

Colorado SECTORS Initiative: Pueblo Manufacturing Collaboration

MARCH 2013 CASE STUDY



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COLORADO'S SECTORS INITIATIVE

In May 2009, The Colorado Department of Labor and Employment (CDLE) and the Colorado Workforce Development Council (CWDC) jointly awarded funding to super-regions throughout the state. Funding was provided to regional workforce partnerships to plan a sector strategy, and many of these grantees received additional funding for the implementation of these activities. Since 2009, ten grants have been awarded to target industries including aerospace, healthcare, manufacturing, renewable energy, and water/wastewater management. Sector initiatives are developed through local public-private partnerships, are industry focused, and include workforce development, economic development, education and other stakeholders to address high priority workforce challenges within an industry.

BACKGROUND

Pueblo is a growing county of over 160,000 residents located in south central Colorado. Post-recession, the area continues to face economic challenges with a fairly stagnant unemployment rate around 10% since 2010.¹ Within the region, manufacturing employs about 9% of the working population (11% in Pueblo)² most prominently in primary metal manufacturing/fabrication, but also in other subsectors such as the production of aircraft brakes, cement, climate control systems, chemicals, plastic pipe and others. Manufacturing is an “economic driver” of the region, especially in Pueblo where 11% of the workforce produces roughly 15% of local earnings. Additionally, manufacturing has a 1.33 to 1 “multiplier” effect in terms of overall economic impact to the area. Concurrent to a projected five to eight year overall decline in Pueblo/Southeast Region’s manufacturing sector,³ looking ahead to 2014 there is a projected increase in demand for workers with advanced skill sets in electrical and mechanical maintenance/repair and quality.⁴ Long term growth is projected during the 2014 to 2021 period in engineering, assembly/fabrication, welding and other manufacturing occupations.

GOALS AND OBJECTIVES

In July 2010, the Colorado Department of Labor and Employment (CDLE) awarded the Pueblo Manufacturing Sector Collaboration (PMC) a three-year grant (7/2010 to 6/2013) to provide training and develop a Manufacturing Center of Excellence (MCOE). The goals for PMC included the following:

¹ BLS Local Area Unemployment Statistics Map
<http://data.bls.gov/map/MapToolServlet?state=08&datatype=unemployment&year=2008&period=M10&survey=la&map=county&seasonal=u>. Unemployment statistics for October 2012.

² PMC proposal 2010, page 1

³ Ibid, page 3

⁴ Economic Modeling Specialists, Inc. (EMSI) data

- Provide further assessment of skills needed for new and incumbent workers in the following occupations: Mechanical and Electrical Maintenance Technicians; Quality Assurance and Inspection Technicians; and mid-level supervisors and managers working with Operational Efficiencies such as: ISO9000, Lean Manufacturing, Six Sigma, etc.
- Conduct an assessment of available training programs and establish a plan for overall new program development (i.e. curriculum development, tools, equipment, other needs).
- Deliver training programs that meet the current and emerging needs of manufacturers specifically in the Mechanical, and/or Electrical Maintenance, Quality Assurance and Inspection, and Operational Efficiencies occupations.
- Determine the best model for a MCOE for the newly created “super-region” that includes all 11 southern Colorado counties (Baca, Bent, Chaffee, Crowley, Custer, Fremont, Kiowa, Otero, Park, Prowers and Pueblo).
- Create a sustainability and growth plan for the MCOE that will ensure long-term support for manufacturers in the super-region.

PARTNERSHIPS

Pueblo’s grant benefited from a strong history of public-private sector partnerships in manufacturing. In late 2007, a consortium of more than twenty-five companies and governmental/educational agencies came together and established the Pueblo Manufacturing Group which evolved into the Southern Colorado Manufacturing Group with the inclusion of companies from Southern and Southeastern Colorado. Pueblo had an infrastructure of partners in place to begin their work and had also managed grants as a group prior to the current grant opportunity.⁵

In fact, it was the vision of these groups and other community stakeholders to submit a grant proposal with the goals of creating a MCOE and improving worker skills. The momentum of the grant was also aided by the fact that the above groups had already begun to assess local needs and brainstorm solutions. The sector grant thus became the vehicle to advance work in progress.

Industry partners were essential to the sector strategy and played multiple roles in the PMC. These partners were a vital source of information about skill sets and competencies that needed to be integrated into existent training modules and/or into new training courses. They were the

⁵ Pueblo Community College along with other local and regional partners had previously obtained a \$2 million grant from USDOL to train incumbent workers and job seekers in work readiness, production, certificate training, and specialized skills training in welding, machining, mechanical/electrical maintenance and materials management.

consumers of incumbent worker training. They were potential employers for job seekers. They contributed insight about manufacturing practices and helped to clarify the structure and function of the proposed MCOE. And finally, they served as members of the oversight team.

In addition, the industry partners promoted the PMC as they talked about their satisfaction with provided trainings and the impact of trainings received on their workforce. As such, the industry partners helped to sustain and expand interest in the PMC and its primary goal – increasing the technical and professional skills of the region’s workforce.

The grant initially included the participation of three workforce regions, Pueblo, Southeast Sub-Region, and Upper Arkansas Sub-Region. Additionally, further funding (\$75,000) was awarded to deliver advanced manufacturing services to an expanded area including El Paso, Huerfano, and Las Animas counties. However, from the development of the sector strategy through its implementation, Pueblo WFC was the primary connection to the partnership, served as the fiscal agent, and coordinated all grant activities. Steve Chorak, a Pueblo WFC Business Services Representative, was the project lead.

Local educational institutions played a critical role in the development and implementation of the PMC. The Colorado Association for Manufacturing & Technology, which provides organizational efficiency training and other types of manufacturing, also participated in curriculum development. It was Pueblo Community College, the recipient of a prior US DOL grant to develop training for regional employers and job seekers, however, which became the primary educational partner for worker training.

One of the main goals of the grant was to develop employer driven, intermediate and high level technical training for incumbent workers. To this end, a training subgroup was established that included Pueblo Workforce Center (PWFC), Pueblo Community College (PCC), Colorado State University-Pueblo (CSU-P) and Colorado Association of Manufacturing & Technology (CAMT) to collect data from employers and the technical and professional associations that certify levels of competency in specific areas. The group developed an assessment tool on current and anticipated skill sets needed by manufacturers and sent it out electronically to regional manufacturing companies. In addition, members of the subgroup conducted site visits and phone interviews with companies to gather data. Collected data was then analyzed along with a review of existent training resources.

IMPLEMENTATION ACTIVITIES

Training

Although the original grant proposal included training for new employees, training over the course of the grant to date has focused almost exclusively on incumbent workers based on the assessed needs of local/regional manufacturers. Training for new employees is planned for the spring of 2013.

Advanced manufacturing training was identified as a critical industry requisite in order for employers to remain competitive in a difficult fiscal climate. The assessment found that training incumbent workers should have an effect on capacity, production, and operational efficiencies and new jobs would eventually be created as a result of promotions among the trained incumbent workforce. During the course of curriculum development, a “one size fits all” model was quickly discarded. Instead, curriculum was tailored to the specific needs of a business and its employees.

PCC provided the vast majority of the grant funded training with CAMT also providing several training programs. The sector initiative delivered intermediate and/or high level technical training to incumbent workers from the following companies: Evraz Rocky Mountain Steel, Trane, GCC Rio Grande, Goodrich, Agalite, Doss/Lesco, Trinity Packaging, Nortrak, GPS Source, Holcim, Portec, Atlas Pacific, Davis Wire, and Oliver Manufacturing and Coffee Holding Company. Additional training is planned for DeBourgh and Kaspia Group in the Southeast and South Central Workforce Region, and Qualtek, Mountain Tech Manufacturing, Prescott and Entegris from the Pikes Peak Workforce Region.

With very minor exceptions, training took place on-site in classrooms and/or in Mobile Learning Labs (MLL). Rarely was training held on the PCC campus. The convenience of on-site training lifted a barrier to employee participation. Employers scheduled training sessions during different work shifts including the night and weekend shifts. In a few cases, training sessions followed a shift. Grant funds covered the cost of training, which served as an incentive for employers. Employers did, however, pay employee wages during training hours and this in turn served as an incentive for employees.

Manufacturing Center of Excellence (MCOE)

The second major focus of the sector strategy in Pueblo was the development of a framework for a regional Manufacturing Center of Excellence. A subgroup of the PMC was organized to research the national models for MCOEs. The group’s research focused on (1) organizational structure, (2) implementation funding, (3) business model, (4) sustainability plans, and (5) impact on the competitive advantage of partner/involved companies. Research was done on existing MCOEs and site visits were made to three different types of MCOE models. By the grant’s fourth quarter the subgroup had drafted a list of objectives for the Southern Colorado Manufacturing Center of Excellence:

- Align with federal and state and local manufacturing initiatives as well as state and local economic development plans (“bottom up economic development planning”)
- Provide “value added support” to existing and new manufacturers
- Maximize competitive advantage for regional manufacturers
- Create new job growth and employment retention

- Implement systemic change

The subgroup also drafted Mission and Vision statements:

MISSION: “To identify, validate, and disseminate best in-class practices, processes, methodologies, systems, and services with the end objective of improving the level of competitiveness of manufacturing and industrial sectors in Southern Colorado.”

VISION: “To bring to fruition a value-added resource that maintains strategic partnerships with academic organizations, industry, and government across all technology disciplines that through innovation can positively impact current and future manufactures in the region.”

In addition, PMC members are working on goals and objectives for the MCOE based on the Colorado Economic Blueprint. Partnerships and discussions have also begun on sustainability of the MCOE. To date, the following concepts are being discussed:

- Request funds through the Pueblo, Colorado half cent sales tax for economic development
- Request funds through either state lottery receipts and/or Pueblo County business property tax
- Use Small Business Administration funds
- Implement member “dues” and/or “association fees”
- Direct employer contributions (either cash or in kind)
- Link with other federal/state initiatives such as the Technology Acceleration Park (TAP), Vet-Biz Initiative for National Sustainment (VINS).

ACHIEVEMENTS

Training

During the development phase of the advanced manufacturing training, coursework was compiled and/or developed in the categories of Leadership/Staff Development/Work Readiness; Engineering/Technical; Maintenance/Facilities; Health/Safety/Environmental; Quality Assurance; and Production. A catalogue of training was developed from which manufacturing employers could select courses most appropriate to their needs. Many of the courses were already prepared, “off the shelf” programs ready for delivery by Pueblo Community College (PCC), Colorado Association of Manufacturing & Technology (CAMT) and Colorado State

University – Pueblo (CSU-P). Other coursework was developed to meet specific needs of manufacturing companies.

Over the progression of the initiative, Pueblo Community College (PCC) developed or refined three core curriculums. The first, Advanced Programmable Logic Controllers (PLCs) training was developed into a thirty-hour course with hands-on lab exercises. The curriculum expanded depth and breadth of existing PLC curriculum and included introductory and intermediate to advanced levels and four different types of industry processing. PCC then began to customize and adapt the curriculum to meet the needs of four very different companies using specific Allen Bradley Control Logix, Allen Bradley SLC 500, Direct Soft, and/or Siemens controllers.

Second, PCC developed a ten to thirty-six hour course on Advanced Hydraulics with upgraded hands-on lab exercises. This curriculum enhanced lab exercises for hydraulic/pneumatic troubleshooting using PCC's hydraulic/pneumatic trainers. In addition to several grant funded participants who already received the training, other companies have expressed an interest in Advanced Hydraulics training for their employees. Finally, PCC developed an eight-hour course with upgraded hands-on lab experiences in the area of Shaft Alignment.

In total, under the grant PCC developed 565 hours of curricula in advanced manufacturing skills. The curricula focuses on the following areas: Lean Basics/Manufacturing; Six Sigma; Process Documentation; Set Up Reduction; Metallurgy; Computer Aided Design; Statistical Process Controls; Bearings & Shafts; Hydraulics/Pneumatics; Advanced Hydraulics; Instrumentation; Mechanical Components; Mechanical Schematics; AC/DC Electricity; Electrical Schematics; Motors & Controls; Programmable Logic Controllers (PLC); Advanced PLCs. Some companies have expressed an interest in the development of a degree in manufacturing technology to include coursework in industrial maintenance, engineering technology and production skills. As a result of this interest, Pueblo Community College, with input from manufacturing companies and CSU-P, are exploring the design of specific manufacturing degree(s) which would accommodate this market demand.

The numbers of individuals who have entered grant related training and completed training far exceeded initial project goals. As of December 31, 2012, 113 individuals (incumbent workers) have been enrolled in Sector Grant training with 113 completing training activities and receiving a credential, or nearly 180% of the target. Trainings have been convened at 15 companies within the super-region. It is projected that an additional 40 to 50 incumbent workers and up to 15 job seekers will receive training prior to the closing date of the grant in June 2013.

Given staffing limitations, and the fact that PCC only had three mobile learning labs, the initiative was unable to satisfy all requests for training. In response, PMC sought additional funding support from the State Energy Sector Partnership, Eastern Wind Sectors Grant and the H-1B grant (see below). Towards the end of the grant, the Pueblo WFC in cooperation with Pueblo Community College and other partners successfully submitted a request for an additional \$75,000 in Sector funds from the Colorado Workforce Development Council. These

new funds enabled the PMC to provide training to companies located in El Paso, Huerfano, and Las Animas Counties.

Manufacturing Center of Excellence

Over the course of the grant, PMC defined the functions for the proposed MCOE, developed a mission and vision statement, and fostered additional partnerships for the initiative. At the end of the grant PMC and its partners were working to identify funding sources and a home for the center. Efforts are still underway to identify and secure sufficient funding for “start-up” of an MCOE.

IMPACT / RETURN ON INVESTMENT (ROI)

No formal ROI measures were established or tracked by PMC, however, employers, incumbent workers, and project leads noted several significant positive effects of the incumbent worker training.

Employers reported positive changes in productivity and workflow. Not only did their employees quickly translate new skills into their job functions but also seemed to have a more comprehensive understanding of production process and the jobs of their co-workers. In fact, they observed a common language now existed between managers and staff which improved communication.

In discussing Six Sigma training at Atlas Pacific, managers mentioned that the training helped change how employees saw problems and solutions. There was a culture shift, making workers (and thus the company) more effective problem solvers. They noticed that “many people looked at things differently after training,” engaging in more preventive maintenance that decreased equipment downtime and improved efficiency.

Several companies expressed concern that employees would leave once trained. Yet, only one company reported that an employee left after being trained. This employer stated that overall he had retained his company’s strongest talent.

Employees also gave positive feedback. For them, the training sessions demonstrated an investment in, if not a commitment to, employee value. A maintenance worker at Davis Wire observed increased morale following training. He noted that workers who had gone through the training were more confident in their ability to fix problems. He also commented that the instructors’ own field experience made a difference in the training.

In some cases, subsequent to their training, companies were able to promote workers. This increased employee wages and created new job openings to “backfill.” For example, after completing training an employee at one company was promoted, increasing his annual salary by \$5,000. This promotion enabled the company to also promote someone into that employee’s

previous position, and this second employee's salary also increased by about \$5,000. The second promotion created an opening for a new entry-level position, and thus created a job.

Generally, employers observed the trainings created new career paths. In equipment maintenance, for instance, there is an absence of qualified job seekers. Recent graduates rarely pursue these positions, so it is "hard to hire off the streets." With this grant HR managers noted that they were more comfortable in hiring a job seeker because they could offer him/her formalized on the job training. This expanded their capacity to recruit and employ new workers. And, with further training, workers could gain additional knowledge and skills which in turn could be used in new capacities. The trainings also enabled the employer to retain workers when new technology was introduced that required a different set of skills.

FINANCIAL AND LEVERAGED RESOURCES

From the beginning, PMC planned for a combination of in-kind and cash resources to be contributed during the life of the grant. Of the \$630,070 budget submitted to CDLE, PMC indicated that 32.5%, or \$205,000, would come from in-kind and cash contributions from partnering agencies and employers. As of June 2012 the cost share from the partners had grown to 45% of the expenses, exceeding expectations.

PMC was able to leverage additional resources through its active partnership with a number of other institutions and organizations. The majority of this funding was focused on expanding PMC's capacity to provide training to incumbent active workers throughout the region. For example, "a blended work agreement" was established between the sector partnership and CAMT to carry out training in advanced manufacturing areas. The Colorado Wind Energy Sector grant also provided \$50,000 that facilitated the training of additional employees of Vestas Towers America, GCC Rio Grande, and Evraz Rocky Mountain Steel. In addition, CAMT applied for a grant through the National Institute of Standards & Technology/Manufacturing Extension Partnership, which potentially could assist in the development of a Southern Colorado Center of Excellence.

PMC successfully applied to CDLE for a supplementary grant of \$75,000 to respond to requests for training. The additional funding runs concurrently with the previous grant, through June 2013.

CHALLENGES / LESSONS LEARNED

- PMC grew from an existent active network of industry, WFCs and educational partners. Prior relationships provided pathways for communication and also a degree of "trust" among the partners. From the beginning, there was momentum to move forward and a common vision – workforce development and the establishment of a MCOE.

- It is critical to schedule orientation to, and discussion of, state accounting and administrative (to include performance outcomes) systems as soon as possible after an award has been made. Meetings between project leaders and state counterparts facilitate early problem solving and the resolution of critical issues, e.g. how to work with multiple accounting systems and tracking requirements.
- WIA and other public programs were a significant source of funds to support incumbent worker training. Attestation processes, however, were burdensome for employers and employees. They also raised concerns from employers about confidentiality resulting in the withdrawal of several companies which had requested incumbent training. Collaborative work between Pueblo WFC and CDLE resolved this issue. Regular bidirectional communication between WFCs and CDLE is critical to the success of local programs. PMC's responsiveness to company concerns about the process of attestation affirmed the commitment to attend to company needs and problem solve with them. These actions communicated the message that public agencies are not rigid "iron cages." Like the companies themselves, they can change or adapt procedures to expedite service delivery. Proof of success was that two of the four companies that had withdrawn training requests after becoming concerned about attestation, reopened their applications for training at a later date.
- While PMC was successful in securing additional funding from the State Energy Sector Partnership, it was less successful with its other fund raising activities. As regional companies recognized the benefits of received training, however, some began to talk about their willingness to pay for actual training costs, i.e., in addition to employee wages. The possibility that companies would invest more dollars in training, even without a formal ROI calculation process, affirms that products that have gained credibility can be marketed and "sold." Further, training, like any other product, takes time to build "product" legitimacy, thus as programs evolve, new strategies and opportunities for support may emerge.
- PMC's active engagement with other entities in the region (such as the Veterans Initiative for National Sustainment and Pueblo Chemical Agent Destruction Pilot Plant) reflected its awareness that the sharing of resources can have mutual benefits. Although there are no contracts currently in place with these organizations, the initiation of dialogue sets the stage for additional opportunities for support and sustainability.

BEST PRACTICES

- Employers noted that conducting trainings on-site lifted barriers to participation. Trane, for example, noted PCC's on-site training had a 100% participation rate in contrast to much lower rates when workers pursued training on their own.

- Many companies stated that PCC's ability to customize training to meet specific company needs was indispensable.
- Mobile Learning Labs were used to provide hands-on-training for specific operations without interrupting the company's production schedule, i.e. using equipment on the factory floor. The labs enabled incumbent workers to be trained without travelling. This was attractive to both employers and employees.
- Streamlining the attestation by allowing employers to use documentation they had collected at hiring reduced processing time and increased the ability of WFC to partner with companies. The new process brought some employers back to the partnership, resulting in the training of more workers. Using joint applications instead of three separate applications proved highly beneficial. This process created less paperwork for employers and less confusion.
- Co-enrolling workers also surfaced as a best practice. Some employers permitted workers from other companies to attend training on their site. Co-enrolling enabled more workers to receive training. Permission was required, but co-enrolling did not necessitate a large investment in time or creation of new procedures.

National research on MCOEs allowed PMC to gain insight and integrate lessons learned as it moved forward. Ongoing dialogue with potential stake holders contributed to the development of a common vision and the possibility of new partners to build and support the MCOE. Finally, the decision to utilize the same terminology that exists at the state and federal levels set the stage for improved communication in the future. This decision is exemplified in the name change from MCOE to "Manufacturing Innovation Center."

SUSTAINABILITY

In 2010, Pueblo Community College received a four year TAA-COETC grant from the US Department of Labor to develop non-degree training for incumbent workers and job seekers in the Oil and Gas Industries. As part of this endeavor PCC has continued to develop industry recognized credentials in electrical, mechanical, welding, MSHA safety and First Responder training. There is significant cross-over of these subject areas with manufacturing, and thus will contribute to the training within the manufacturing sector. In addition, TAA-COETC funds are supporting the construction of additional MLLs which might be used in future sector trainings.

At the filing of this report, the Pueblo Collaboration had not been successful in identifying additional funds to establish a regional Manufacturing Center for Excellence. However, in the State of the Union, President Obama mentioned plans to fund a number of Centers of Excellence around the nation. This support may stimulate increased interest and investment in the funding of Pueblo's Manufacturing Center of Excellence.

Incumbent worker trainings are continuing throughout the region with employers increasing their share of the costs. Demand for the training is great and even with additional state funding, the Pueblo Collaborative has not been able to respond to all requests for incumbent trainings.

RECOMMENDATIONS

Reflecting on the activities, challenges and successes of PMC, the following recommendations are suggested:

- Continue to streamline the method of identifying eligible incumbent workers for the grant program.
- Develop a protocol or guide that can help companies identify and select workers who could most benefit from incumbent training.
- Work collaboratively with others across the state to develop a return on investment measurement tool that can help companies quantify the impact of training on their workforce, productivity and profits.
- Identify measures that can confirm the potential impact of the MCOE, and use these for future fund raising.

ABOUT

Rutgers University's School of Management and Labor Relations (SMLR) is the leading source of expertise on the world of work, building effective and sustainable organizations, and the changing employment relationship. The school is comprised of two departments—one focused on all aspects of strategic human resource management and the other dedicated to the social science specialties related to labor studies and employment relations. In addition, SMLR provides many continuing education and certificate programs taught by world-class researchers and expert practitioners. For more information, visit www.smlr.rutgers.edu

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APPENDIX A

Pueblo Manufacturing Collaboration Partners:

- Pueblo Workforce Center (also Fiscal Entity)
- Colorado Workforce, Southeast Sub-Region,
- Colorado Workforce Upper Arkansas Sub-Region
- Colorado State University – Pueblo
- Pueblo Community College
- Colorado Association of Manufacturing
- Pueblo Economic Development Corporation
- Small Business Development Center
- Evraz Pueblo
- Holcim Cement
- Krage Manufacturing
- Kurt Manufacturing
- Oliver Manufacturing
- Trane
- Vestas Towers America
- GCC Rio Grande
- Goodrich/UTC
- Agalite
- Doss/Lesco
- Trinity Packaging
- Nortrak
- GPS Source
- Portec
- Atlas Pacific
- Davis Wire
- Coffee Holding Company
- Qualtek
- Mountain Tech Manufacturing
- Prescott, Entegris
- DeBourgh
- Kaspia Group

APPENDIX B

ACTIVITY	TOTAL PLANNED	TOTAL ACTUAL*	% OF GOAL
Entered training	70	113	161%
Completed training	63	113	179%
Earned certificate or industry credential	63	113	179%

*Outcomes to date. Grant continues through 6/30/13.