.35	280	210	290	40	18	66
51-4111	Tool and Die Makers	3	\$20.24	\$30.18	\$23.42	na	na	100	80	na	1	4

51-4121	Welders, Cutters, Solderers and Brazers	3	\$15.08	\$15.27	\$18.04	na	150	60	100	na	12	36
51-7011	Cabinetmakers and Bench Carpenters	3	\$15.68	\$14.24	na	na	30	180	na	na	18	8
51-1011	First-Line Supervisors of Production and Operating Workers	2	\$23.41	\$25.82	\$25.57	\$23.45	380	590	150	120	34	54
51-4011	Computer-Controlled Machine Tool Operators	2	\$15.80	\$15.82	\$15.39	\$19.28	150	180	70	40	15	41
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders	2	na	\$12.98	na	na	na	370	na	na	12	15

Sources: 2012 Occupational Employment and Wages, Northern Vermont BOS, Southern Vermont BOS, Economic & Labor Market Information, Vermont Department of Labor; 2012 Occupational Employment Statistics, Claremont Wage Area, Lebanon-Hanover Wage Area, Economic and Labor Market Information Bureau, New Hampshire Employment Security; Job Zones, O*NET OnLine, 2013; Occupational Projections: Short Term 2012-2014, Economic & Labor Market Information, Vermont Department of Labor; Employment Projections: Short-Term Occupational Projections, 2012 Q4 to 2014 Q4, Economic and Labor Market Information Bureau, New Hampshire Employment Security; Employer interviews.

Notes: Occupational data is not industry specific. The abbreviation "SOC" refers to the Standard Occupational Classification system, which is used by Federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. The abbreviation "No. VT" refers to the Northern Vermont Balance of State Occupational Employment Statistics Area. The abbreviation "So. VT" refers to Southern Vermont Balance of State Occupational Employment Statistics Area. The abbreviation "Cla." refers to the Claremont Occupational Employment Wage Area. The abbreviation "Leb-Han" refers to the Lebanon-Hanover Occupational Employment Wage Area. The abbreviation "na" indicates that data is not available.

VII. Top Jobs in Professional, Scientific, and Technical Services

SOC Code	Job Title	Knowledge Intensity	Median Hourly Wage				Total Employment				VT Total Annual Openings	NH Average Annual Openings
			No. VT	So. VT	Cla.	Leb-Han	No. VT	So. VT	Cla.	Leb-Han		
15-1199	Computer Occupations, All other (incl. GIS Technicians and Computer Systems Engineers)	na	\$34.23	\$34.23	na	\$32.02	20	20	na	70	na	34
19-1029	Biologists, All Other (incl. Molecular and Cellular Biologists)	na	na	\$30.35	na	na	na	30	na	na	4	2
17-2199	Engineers, All Other (incl. Chemical Engineers)	na	na	\$37.44	na	\$37.88	na	30	na	na	5	47
11-9041	Engineering Managers	5	\$47.91	\$45.30	na	\$55.32	40	40	na	70	na	25
15-2021	Mathematicians (incl. Data Modelers)	5	na	na	na	na	na	na	na	na	na	na
17-1011	Architects, Except Landscape and Naval	5	\$25.88	\$31.93	na	na	60	60	na	na	14	9
19-1021	Biochemists and Biophysicists	5	na	na	na	na	na	na	na	na	4	na
11-3021	Computer and Information Systems Managers	4	\$41.94	\$61.11	na	\$54.21	70	50	na	110	7	71
13-1111	Management Analysts	4	\$29.43	\$34.62	na	\$44.43	50	150	na	40	28	48
13-1161	Market Research Analysts and Marketing Specialists	4	\$24.12	\$22.63	na	\$22.14	220	270	na	40	70	54
13-2011	Accountants and Auditors	4	\$27.19	\$29.03	\$27.60	\$29.07	780	820	30	190	89	140
15-1121	Computer Systems Analysts	4	\$34.23	\$39.84	na	\$35.25	50	40	na	70	10	104
15-1131	Computer Programmers	4	\$24.93	\$31.49	na	\$31.91	30	20	na	50	na	51
15-1132	Software Developers, Applications	4	\$29.69	\$40.00	na	\$42.31	210	130	na	250	20	154
15-1133	Software Developers, Systems Software	4	\$46.78	na	na	\$44.15	na	na	na	40	8	70
15-1141	Database Administrators	4	\$27.48	\$51.34	na	\$44.45	100	40	na	30	10	20
15-1142	Network and Computer Systems Administrators	4	\$28.36	\$28.35	na	\$33.23	270	370	na	120	42	61
17-1021	Cartographers and Photogrammetrists	4	na	na	na	na	na	na	na	na	na	4
17-2051	Civil Engineers	4	\$31.97	\$30.56	na	\$49.35	170	80	na	40	12	31
17-2071	Electrical Engineers	4	\$35.06	\$35.60	na	na	40	190	na	na	10	32

17-2112	Industrial Engineers	4	\$33.26	\$34.59	na	\$34.91	70	150	na	60	8	32
17-2141	Mechanical Engineers	4	\$33.13	\$34.35	\$36.00	\$38.11	50	110	90	210	14	58
19-2031	Chemists	4	\$24.89	\$27.37	na	na	30	20	na	na	7	6
41-4011	Sales Representatives, Technical and Scientific Products	4	\$35.27	\$38.05	\$33.83	\$37.22	na	110	40	80	14	142
15-1151	Computer (User) Support Specialists	3	\$21.57	\$17.54	\$21.01	\$23.29	210	240	40	200	52	114
23-2011	Paralegals and Legal Assistants	3	\$21.68	\$15.91	na	\$21.30	na	200	na	na	13	20
43-1011	First-Line Supervisors of Office and Administrative Support Workers	3	\$24.00	\$22.21	\$19.69	\$21.59	570	810	120	430	62	252
43-3031	Bookkeeping, Accounting, and Auditing Clerks	3	\$16.28	\$16.18	\$17.45	\$17.54	1,470	2,060	110	430	102	175

Sources: 2012 Occupational Employment and Wages, Northern Vermont BOS, Southern Vermont BOS, Economic & Labor Market Information, Vermont Department of Labor; 2012 Occupational Employment Statistics, Claremont Wage Area, Lebanon-Hanover Wage Area, Economic and Labor Market Information Bureau, New Hampshire Employment Security; Job Zones, O*NET OnLine, 2013; Occupational Projections: Short Term 2012-2014, Economic & Labor Market Information, Vermont Department of Labor; Employment Projections: Short-Term Occupational Projections, 2012 Q4 to 2014 Q4, Economic and Labor Market Information Bureau, New Hampshire Employment Security; Employer interviews.

Notes: Occupational data is not industry specific. The abbreviation "SOC" refers to the Standard Occupational Classification system, which is used by Federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. The abbreviation "No. VT" refers to the Northern Vermont Balance of State Occupational Employment Statistics Area. The abbreviation "So. VT" refers to Southern Vermont Balance of State Occupational Employment Statistics Area. The abbreviation "Cla." refers to the Claremont Occupational Employment Wage Area. The abbreviation "Leb-Han" refers to the Lebanon-Hanover Occupational Employment Wage Area. The abbreviation "na" indicates that data is not available.

VIII. Education and Training Contacts

Resources Mentioned in Report

Advanced Machinist Apprenticeship Training Program

Jeff Higgins

Program Director, External Degree Programs, Vermont Technical College

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Principles of Supervision

Tiffany Keune

Director of Workforce Education, Community College of Vermont

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Hypertherm Technical Training Institute

Jim Britton

Program Director for the Advanced Machine Tool Technology Program,
River Valley Community College

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Leading from Within

Jim Britton

River Valley Community College

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Little League of Manufacturing

Jacqueline Guillette

Capstone Consulting LLC, on behalf of Whelen Engineering Company, INC

jeguillette@gmail.com | 603-558-1953

Management Excellence Seminar Series – Upper Valley Program

Cathy Brotzman

Sr. Program Manager, Center for Professional and Executive Development, Champlain
College, Division of Continuing Professional Studies

brotzman@champlain.edu | 802-865-5471

Northern Stage Communication Workshops

Eric Bunge, Managing Director, Northern Stage

Amanda Rafuse, Development Director, Northern Stage

ebunge@northernstage.org | arafuse@northernstage.org | 802-291-9009

Upper Valley Business and Education Partnership

Kathy Terami

Executive Director, Upper Valley Business and Education Partnership

kterami@uvbep.org | 603-643-3431 ext. 2902

**Leadership Certificate Series
Customized Business Trainings**

Dianne Gross Percy
Education and Training Specialist, Office of Continuing Education & Workforce
Development, Vermont Technical College
dpercy@vtc.edu | 802-236-9161

Additional Resources

Excellence In Executive Leadership (ExcEL)

Cathy Brotzman
Sr. Program Manager, Center for Professional and Executive Development, Champlain
College, Division of Continuing Professional Studies
brotzman@champlain.edu | 802-865-5471

Hartford Area Career and Technology Center

Charles Reibel
Assistant Director
reibelc@hartfordschools.net | 802-359-4739

Granite State College – Claremont and Lebanon Campuses
603-542-3841

Lebanon College

Patricia Gerard
Dean for Enrollment Management and Student Services
pgerard@lebanoncollege.edu

River Valley Community College

Valerie Mahar
V.P. of Student Services and Community Relations
vmahar@ccsnh.edu | 603-542-7744 ext. 5320

Vermont HITEC

Gerald Ghazi
President
gerry.ghazi@vthitec.org | 802-872-0660

Randolph Technical Career Center

Abbe Meiling
Cooperative Education Coordinator
ameiling@randolphtech.org | 802-728-9595 ext. 405

River Bend Career and Technical Center

Robert St. Pierre

Assistant Director

RStPierre@rbctc.org | 802-222-5212 ext. 131

Tuck Executive Education at Dartmouth

tuck.exec.ed@dartmouth.edu | 603-646-2839

Vermont Woodworking School

Carina Driscoll

Co-Founder/Director

carina@vermontwoodworkingschool.com | 802-849-2013

Sugar River Valley Regional Technical Center

Joel Schneid

CTE Director

jschneid@claremont.k12.nh.us | 603-543-4291 ext. 224

IX. Sample Health Care Career Brochure

upper valley careers!

Sample of Local Health Care Employers ...

Alice Peck Day Hospital, Lebanon
 Dartmouth Hitchcock Medical Center, Lebanon
 Gifford Medical Center, Randolph
 Good Neighbor Health Clinic, White River Junction
 Kendal at Hanover, Hanover
 Little Rivers Health Care, Bradford, East Corinth, Wells River
 Ottauquechee Health Center, Woodstock
 Terrace Communities, Hanover, Wilder, Woodstock
 VA Medical Center, White River Junction
 Valley Regional Hospital, Claremont
 Visiting Nurse Association and Hospice of VT and NH, W. Lebanon
 West Central Behavioral Health, Lebanon

... and Health Care Educators

Colby Sawyer College
 Dartmouth University
 Lebanon College
 Granite State College
 River Valley Community College
 Sugar River Valley Regional Technical Center
 Community College of VT
 Hartford Area Career and Technical Center
 Randolph Technical Career Center
 Riverbend Technical and Career Center
 Vermont Technical College



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Health Care



A student guide to Upper
 Valley health care careers

upper valley careers!

upper valley careers!



what do you want to do?
 heal, educate, analyze, organize, interact
check out local jobs in health care

JOB TITLE	DESCRIPTION	EDUCATION LEVEL	MAXIMUM LOCAL MEDIAN WAGE	AVERAGE ANNUAL OPENINGS IN VT	AVERAGE ANNUAL OPENINGS IN NH
Medical and Health Services Managers	Plan, direct, or coordinate medical and health services in hospitals, clinics, public health agencies, or similar organizations.	Bachelor's degree	\$50.38 / hr	30	34
Mental Health Counselors	Work with individuals and groups to promote optimum mental and emotional health. May help individuals deal with issues related to addictions, family, parenting, and marital problems, stress, aging, etc.	Master's degree	\$22.73 / hr	28	26
Physician Assistants	Conduct complete physicals, provide treatment, and counsel patients. May, in some cases, prescribe medication.	Master's degree	\$43.85 / hr	6	8
Occupational Therapists	Help people with disabilities build or restore work, homemaking, and daily living skills, as well as general independence.	Master's degree	\$34.25 / hr	7	21
Physical Therapists	Help people improve mobility, relieve pain, increase strength, and improve disabling conditions resulting from disease or injury.	Doctoral or professional degree	\$37.06 / hr	26	29
Informatics Nurses Specialists	Apply knowledge of nursing and informatics to assist in the design, development, and modification of computerized health care systems.	Bachelor's degree	data not available	data not available	data not available
Health Educators	Provide and manage health education programs that help individuals, families, and communities maximize and maintain healthy lifestyles.	Bachelor's degree	\$26.61 / hr	12	11
Medical and Clinical Laboratory Technologists	Perform complex medical laboratory tests for diagnosis, treatment, and prevention of disease. May train or supervise staff.	Bachelor's degree	\$29.43 / hr	8	9
Registered Nurses	Assess patient health problems and needs, develop and implement nursing care plans, and maintain medical records.	Associate's degree	\$29.05 / hr	229	327
Medical and Clinical Laboratory Technicians	Perform routine medical laboratory tests for the diagnosis, treatment, and prevention of disease.	Associate's degree	\$18.30 / hr	7	14
Licensed Practical and Licensed Vocational Nurses	Care for patients or persons with disabilities in hospitals, nursing homes, clinics, private homes, group homes, and similar institutions.	Postsecondary non-degree award	\$22.83 / hr	54	90
Medical Records and Health Information Technicians	Compile, process, and maintain medical records of hospital and clinic patients.	Postsecondary non-degree award	\$19.56 / hr	16	20
Medical Assistants	Perform administrative duties such as scheduling appointments and billing and clinical duties such as taking vital signs and medical histories and administering medications under direction of physician.	High school diploma or equivalent	\$16.37 / hr	15	21

Sources: Upper Valley Workforce Needs Assessment 2014; O*NET OnLine; Economic and Labor Market Information Bureau, New Hampshire Employment Security; Economic & Labor Market Information, Vermont Department of Labor.

X. Overview of External Management Education Resources

Champlain College - Center for Professional & Executive Development *Management Excellence Seminar Series – Upper Valley Program*

Location:	Norwich
Duration:	Five full-days over a two-week period
Sample Topics:	Understanding your management style Building high performing teams Engaging in effective crucial conversations Tools for successful meetings and decision-making
Educators:	Cortney Cahill, Organization Development Coach and Consultant Subject experts from throughout Vermont
Cost:	\$2,595 per participant (\$2,335 for early registration) Vermont Training Program tuition reimbursement*

Community College of Vermont (CCV) *Principles of Supervision*

Locations:	All CCV locations
Duration:	42 contact hours
Sample Topics:	Communication Goal setting Delegating Time and stress management
Educators:	CCV Instructors (working professionals)
Cost:	Tuition free

* The Vermont Training Program may provide up to 40% tuition reimbursement for eligible employees in Manufacturing, Health Care, Telecommunications, Information Technology, or Environmental Engineering.

Northern Stage*Communication Workshops*

Location:	White River Junction
Duration:	Varies
Sample Topics:	Public speaking Storytelling Non-verbal communication Team building
Educators:	Eric Bungee, Managing Director, Actor, Educator, Consultant Amanda Rafuse, Development Director, Actress, Educator, Consultant
Cost:	Varies Example: \$100 per participant for half-day program

River Valley Community College – Business Training Center*Leading from Within*

Locations:	Lebanon, Claremont
Duration:	13 weekly half-day sessions plus 90-day follow-up meeting
Sample Topics:	Goal setting Communication Problem-solving Decision-making
Educators:	Businesspeople recruited by Action To Excellence, a Burlington-based business consulting firm
Cost:	\$2,000 per participant New Hampshire-based companies may be eligible for New Hampshire Job Training Fund tuition reimbursement

Vermont Technical College (VTC) – Division of Continuing Education & Workforce Development

Leadership Certificate Series

Locations:	All VTC locations, on-site at employer locations
Duration:	6 weekly 3.5 hour sessions
Sample Topics:	Essentials of leadership Having difficult conversations High impact feedback and listening Leading change
Educators:	Dianne Gross Percy, VTC Education and Training Specialist Subject experts from throughout Vermont
Cost:	\$1,150 per participant \$1,500 total base fee for 16 participants for on-site, half-day workshop Vermont Training Program tuition reimbursement*

Customized Business Trainings

Locations:	All VTC locations, on-site at employer locations
Duration:	Varies
Sample Topics:	Leadership Communication Customer service Personal mastery
Educators:	Dianne Gross Percy, VTC Education and Training Specialist Subject experts from throughout Vermont
Cost:	Varies Vermont Training Program tuition reimbursement*

* The Vermont Training Program may provide up to 40% tuition reimbursement for eligible employees in Manufacturing, Health Care, Telecommunications, Information Technology, or Environmental Engineering.

XI. Additional Quotes from Employer Interviews

Feeder Programs

"If there is something high school students should learn its science and math. All of the high-paying jobs require science and math."

– HR Director, PST Services

"The best way for kids to see that the manufacturing environment is different from what they think it is for them to walk through the factory and work on a machine."

– VP of Manufacturing, Manufacturing

"Right now the biggest export between our two states is our kids."

– Educator

"Kids are amazed at how many computers are involved [in manufacturing]. Almost every machine is controlled by a computer."

– CEO, Manufacturing

"We take on Medical Assistants as students. That's how we get the stars of each class."

– CEO, Health Care

"These are careers. There are flow-through career opportunities in our industry."

– CEO, Manufacturing

Technical Skills

"We're going to automate [in Vermont]. We're going to take people out [of entry-level positions] because we have no choice. But we still need technicians, because otherwise who is going to run the machines?"

– CEO, Manufacturing

"I went to do mock interviews at the local technical college hoping to find some candidates in the Industrial Arts Program, but I ended up interviewing nine people who were training to be arborists."

– Woodshop Supervisor, Manufacturing

"Everyone needs good computer skills. There is no such thing as an entry level job at our organization."

– CEO, Health Care

"We need really good trade schools that people have to apply to; they shouldn't be a catch-all for everyone who doesn't like school."

– CEO, Manufacturing

“We have a plan to develop a product in three years that our business depends on. We can’t find people [computer programmers] to do this.”

– CEO, PST Services

“The trend for us is more highly skilled individuals. We will either hold steady or shrink in terms of low-skilled employees.”

– HR Director, Health Care

“The biggest thing holding back manufacturing in New Hampshire is the lack of people.”

– CEO, Manufacturing

Management Skills

“Its not about the skills you need to do a particular job, its managing people.”

– HR Director, Health Care

“The biggest thing holding us back [from more growth] is that not enough people have the confidence to take leaps.”

– CEO, Manufacturing

“We basically throw them [newly promoted managers] to the wolves.”

– General Manager of Manufacturing, Manufacturing

Miscellaneous

“A lot of people think they’re coming to a rural area. When they see the cost of living they say, ‘Are you kidding me?’ I tell them that we are not paying them enough to live in Lebanon. They have to live in the outskirts.”

– HR Director, Manufacturing

“We’re acutely aware of how hard it is for Asians and Indians to move to this area.”

– HR Director, PST Services



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