



REGIONAL EMPLOYMENT BOARD
OF HAMPDEN COUNTY, INC.

Precision Manufacturing Regional Alliance Project (PMRAP)

Business Impacts Report

Precision Manufacturing Regional Alliance Project (PMRAP)

Business Impacts Report

March 2011

The Precision Manufacturing Regional Alliance Project was funded by the Massachusetts Technology Collaborative- John Adams Innovation Institute.

Introduction

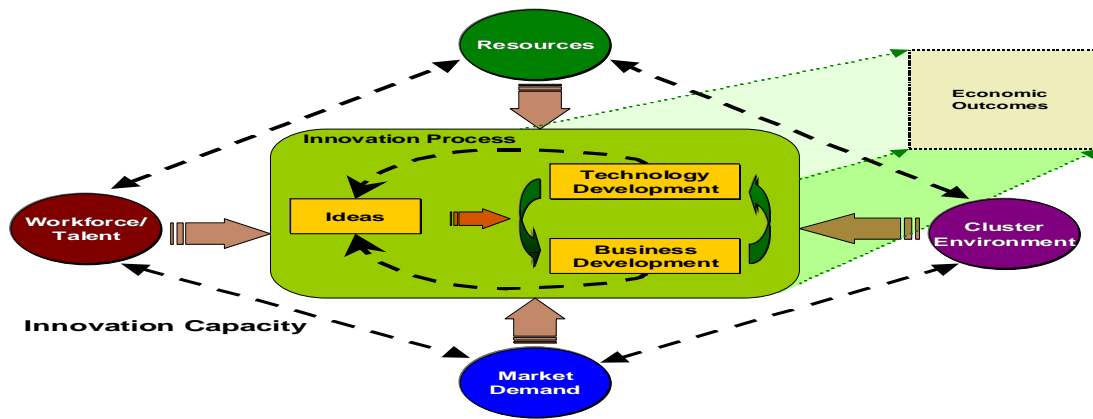
The **Precision Manufacturing Regional Alliance Project (PMRAP)** was a strategic initiative of the Regional Employment Board of Hampden County, Inc. (REB), in collaboration with the following partners:

Project Partners

- Western MA Chapter- National Tooling and Machining Association (WMNTMA)
- University of Massachusetts- Amherst
- Springfield Technical Community College
- Economic Development Council of Western Massachusetts (EDC)
- Holyoke Community College
- Six Vocational Technical High Schools

Project Strategic Vision

PMRAP's strategic vision was to develop a strategic alliance that would assist cluster companies to serve emerging and growing markets, while building a well-educated, technologically skilled and highly adaptable workforce. The project was built on a model for economic development framework that supported innovation in the precision machining cluster.



Project Synopsis

The Precision Manufacturing Regional Alliance Project (PMRAP) was organized and implemented to initiate cluster development and expand sector markets, transform industry capability, and build a workforce infrastructure that would increase the transformative capacity of the precision machining cluster in the Pioneer Valley Region to move up the supply chain in their present markets, position them to respond to specialized market demands in emerging domestic and international markets, and develop collaborative business formations that would accelerate job creation and economic growth.

Going Forward

The findings and analysis contained in this Business Impacts Report will provide some critical guidance to assist the regional cluster companies, the PMRAP partnership, and other interested stakeholders, to continue implementing initiatives to increase the competitiveness of this critical industry sector, and to improve the economic development and expansion of the Pioneer Valley Region.

March 2011

OVERVIEW

The **Business Impacts Report** of the Precision Manufacturing Regional Alliance Project (PMRAP) presents findings from a capacity building initiative that was conducted from September 2008-December 31, 2010.

Twenty-two (22) companies (Attachment A) of the Western Massachusetts Chapter of the National Tooling and Machining Association (WMNTMA) and other companies responded to the Business Impacts Survey (Attachment B) which was conducted in the time period of November 2010-December 2010. The company response rate was 79%.

The size of the sample used to generate the data and findings in the Final Report was very significant, and represents responses from a diverse cross section of the regional precision machining companies.

The Final Report can be viewed on the web site of the Regional Employment Board of Hampden County Inc. at www.rebhc.org, and on the web site of the Western Massachusetts Chapter of the National Tooling and Machining Association at <http://www.wmntma.org/members-resources/industry-reports/>.

The Precision Manufacturing Regional Alliance Project was funded by the Massachusetts Technology Collaborative- John Adams Innovation Institute. Matching cash and in-kind contributions were provided by the lead agency, the Regional Employment Board of Hampden County, Inc. In-kind contributions were also provided by other project partners.

CONTACT INFORMATION

For additional information on the **Business Impacts Report** or on the Precision Manufacturing Regional Alliance Project, please contact David M. Cruise at 413-755-1362 or dcruise@rebhc.org.

For information on the Massachusetts Technology Collaborative- John Adams Innovation Institute, please visit their web site at <http://masstech.org/institute2009/index.html>

Precision Manufacturing Regional Alliance Project (PMRAP)

Business Impacts Report

I. Description of the Regional Precision Machining Cluster

The high technology precision machining companies in the Pioneer Valley Region are led by the Western Massachusetts Chapter of the National Tooling and Machining Association (WMNTMA- www.wmntma.org). The WMNTMA represents 34 precision machining companies employing 2,051 people (**December 31, 2010**). The companies are contract manufacturers that are primarily engaged in supplying precision mechanical components and sub-assemblies in the aerospace, defense, medical device, and power generation markets, both in the United States and internationally. The companies perform value-added precision manufacturing processes and operations utilizing high technology equipment and world class technology development. In CY 2010, the **Regular Member** companies of the WMNTMA had the following employment levels and estimated gross sales:*

Estimated Gross Sales of Regular Member Companies: Adjusted for Changes in Company Membership

Year	No. of Companies	No. of Employees	Estimated Gross Sales
2005	24	899	\$108 Million
2006	29	993	\$155 Million
2007	33	1281	\$229 Million
2008	39	1386	\$252 Million
2009	36	1201	\$222 Million
2010	33	1304	\$243 Million
Change '09-'10	(-) 3	(+) 103 (8.6%)	(+) \$21 Million (9.5%)
Change '05-'10	(+) 9	(+) 405(45.0%)	(+) \$135 Million (125%)

* Estimated Gross Sales, Number of Companies and Number of Employees does not include Smith and Wesson, a WMNTMA Associate Member.

Despite a challenging business and economic environment in CY 2010, the dollar added value per employee was \$185,927, which is .06% higher than in CY 2009, and 8.5% higher than the last reported (2006) state-wide average of \$171,358. This level of productivity was achieved with an 8.6% increase in the number of employees from CY 2009, and affirms the sectors commitment to investment in new equipment, and implementation of lean manufacturing processes.

II. Goals of the Regional Precision Machining Cluster

In a changing market environment, the WMNTMA, as the established industry association representing the precision machining industry, revised their strategic goals for FY '11 to more accurately reflect the realities of the marketplace. The companies were committed to implementing the following goals to develop and strengthen the precision machining industry in the Pioneer Valley Region:

Business Impacts Report

- Goal 1. Increase industry awareness of the Pioneer Valley Region as an innovative and agile high technology precision manufacturing region.
- Goal 2. Strengthen cluster development and increase business competitiveness.
- Goal 3. Build a well-educated, technologically skilled and highly adaptable STEM workforce.
- Goal 4 .Transform industry capability to improve manufacturing processes and operations.

III. PMRAP Outcomes/Economic Benefits

1. Assess the feasibility for developing a sustainable Center for Advanced Precision Manufacturing Technology and implement and test major elements of the Center.
2. Increase new technology development and applications engineering support that will enhance the companies outsourcing capability in present and new markets.
3. Position companies to respond to specialized demands in new or emerging domestic/international markets.
4. Achieve 4% annual increase in new pipeline employees, and higher skills competencies for incumbent employees.

IV. Business Impacts Findings

The companies were asked to measure the business impact of the project over a twenty-eight (28) month time period from September 1, 2008 through December 31, 2010, which is a statistically significant time period. During this time period, the economic and business climate of the industry and the companies changed significantly. The findings and corresponding analysis in the Report should be viewed with an awareness of this fact.

The survey used a **Project Results Scale** ranging from 1-4 (1= **Highly Successful** to 4= **Did Not Attain Goal**) to rate the degree to which the Precision Manufacturing Regional Alliance Project achieved its original goals and successfully completed the contracted Project Deliverables.

The following is the ratings based on survey responses from **twenty-two (22)** precision machining companies. The response rate was **79%**.

No.	Goals and Deliverables	Rating
1.	Developing working partnership with the Pioneer Valley Region educational institutions resulted in an aligned training infrastructure that provided training courses for incumbent and new pipeline employees.	1.41
2.	Hiring Technology Innovation and Applications Engineer as a shared engineering resource to cluster companies provided value added engineering support and services to sector companies.	1.68
3.	Using Technology Innovation and Applications Engineer as the technical liaison between UMass faculty researchers/STCC faculty and cluster companies facilitated the implementation of collaborative new technology development projects focused on improving cluster competitiveness.	1.64
4.	Facilitating cluster partnership with EDC, and other regional economic development entities, resulted in enhanced marketing and promotional services, new business development, and opportunities for market expansion.	1.68
5.	Developing working relationships with faculty researchers at UMass resulted in the piloting of research projects that targeted new technology development focused on improving the manufacturing processes of the regional cluster companies.	1.73
6.	Modifying WMNTMA web site to focus on the clusters need for new business development resulted in an increased awareness by site visitors of the clusters advanced manufacturing capacity and assets.	1.86

Business Impacts Report

7.	Increasing communication and networking among the precision manufacturing companies resulted in the development of new industry business formations and increased collaborative business networks and activities.	1.41
8.	Implementing Regional Precision Manufacturing Technology Advisory Council accelerated industry involvement in the Machine Tool Technology programs at the regional secondary technical schools and resulted in increased student enrollment and improved graduation rates.	1.45
9.	Conducting the Feasibility Study to assess and validate the regional clusters need for a center that would become a focal point for technology development and a facilitator for technology and innovation transfer to the shop floor, resulted in the incorporation of the Massachusetts Center for Advanced Precision Manufacturing Technology, Inc (MCAPMT)	1.77
10.	Developing a new certificate program at STCC will strengthen the Mechanical Engineering Technology program and ensure that graduates have increased technical competencies that are aligned with the clusters future technical skills requirements.	1.41
11	Conducting Market Opportunity Forums resulted in opportunities for cluster companies to obtain real time information and data on market diversification and future industry trends and opportunities	1.59

The following is the ratings given to each Goal and Deliverable ranked in order of the highest rating:

No.	Goals and Deliverables	Rating
1.	Developing working partnership with the Pioneer Valley Region educational institutions resulted in an aligned training infrastructure that provided training courses for incumbent and new pipeline employees.	1.41
10.	Developing a new certificate program at STCC will strengthen the Mechanical Engineering Technology program and ensure that graduates have increased technical competencies that are aligned with the clusters future technical skills requirements.	1.41
7.	Increasing communication and networking among the precision manufacturing companies resulted in the development of new industry business formations and increased collaborative business networks and activities.	1.41
8.	Implementing Regional Precision Manufacturing Technology Advisory Council accelerated industry involvement in the Machine Tool Technology programs at the regional secondary technical schools and resulted in increased student enrollment and improved graduation rates.	1.45
11	Conducting Market Opportunity Forums resulted in opportunities for cluster companies to obtain real time information and data on market diversification and future industry trends and opportunities	1.58
3.	Using Technology Innovation and Applications Engineer as the technical liaison between UMass faculty researchers/STCC faculty and cluster companies facilitated the implementation of collaborative new technology development projects focused on improving cluster competitiveness.	1.64
2.	Hiring Technology Innovation and Applications Engineer as a shared engineering resource to cluster companies provided value added engineering support and services to sector companies.	1.68
4.	Facilitating cluster partnership with EDC, and other regional economic development entities, resulted in enhanced marketing and promotional services, new business development, and opportunities for market expansion.	1.68
5.	Developing working relationships with faculty researchers at UMass resulted in the piloting of research projects that targeted new technology development focused on improving the manufacturing processes of the regional cluster companies.	1.73
6.	Modifying WMNTMA web site to focus on the clusters need for new business development resulted in an increased awareness by site visitors of the clusters advanced manufacturing capacity and assets.	1.86

V. Analysis of Business Impacts Findings

The following is an analysis of the findings from the Business Impacts Survey:

- ✦ The 22 companies (**79% response rate**) that responded to the business impact survey represent a cross section of the large, medium sized and smaller companies within the WMNTMA Regular Member companies. The surveys were completed directly by the company owners, and in limited cases, included comments that supported their final ratings.
- ✦ The Ratings in each Goal and Deliverable were extremely positive with a range of **1.41-1.86**. The consistency of the final ratings in each goal and deliverable indicate the WMNTMA member company's high level of satisfaction with the impact of the project's work to improve the competitiveness of both their individual companies and the regional precision machining cluster.
- ✦ The highest ratings (**1.41-1.45**) are primarily clustered in those project deliverables that have a direct association with workforce development and the importance of creating an aligned and flexible education/training infrastructure that can respond to the cluster companies business need for well trained new employees and more technically competent incumbent employees. The consistency of these ratings across the cluster is significant and reflects the majority of the regional cluster company's need for talent and training to respond to their current positive business conditions.
- ✦ The **consistency of the ratings in No. 1, 10, 7, and 8** indicate broad industry support for the value of these activities and their importance to the companies going forward. The survey, completed in the November 2010- January 2011 time period, validates that talent and training are the critical factors that the regional cluster companies believe will give them the competitive advantage they need to remain viable suppliers in a constantly changing and shrinking supply chain.
- ✦ The **1.4 rating for No. 1 and 10** indicate the companies' satisfaction with and continued commitment to ensuring that the educational infrastructure and programs at the vocational technical high schools and STCC are aligned with their companies future workforce needs. Workforce continues to be the one issue that companies and their suppliers consistently articulate as critical to their continued ability to compete globally. The workforce development/education activities developed in PMRAP appear to have had a positive business impact on the regional cluster.
- ✦ The **1.45 rating in No. 8** attests to the positive business impact that the industry-developed and led Regional Precision Manufacturing Technology Advisory Council has had on the regional cluster, and confirms industry's commitment to actively engaging with the educational institutions to create incremental improvements and sustainable change that will strengthen both the educational infrastructure and delivery system and the companies ability to deploy a well trained, agile, and flexible workforce.
- ✦ The **1.41 rating in No. 7** is extremely significant and confirms that PMRAP's wide range of collaborative activities and events increased communication and networking among the precision machining companies and were a contributing factor to the regional clusters ability to develop new industry business formations and increased collaborative business networks. The development of the Precision Manufacturing

Business Impacts Report

Collaborative of Pioneer Valley was as significant project deliverable and may become a model for future business collaborations that will transform business activity within the small and medium-sized enterprises in the cluster.

- ✚ The **rating (1.58) in No. 11** is compelling given the fact that the project conducted only two of the planned four Market Opportunity Forums. This new information sharing, business networking model appears to have been well received by the companies, and bodes well for the development of future forums that provide companies with real time information and data on market diversification and future industry trends and opportunities, while fostering opportunities to network with representatives from OEM's, prime contractors, and regional economic development organizations.
- ✚ The hiring of the PMRAP Technology Innovation and Applications Engineer as a shared engineering resource to the regional cluster companies and as the technical liaison between the UMass faculty researchers/STCC faculty and the companies appeared to have positive business impact on the regional machining companies. The **1.64 and 1.68** ratings for this creative response to an articulated business need indicates that the regional companies see the concept of a "shared resource, industry/education liaison" as a unique approach that can add value to the entire cluster, but in particular to the smallest companies, whose in-house engineering capability and resources are entrepreneurial. The role, deployment and significance of this position have been validated by PMRAP, and its long term value to the regional cluster should be further evaluated.
- ✚ The **1.68 rating in No. 4** is very significant and responds to the third planned outcome described in Section III- PMRAP Outcomes/Economic Benefits- "Position companies to respond to specialized demands in new or emerging domestic/international markets". The positive response from the companies validates PMRAP's success in facilitating a partnership with the Economic Development Council of Western Massachusetts (EDC). This partnership has benefitted the companies by enhancing marketing and promotional services, expanding networking opportunities, increasing opportunities to exhibit collaboratively at national trade shows, and generating greater awareness of the regional precision machining cluster as a critical economic driver in the Pioneer Valley Region.
- ✚ The successful development of working relationships with faculty researchers at UMass that resulted in the development of a technology transfer project, and the piloting of three (3) on-going research projects with individual WMNTMA companies targeting new technology development focused on improving the manufacturing processes, was a key project deliverable. The **1.73 rating in No. 5** indicates that the responding companies believe that this industry/education relationship, although new and developing, has, in the long term, the potential to improve their manufacturing operations and positively impact their future book of business.
- ✚ The **rating of 1.86** on the modifications to the WMNTMA web site to focus on the clusters need for new business development suggests that this work needs to be accelerated, and greater attention given to refining the web site's content and design. The rating, although the lowest of all the survey ratings, is positive, and suggests that the cluster companies understand the value of their web site as an extension of their individual efforts to promote their companies and the cluster. The WMNTMA companies' need to continue to resource and support the refinement of the web site as an integral part of their individual and cluster-wide marketing and promotional strategy.

VI. Thoughts Moving Forward

1. The REB believes that including the Measuring Business Impact as a Project Deliverable in the Precision Manufacturing Regional Alliance Project was an excellent strategy and methodology to gauge the impact of this sectoral capacity building initiative to respond to the indentified business needs and goals of the regional precision machining cluster as defined in **Section II**.
2. The REB believes that the Business Impact measurement instrument and the methodology used to collect the data and evaluate the business impact in the Precision Manufacturing Regional Alliance Project (PMRAP) was appropriate, and will continue to use the instrument and collection methodology in future data collection and reporting to the John Adams Innovation Institute.
3. The work tasks implemented in the Precision Manufacturing Regional Alliance Project from September 1, 2008-March 31, 2011 responded to the business needs of the precision machining sector in the Pioneer Valley Region. The data and analysis contained in the Business Impact Report provided some critical guidance to assist the regional cluster companies, the PMRAP partnership, and other interested stakeholders, in developing future projects designed to increase the competitiveness of this critical industry sector and to improve the economic development and expansion of the Pioneer Valley Region.
4. The REB will continue to sustain the partnership developed in the Precision Manufacturing Regional Alliance Project and will develop a process to assess the long term impact of the project deliverables on meeting the objectives described in **Section III- PMRAP Outcomes/Economic Benefits**.

VII. Conclusion

The Business Impacts Report developed in the Precision Manufacturing Regional Alliance Project (PMRAP) provided some important and significant findings on the business impact of this intentional capacity building project on the regional precision machining cluster led by the Western Massachusetts Chapter of the National Tooling and Machining Association. The data, information, and resulting analysis of the findings from the business impact survey provided critical business intelligence that will inform the partnerships collaborative decision making going forward.

The Regional Employment Board of Hampden County, Inc. will continue to use the lessons learned and promising practices that evolved from this project and articulated in the Business Impacts Report to develop future strategies, interventions, and programs that will position the precision machining industry in the Pioneer Valley Region to embrace innovation, improve its manufacturing processes, strengthen its present book of business, expand into new and emerging markets, retain its talented and agile workforce, generate new job growth, and continue to be a significant contributor to the economic development of the Region and the Commonwealth.

Attachment A

Precision Manufacturing Regional Alliance Project (PMRAP)

Business Impacts Report

Participating Companies

- + Hoppe Technologies**
- + Tell Tool Inc.**
- + Hayden Corporation**
- + B&E Tool Group, LLC**
- + Lenox**
- + Ben Franklin Design and Manufacturing Co.**
- + Associated Electro-Mechanics, Inc.**
- + Advance Welding**
- + Mitchell Machine Corporation**
- + Pioneer Tool Supply Co. Inc.**
- + O-A Inc.**
- + Boulevard Machine and Gear**
- + Valley Steel Stamp**
- + Peerless Precision Inc.**
- + Universal Plastics**
- + C&G Machine & Tool Co. Inc.**
- + Creative Machining and Molding Corporation**
- + JRK Precision Machining**
- + Amherst Machine**
- + Mechanical Drive Components**
- + Thorn Industries**
- + Poplar Hill Machine, Inc.**



Precision Manufacturing Regional Alliance Project (PMRAP)

Business Impacts Survey

Goals

Goal 1: Initiating Cluster Development and Expanding Sector Markets

Develop collaborative and practical sector cluster development initiatives that offer sector companies new business strategies, and create collaborative business activities that will increase market penetration and result in sustainable growth in an innovation economy.

Goal 2: Transforming Industry Capability

Develop innovative ideas for new technology application, and improve manufacturing production processes and operations by incorporating new processes that can enable the companies to move up the supply chain to become suppliers in new and emerging growth markets.

Goal 3: Building Workforce Infrastructure

Build a more responsive training infrastructure that can meet the technical skills needed by new technology, by expanding partnerships between industry and educational/training institutions to implement comprehensive, coordinated and industry aligned programs and skills standards.

Project Outcomes/Economic Benefits

1. Assess the feasibility for developing a sustainable Center for Advanced Precision Manufacturing Technology and implement and test major elements of the Center.
2. Increase new technology development and applications engineering support that will enhance the companies outsourcing capability in present and new markets.
3. Position companies to respond to specialized demands in new or emerging domestic/international markets.
4. Achieve 4% annual increase in new pipeline employees, and higher skills competencies for incumbent employees.

Key Project Deliverables

1. Memoranda of Agreement among the Precision Manufacturing Companies and Educational Institutions
2. Marketing Program with the Economic Development Council of Western Massachusetts (EDC)
3. Hiring Technology Innovation and Applications Engineer
4. Market Opportunities Forums
5. Technology Innovation Forums with UMass
6. Technology Transfer Pilot with UMass –WMNTMA Companies
7. New Certificate Program in Mechanical Engineering Technology at Springfield Technical Community College
8. Constitute the Regional Precision Manufacturing Technology Advisory Council
9. Feasibility Study on Establishment of a Center for Advanced Precision Manufacturing Technology
10. Market Opportunities Section on www.wmntma.org and Enhanced WMNTMA Web Site Content and Design.

Business Impacts Survey

1. Using a **Project Results Scale** ranging from 1-4 (1= Highly Successful to 4= Did not Attain Goal), please indicate the degree to which the **Precision Manufacturing Regional Alliance Project (PMRAP)** achieved its original project goals, and successfully completed the contracted Project Deliverables:

Goals and Deliverables	Scale	Comments
Developing working partnership with the Pioneer Valley Region educational institutions resulted in an aligned training infrastructure that provided training courses for incumbent and new pipeline employees.	1 2 3 4	
Hiring Technology Innovation and Applications Engineer as a shared engineering resource to cluster companies provided value added engineering support and services to sector companies.	1 2 3 4	
Using Technology Innovation and Applications Engineer as the technical liaison between UMass faculty researchers/STCC faculty and cluster companies facilitated the implementation of collaborative new technology development projects focused on improving cluster competitiveness.	1 2 3 4	
Facilitating cluster partnership with EDC, and other regional economic development entities, resulted in enhanced marketing and promotional services, new business development, and opportunities for market expansion.	1 2 3 4	
Developing working relationships with faculty researchers at UMass resulted in the piloting of research projects that targeted new technology development focused on improving the manufacturing processes of the regional cluster companies.	1 2 3 4	
Modifying WMNTMA web site to focus on the clusters need for new business development resulted in an increased awareness by site visitors of the clusters advanced manufacturing capacity and assets.	1 2 3 4	
Increasing communication and networking among the precision manufacturing companies resulted in the development of new industry business formations and increased collaborative business networks and activities.	1 2 3 4	
Implementing Regional Precision Manufacturing Technology Advisory Council accelerated industry involvement in the Machine Tool Technology programs at the regional secondary technical schools and resulted in increased student enrollment and improved graduation rates.	1 2 3 4	

Conducting the Feasibility Study to assess and validate the regional clusters need for a center that would become a focal point for technology development and a facilitator for technology and innovation transfer to the shop floor, resulted in the incorporation of the Massachusetts Center for Advanced Precision Manufacturing Technology, Inc (MCAPMT)	1 2 3 4	
Developing a new certificate program at STCC will strengthen the Mechanical Engineering Technology program and ensure that graduates have increased technical competencies that are aligned with the clusters future technical skills requirements.	1 2 3 4	
Conducting Market Opportunity Forums resulted in opportunities for cluster companies to obtain real time information and data on market diversification and future industry trends and opportunities	1 2 3 4	
OTHER	1 2 3 4	

2. Describe any positive changes that have occurred in the regional precision manufacturing industry, and in your company, as a result of the work tasks that were implemented in the Precision Manufacturing Regional Alliance Project (PMRAP).

Company: _____ Contact Person: _____ Date: _____