



REGIONAL EMPLOYMENT BOARD
OF HAMPDEN COUNTY, INC.

Precision Manufacturing Training Project (PMTP)

Business Impacts

Interim Report- Goal 1



Introduction

The **Precision Manufacturing Training Project (PMTP)** is a strategic venture of the Regional Employment Board of Hampden County, Inc. (REB), in collaboration with the following partners, to respond to the skills shortage issue in the precision manufacturing industry in the Pioneer Valley Region:

Training Institution
Springfield Technical Community College
Asnuntuck Community College
Massachusetts Career Development Institute

The Precision Manufacturing Training Project has two distinct goals:

- Goal 1- Training in Machine Tool Technology for 40 Unemployed/Underemployed Individuals.**
- Goal 2- Skills Enhancement Training in 40 Training Slots for 60 Incumbent Employees.

This **Interim Report** focuses on Business Impacts for **Goal- 1**, and presents findings from a survey of precision manufacturing companies who hired unemployed/underemployed participants who successfully completed industry aligned training programs that were conducted from August 2007- September 2008. The analysis of the findings is intended to provide initial baseline data and information on the impact of the workforce development intervention on responding to the needs of area companies to increase their workforce to position them to grow their business in their present markets and/or in new and emerging markets.

The REB is hopeful that the on-going findings from the Goal No. 1 Business Impact Survey will provide critical business intelligence that will allow for creative and sustainable workforce development programming and interventions that will create career employment opportunities for unemployed/underemployed program graduates, and create cluster-wide innovation and expansion resulting in increased market share on the regional, national and international levels for the precision manufacturing companies.

Additional surveys will be conducted in June 2009, and September 2009 and will cover the time period of September 2008- September 2009. Findings from that survey will be combined with the information contained in this Interim Report and will be detailed in a comprehensive Final Report that will be presented to Commonwealth Corporation on or before December 31, 2009.

April 2009

OVERVIEW

The **Interim Report on Business Impacts for Goal No. 1** of the Precision Manufacturing Training Project (PMTTP) presents findings from a workforce development intervention that involved unemployed/underemployed participants who successfully completed an industry aligned training program that was conducted from August 2007- September 2008. The selection of the training providers, the training design, and the duration of the training programs was intentional.

Seven (7) companies (Attachment A), representing seven (7) unduplicated incumbent employees, responded to the Survey (Attachment B) which was conducted in early winter 2008/2009. The company response rate was 70%.

The Report can also 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 Training Project is funded by the Workforce Competitiveness Trust Fund managed by Commonwealth Corporation. Matching in-kind funds are provided by the lead agency, the Regional Employment Board of Hampden County, Inc., and other project partners.

CONTACT INFORMATION

For additional information on the **Interim Report** or on the Precision Manufacturing Training Project (PMTTP), please contact David M. Cruise at 413-755-1362 or dcruise@rebhc.org.

For information on Commonwealth Corporation, please visit their web site at www.commcorp.org.

Precision Manufacturing Training Project (PMTP)

Business Impacts

Goal No. 1- Unemployed/Underemployed

Interim Report

I. Description of the Precision Manufacturing Cluster

High technology precision manufacturing is one of the most important industry clusters in the Pioneer Valley Region. The high technology precision machining companies in the Region, led by the Western Massachusetts Chapter of the National Tooling and Machining Association (WMNTMA), are contract manufacturers that are primarily engaged in supplying precision mechanical components and sub-assemblies to major commercial manufacturers, aircraft engine builders, and military equipment contractors 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.

The companies in the cluster have invested extensive resources on building manufacturing capacity by improving operating processes and due to high demands in the aerospace and defense markets are currently experiencing high business volumes. Since these markets are cyclical, the long term prosperity and growth of the precision machining firms as part of various supply-chains might be jeopardized by global changes. The sector faces a shrinking workforce, increased competitive strains from off-shore suppliers, and market pressures that might jeopardize business and employment growth in the Region.

The precision manufacturing cluster in the Region is led by the regular member companies of the Western Massachusetts Chapter of the National Tooling and Machining Association. In calendar year **2008**, the regular members of the WMNTNA experienced the following growth in employment levels and estimated gross sales:

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

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
Change '07-'08	(+) 6	(+) 105 (8.2%)	(+) \$23 Million (10%)
Change '05-'08	(+) 15	(+) 487 (54.2%)	(+) \$144 Million (133%)

The dollar added value per employee was \$181,818, which is 16.5% higher than the reported state-wide average of \$156,065. In addition, the sectors multiplier effect (4.0) generates comparable growth within their supplier and support network. This level of

Interim Report- Goal # 1

productivity was achieved with an 8.2% increase in the number of employees, and affirms the sectors commitment to investment in new equipment, and implementation of lean manufacturing processes.

II. Goals of the Precision Manufacturing Cluster

The cluster has established the following goals for CY 2009 that defines and validates its commitment to develop true cluster identity and collaborative actions that will result in job retention, wealth creation, job growth, and continued economic development in the Region and the State:

Goal 1. Transform Industry Capability to Improve Manufacturing Processes and Operations

Goal 2. Strengthen Cluster Development and Increase Business Competitiveness

Goal 3. Build a Well-Educated, Technologically Skilled and Highly Adaptable STEM Workforce.

Goal 4. Develop a Marketing Plan to Promote the Economic Viability of the Precision Manufacturing/Machining Industry.

III. The Workforce Development Intervention

The workforce development intervention that is described in this Interim Report involved unemployed/underemployed participants who successfully completed an industry aligned training program that was conducted from **August 2007- September 2008**. The programs were conducted at the following educational institutions for the following duration. The selection of the training providers, the training design, and the duration of the training programs was intentional.

Institution	Duration of Training	No. of Participants
Massachusetts Career Development Institute	Ten Weeks (250) Hours	2
Asnuntuck Community College	1. Thirty-Two Weeks (960) Hours 2. Twenty-Four Weeks (720) Hours	4 1
Springfield Technical Community y College	One Year Certificate Program	0

The 7 participants referenced in this interim report represent an unduplicated count. Each participant successfully completed one of the above referenced training programs, and was hired by a precision manufacturing company as a full time employee with fringe benefits... The follow-up survey of the employers of the new pipeline employees was conducted from December 1, 2008-January 31, 2009, approximately 90-120 days following their initial date of employment with the company.

The companies in the precision machining sector in the Region are small and medium (SME) sized contract manufacturers who perform high value, low volume work that is highly engineered. With their primary focus on aerospace and defense work, the companies are very quality centric and commit significant time and resources to insure that employees new to the industry receive the appropriate training and support. They do not expect the new employee to immediately be productive, opting instead to focus on quality and the importance of developing skills competencies in machining small quantities to close tolerance. In addition, they are very concerned with insuring that the new employee has the proper attitude, motivation and work habits to accept company specific training and contribute to the manufacturing team concept. In analyzing the impact of this workforce intervention, it is important to look at the

Interim Report- Goal # 1

findings with the understanding that the Supervisor’s Comments that resulted in the Business Impact Ratings reflect their evaluation of the new employee’s skills competencies and behaviors during the initial 90-120 day time frame.

IV. Business Impact Levels

This Interim Report is using the business impact levels derived from the work of Donald Kirkpatrick¹ to provide some basic understanding relative to the impact of this workforce development intervention on a new employees’ skills competencies and behaviors in comparison to the competencies and behaviors of a new employee who did not participate in a structured and comprehensive workforce development intervention. This analysis is also grounded in information and guidance provided by Commonwealth Corporation². The following is a basic summary of each level:

Level of Impact	Description
I	Employers’ satisfaction with workforce development intervention and expectation of future value-added to company.
II	Value added to company as a result of new employees’ attainment of skills competencies to perform technical work tasks.
III	Employers’ satisfaction with new employees’ behaviors as a result of workforce development intervention, and future business impact on company.
IV	Change in business practices and outcomes.

V. Business Impact Findings

KEY:
Business Impact Rating: (1= Significant Impact to 5 = Minimum Impact)
Sources: (SC) = Supervisors Comments (SR) = Supervisors Report (WP) =Weekly Production Report, (DP) = Daily Production Sheet
Difference: % Variation
No. of Companies: 7 **No. of New Employees:** 7

Business Impact Objective	Business Impact Rating 1 Sig. ← → 5 Min.	Difference % Variation				Sources			
		1-10	11-20	21-40	41+	SC	SR	WP	DP
1. Demonstrates Safe Use of Equipment, Controls, and Tooling	2.71		1	3	1	7			
2. Demonstrates Positive Attitude, Motivation, Attendance and Work Habits	2.00	2		1	1	7			
3. Correctly Interprets Blueprints, Operation Sheets and Verbal Orders	2.71		1	1	2	7			
4. Understands Manufacturing Processes and Sequence of Machining Operations	3.14			3	1	7			
5. Performs Progressive Machining and Assembly Operations on Standard Parts to Specified Tolerances	3.28	1		1	1	2	7		
6. Performs First Piece Inspection and Makes Changes to Produce Acceptable Quality Parts	3.16	1			3	1	7		
7. Program Reduced New Employee Over-the-Shoulder Training Time	3.00		1	3	1	7			
8. Program Reduced New Employee Recruitment and Screening Costs	3.00		1	2	1	7			
9. Program Increased New Employee Retention	2.71				3	7			
10. Increased Staffing Levels have Improved our Ability to Quote on New Work	3.16		Comment				Comment		
11. Increased Staffing Levels have Enhanced our Ability to Perform New Value-Added Work	3.33		Comment				Comment		
12. Increased Staffing Levels have Helped to Improve our Profit Margins	3.14		Comment				Comment		

¹Evaluating Training Programs, Kirkpatrick, D., American Society for Training and Development, 1975.

² Business Impact Primer: Speaking the Language of Employers, Commonwealth Corporation, 2007

VI. Analysis of Business Impact Findings

In analyzing the findings from the initial study of the impact of this workforce development intervention, we have categorized the Business Impact Objectives by their Level of Impact. This allows us to more clearly understand and measure the impact of the intervention on new worker effectiveness, as well as its immediate and future impact on the company.

Business Impact Objective	Business Impact Rating 1 Sig. ←————→ 5 Min.	Difference				Sources			
		% Variation				SC	SR	WP	DP
		1-10	11-20	21-40	41+				
Level I									
1. Intervention Increased New Employee Retention	2.71				3				7
Level II									
2. Demonstrates Safe Use of Equipment, Controls, and Tooling	2.71		1	3	1				7
3. Understands Manufacturing Processes and Sequence of Machining Operations	3.14				3				7
4. Correctly Interprets Blueprints, Operation Sheets and Verbal Orders	2.71		1	1					7
5. Performs Progressive Machining and Assembly Operations on Standard Parts to Specified Tolerances	3.28	1		1					7
6. Performs First Piece Inspection and Makes Changes to Produce Acceptable Quality Parts	3.16	1			3				7
Level III									
7. Demonstrates Positive Attitude, Motivation, Attendance and Work Habits	2.00	2			1				7
8. Intervention Reduced New Employee Over-the-Shoulder Training Time	3.00		1	3					7
9. Intervention Reduced New Employee Recruitment and Screening Costs	3.00		1	2					7
Level IV									
10. Increased Staffing Levels have Improved our Ability to Quote on New Work	3.16								
11. Increased Staffing Levels have Enhanced our Ability to Perform New Value-Added Work	3.33								
12. Increased Staffing Levels are Helping to Improve our Profit Margins	3.14								

- ✚ The primary evaluation Source from all seven employers was the **Supervisors Comments**. As the new pipeline employees become more productive, we anticipate that the Weekly and Daily Production Reports will also be used to evaluate the business impact in specific but not all business impact objectives.
- ✚ The **% variation** of the impact of this workforce development intervention on the new employees' skills competencies and behaviors in comparison to the competencies and behaviors of a new employee who did not participate in a structured and comprehensive workforce development intervention is very significant with almost all companies indicating variations of 25% or more in all business impact objectives.
- ✚ The Rating for Objective # 1 in **Level I** is reasonably significant at this early point in the project. The supervisor's comments and the consistently high degree of variation indicated by the employer's ratings appear to indicate initial satisfaction with the workforce development intervention and expectation of future value-added to the company. The initial degree of impact at Level 1

Interim Report- Goal # 1

is favorable, and it will be important to monitor this objective in future evaluations to establish the true impact of the intervention.

- # The Ratings for Objectives # 2, 4 in **Level II**, at 2.71 indicate that the new employee has acquired the basic technical competencies related to the safe and correct usage equipment, controls, and tooling, and their training in interpreting engineering drawings and blueprints, which were a major component of each training intervention, has positioned them to be able to perform the assigned machining processes and techniques.
- # The Ratings for Objectives # 3, 5, 6, in **Level II** are clustered in the 3.14-3.28 range. These early stage ratings, and the significant % of variation in each of the objectives, indicate that the intervention is being viewed positively by the companies. It is too early to measure the true value added to company as a result of the new employees' attainment of skills competencies to perform technical work tasks, however it appears that the workforce development intervention provided the employee with targeted and relevant skills sets that, in time, will impact the manufacturing process on the factory floor.
- # Improvement in Objective # 4 in **Level II** is significant, and provides an initial indication that the intervention is having the desired impact on employees' attitude and work habits. This change has been validated by the number of companies that indicated an increase of 20% or more in this objective. We believe this result is significant for employees and employers going forward, and is an essential component of increasing the business impact rating in **Level IV**.
- # The Rating for Objective # 7, in **Level III** at 2.00 is the highest rating in the sample and is highly significant. This business impact objective is critical from the companies' perspective, and this positive early stage rating clearly indicates the employers' satisfaction with the new employees' behaviors as a result of workforce development intervention. The assessment and support services provided in the intervention focused on developing positive job readiness skills, and the initial assessment indicates the companies' satisfaction with the results of this intentional component of the intervention.
- # Future reports will analyze the impact of the rating for Objective # 7, in **Level III**, on Objective #1 in **Level I**. Going forward, this should begin to positively impact the ratings for business impacts objectives #5, 6, and 7 in **Level II**.
- # The Ratings and % variation for Objectives # 8,9 in **Level III** at 3.00 are significant at this point in the project cycle, and appear to be an early indicator that the workforce development intervention may result in cost reductions in two areas of sectoral new employee development where companies traditionally incur significant costs. This will be monitored closely to see if the intervention will result in new employee development cost reductions.
- # The Ratings for Objectives # 10, 11, 12 in **Level IV** fall in the range of 3.14-3.33 and are the least significant at this point in the life of the project. Changes in sectoral business practices and outcomes are incremental, and the significance and impact of the programmatic intervention at Level IV will take time to mature. We are satisfied with this impact at this point, and will be interested in its development as the Goal # 1 evaluative process continues.

VII. Observations and Challenges Going Forward

1. The REB believes that the Business Impact measurement instrument used to evaluate the workforce development intervention in Goal # 1 is appropriate, and will continue to use the instrument in future data collection and analysis.
2. The workforce development intervention is clearly aligned with industry's needs. The initial data, in particular the significant % of variation in all of the business impact objectives indicates that the interventions prepared the participants with the appropriate entry level skills competencies to perform a myriad of basic machining tasks and operations at a higher level, and with greater proficiency, than a new employee without the intentional workforce development intervention.
3. The REB will be carefully monitoring the anticipated change in business practices and outcomes in Level IV to determine the depth and breadth of sectoral change that the intervention will create going forward.
4. The REB believes that the small size of the sample in this Interim Report, while providing good initial data, limits in-depth analysis on the true long term impact of the intervention. As more participants in Goal # 1 obtain and retain training related employment positions, we will be better positioned to develop more cogent findings and recommendations that will reflect the long term significance of the intervention, and its capability of evolving into a promising practice.

VIII. Conclusion

The Interim Report of the Precision Manufacturing Training Project (PMTP) on Goal # 1- unemployed/underemployed individuals has provided some important and significant early stage data on the impact of this intentional workforce development intervention on that cohort. The analysis of the findings is intended to provide data and information that will inform our collaborative decision making, allow for mid-course corrections, if necessary, and insure that the project attains its planned outcomes and actual participant results.

We will continue to use this component of the project as a unique opportunity to develop strategies, interventions and programs that will position the precision manufacturing industry in the Pioneer Valley Region to strengthen their present business, expand into new and emerging markets, retain the existing workforce, create new pipeline job growth, and be a significant contributor to the economic development of the Region and the Commonwealth. We look forward to presenting additional data on Goal # 1 to Commonwealth Corporation.

April 2009

Precision Manufacturing Training Project (PMTTP)

Business Impacts

Interim Report- Goal 1

Participating Companies

-  **Berkshire Industries Inc.**
-  **Smith and Wesson**
-  **Tell Tool Inc.**
-  **Mechanical Drive Components**
-  **B&E Tool Group, LLC**
-  **Ben Franklin Design and Manufacturing**
-  **Magnat Fairview**

Precision Manufacturing Training Project (PMTTP)

New Pipeline Employee

Measuring Business Impact: Developing a Plan

Company: _____ Contact Person: _____ New Employees: _____

Using a **Business Impact Rating** from 1-5 (1= Significant Impact to 5 = Minimum Impact), please rate the skills competencies (**Objective No.1-6**) of your new employees who completed the Precision Manufacturing Training Project (PMTTP) training program funded by the WCTF, the business impact (**Objective No. 7-9**), and value-added (**Objective No.10-12**) to your manufacturing and business operations of this workforce development initiative. Also, please indicate the **Difference (Indicate %)** in each **Business Impact Objective** between hiring a new employee who completed a REB/WCTF program in comparison to hiring a new employee without such training, and with similar work experience. Please use a separate sheet to **Comment** on **Numbers 10-12**.

Please select **one or more** of the **Sources** that are the basis for your rating for **each** Business Impact Objective. **1. = Supervisors Comments (SC) 2. = Supervisors Report (SR) 3. = Weekly Production Report (WP) 4. = Daily Production Sheet (DP)**.

Business Impact Objective	Business Impact Rating					Difference	Sources			
	Sig. ←————→ Min.					___ % Variation	SC	SR	WP	DP
1. Demonstrates Safe Use of Equipment, Controls, and Tooling	1	2	3	4	5	___ % Variation	1	2	3	4
2. Demonstrates Positive Attitude, Motivation, Attendance and Work Habits	1	2	3	4	5	___ % Variation	1	2	3	4
3. Correctly Interprets Blueprints, Operation Sheets and Verbal Orders	1	2	3	4	5	___ % Variation	1	2	3	4
4. Understands Manufacturing Processes and Sequence of Machining Operations	1	2	3	4	5	___ % Variation	1	2	3	4
5. Performs Progressive Machining and Assembly Operations on Standard Parts and Equipment to Specified Tolerances	1	2	3	4	5	___ % Variation	1	2	3	4
6. Performs First Piece Inspection and Makes Changes to Produce Acceptable Quality Parts	1	2	3	4	5	___ % Variation	1	2	3	4
7. Program Reduced New Employee Over-the-Shoulder Training Time	1	2	3	4	5	___ % Variation	1	2	3	4
8. Program Reduced New Employee Recruitment and Screening Costs	1	2	3	4	5	___ % Variation	1	2	3	4
9. Program Increased New Employee Retention	1	2	3	4	5	___ % Variation	1	2	3	4
10. Increased Staffing Levels have Improved our Ability to Quote on New Work	1	2	3	4	5	Comment	Comment			
11. Increased Staffing Levels have Enhanced our Ability to Perform New Value-Added Work	1	2	3	4	5	Comment	Comment			
12. Increased Staffing Levels have Helped Improve our Profit Margins	1	2	3	4	5	Comment	Comment			

2. Please describe any changes that have occurred in your manufacturing operations as a result of your company's participation in this new pipeline workforce development training initiative.

3. Please identify any industry aligned technical areas that you would like to see emphasized more in the training curriculum that would increase the new pipeline employee's skills competencies, and add value to your manufacturing operations.
