

Appendix C: Case Study Site Visit Summaries

Funded Initiative/Organization (Abbreviation)	Region	State	Round	Industry	Organization Type*
Skills for Manufacturing and Related Technologies (SMART) Initiative /Board of Trustees of Connecticut Community-Technical College (CT SMART)	1	CT	2	Advanced Manufacturing	Community-Technical College District
Healthcare as High Growth /The Community College of Baltimore County (CCBC Healthcare 1)	2	MD	2	Healthcare	Community College
Building for Tomorrow /The Community College of Baltimore County (CCBC Build)	2	MD	3	Construction and Energy	Community College
Expanding Healthcare Opportunities in a Recession Economy/The Community College of Baltimore County (CCBC Healthcare 2)	2	MD	4	Healthcare	Community College
RN Job Fulfillment Partnership/St. Petersburg College (SPC RN)	3	FL	1	Healthcare	Educational Institution
Building the Healthcare Informatics Workforce/ St. Petersburg College (SPC Informatics)	3	FL	2	Healthcare	Educational Institution
Biotech KY /Owensboro Community and Technical College (OCTC Biotech)	3	KY	3	Biotechnology	Community-Technical College
Energy for Tomorrow /Montana State University-Billings College of Technology (MSUB-COT Energy)	4	MT	2	Energy	Educational Institution
Leveraging Innovation Assets to Alleviate Critical Healthcare Worker Shortages/ Cleveland/Cuyahoga One-Stop Career Center – 2 (Tri-C Healthcare)	5	OH	3	Healthcare	Public Workforce Investment Organization
Joined by a River: Logistics Programming in the Quad Cities /Eastern Iowa Community College District (EICCD Logistics)	5	IA	2	Transportation	Community College District
California Nanotechnology Collaborative /San Bernardino Community College District (SBCCD Nanotech)	6	CA	4	Nanotechnology	Community College District

**Skills for Manufacturing and Related Technologies Initiative/ Board of Trustees of Connecticut
Community-Technical College
(CT SMART)**

Grantee:	Board of Trustees of Connecticut Community-Technical Colleges (CCCS)
Location of Grant Activities:	State of Connecticut
Sector Targeted:	Advanced Manufacturing
Type of Grant:	Training and Capacity Building
Grant Amount:	\$2,191,400
Match/Leveraged Amount:	\$1,635,876 (as of June 30, 2011)
Grant Period:	April 4, 2008 – March 31, 2012 (Extended from original end date of March 31, 2011)
Site Visit Dates:	March 10 - 11, 2011

Workforce Context: The manufacturing sector is a major employer and contributor to the economy of Connecticut. In 2006 (just prior to preparation of the CBJTG application), the manufacturing sector accounted for 13.6 percent of all Connecticut jobs,¹ with 5,300 manufacturing companies in Connecticut employing almost 200,000 workers in jobs with average annual wages of \$65,940 (in excess of \$11,000 of the overall average wage for workers in the state).² Within the manufacturing sector, Connecticut has employers that offer a range of advanced manufacturing jobs, including a concentration of jobs in aerospace manufacturing, surgical and medical instrument manufacturing, pharmaceutical and medicine manufacturing, defense, metal, and plastic manufacturing. Large employers located in Connecticut, such as Pratt and Whitney and Electric Boat, in addition to small to medium sized manufacturers (those who employ fewer than 100 employees), continue to be the driving force of manufacturing in Connecticut and create ongoing demand for skilled machinists and a diverse range of other manufacturing workers. In recent years, with the aging of the state’s population, manufacturers have increasingly faced the need for new workers to fill highly skilled jobs vacated by retiring workers. Prior to the recession, there was particularly strong demand for advanced manufacturing workers to fill openings in plastics, aerospace, and submarine sectors, in various parts of the state. Yet, despite the strong demand for workers, employers complain about a thinning pool of talented and skilled workers from which to recruit.

In 2007, the Connecticut Office of Workforce Competitiveness identified precision manufacturing as one of four “key skill shortage areas”. The shortage in supply of skilled workers has been partially linked to the limited capacity of local area colleges to increase the pipeline of skilled workers required by employers in the various manufacturing professions. Insufficient facilities, faculty, and advanced manufacturing equipment make it difficult for community colleges and proprietary schools to provide trainings. Rapidly changing technology and equipment further complicates efforts to provide students with state-of-the-art instruction on techniques/skills in current use by leading-edge employers in the state. Additionally, limited hands-on and work-based learning opportunities available at employer sites make it difficult for students and employees to learn advanced manufacturing skills.

¹ According to the U.S. Department of Labor; date for 2006.

² According to the Connecticut Department of Labor, Information for Workforce Investment Planning.

Local colleges are also constrained by the lack of interest in these fields which is, in part, due to the lack of understanding and awareness of advanced manufacturing jobs, the skills needed to secure higher paying and technology-oriented jobs in the sector, and the wide variety of manufacturing careers and educational opportunities. Many teachers, parents, and students have antiquated notions about manufacturing jobs, which makes it difficult for community colleges to recruit new and well-equipped students into advanced manufacturing programs.

Target Populations: The original target populations for this CBJTG-funded project included adult education learners; veterans; underrepresented ethnic minorities; immigrants (including those who lack English proficiency); young workers aged 18-27; and young women. Over time, as the nation and Connecticut slid into recession, more unemployed and dislocated workers were targeted and entered training programs offered and paid for by grant funds.

Project Goals:

1. *Increase the pipeline of skilled manufacturing workers to meet employer demand.*
 - Create a career pathway by providing pre-manufacturing training followed by Level I and II advanced manufacturing training.
 - Provide tuition assistance for students to make advanced manufacturing training affordable to students who might otherwise not be able to afford to enter training.
 - Expand the available number of advanced manufacturing internships sponsored by employers in the state.
2. *Increase awareness of and interest in manufacturing jobs among youth and other unemployed/underemployed workers, as well as bring a more diverse workforce into advanced manufacturing.*
3. *Create distance-learning opportunities through a multi-institutional collaborative in order to provide students with support in general educational areas such as math, science, and English.*
4. *Increase the capacity of community colleges to provide advanced manufacturing training to meet the workforce needs of employers in their localities.*
 - Develop and refine a pre-manufacturing training curriculum for the community college system.
 - Expand training slots available in advanced manufacturing training programs at community colleges across the state.

Major Project Components:

Recruitment and Community Awareness. To reach the targeted population, community colleges involved in this project partnered with local workforce investment boards (WIBs)/One-Stop Career Centers to conduct much of the outreach and recruitment for the training provided with CBJTG funding. Three Career Advisors were hired with grant funds to conduct recruitment and orientation sessions with interested individuals. Each month, Career Advisors conducted one to two 90-minute orientation(s) at 17 One-Stop Career Centers across the state. The Career Advisors travelled to assigned one-stop

locations both to present orientations and to discuss the program one-on-one with interested one-stop customers. Career Advisors provided most of the referrals to the program (though there was no requirement that participants be WIA enrolled). The Connecticut Community College System (CCCS), and community colleges within this system involved in the project, further supported these recruitment and awareness activities through distribution of program information on their websites, brochures, posters, press releases, and several special open houses. The Connecticut Women's Education and Legal Fund (CWEALF) partnered with CCCS to reach out to young girls (see description below in Pipeline Development).

Pipeline Development. One focus of the *SMART Initiative* is increasing awareness and interest among young girls in entering advanced manufacturing careers. In partnership with the non-profit CWEALF, CCCS conducted six one-day technical expositions (referred to as G²O-Expo). These expositions were attended by young female students and teachers -- e.g., a G²O-Expo held in October 2010 at Asnuntuck Community College (ACC) was attended by 92 female participants and eight teachers. The all-day workshops highlighted the varying sectors and opportunities within the manufacturing industry. A range of workshops were offered, including *Let's Make Something* (how machines help to take a product from raw to finished form); *The Amazing Cube* (a vertical milling machine is used to make a design that can hang from a key chain); and *Treasure Hunt* (teams work to locate three caches using a GPS unit). The expositions are aimed at bringing a "cleaner" and more modern view of manufacturing to a younger generation.

- As of December 31, 2010, nearly 450 students attended expositions focused on increasing knowledge/awareness of advanced manufacturing careers.

Curriculum Development. With the help of industry employers and the Connecticut Center for Advanced Technology (CCAT), CCCS created and implemented a Pre-Manufacturing Certificate (PMC) training program at five community colleges across the state expanding the locations where individuals could access such training to six sites (Asnuntuck Community College offered a PMC program prior to the implementation of the SMART initiative). The PMC training program offers 204 hours of training for students new to manufacturing plus an optional 96 hours of a regional elective in a specific area of manufacturing. The PMC training curriculum -- involving both classroom instruction and hands-on activities -- was intended to serve as an introduction to the field of manufacturing and to lay the foundation for more specialized training in SMART Level I and II training programs offered within the community college system. The PMC program offers a core curriculum across the five colleges, but provides flexibility in terms of timing of the program, the duration of training, and the focus of the regional elective. For example, at Manchester Community College (MCC), the PMC curriculum is taught over a 7 to 8 week period; at Three Rivers Community College (TRCC), the PMC curriculum is provided over a 14-week period to accommodate evening and weekend students. The PMC program is also geared at laying a foundation of basic skills so that those completing the program could secure a job as an entry-level machinist (earning in the \$11-\$12 per hour range or even higher), prior to undertaking additional training. The elective training is offered to provide basic training in a specialty manufacturing area that is in high demand among employers in the region that the community college served.

Training -- Advanced Manufacturing. At the time of its grant award, CCCS set a goal of 439 students enrolling in and 331 students achieving credentials across the three target certificate programs (PMC, Level I and Level II). Additionally, CCCS had a goal of placing 584 individuals in internships with employers across the state. They helped students obtain financial support through CBJTG-funded scholarships, Pell Grants, and ITAs (Individual Training Accounts).

As of December 31, 2010 (with more than a year remaining on its grant period of performance), the SMART Initiative has attained the following training results:

- 236 individuals have enrolled in PMC, Level I, and Level II SMART training
- 150 individuals have completed PMC, Level I, or Level II SMART training
- 14 individuals have been placed in internships (two weeks to two months in duration)
- 24 individuals have secured manufacturing-related employment

Career Pathway Development/Enhancement. The *SMART Initiative* created four primary avenues for career pathway development/enhancement: (1) adding on to their existing advanced manufacturing training with the development of the Pre-Manufacturing Certificate (described above); (2) expanding the number of training providers offering the SMART Level I Training program; (3) creating clear articulations between the three levels of manufacturing training; and (4) hiring Roving Mentors to strengthen linkages between the community colleges and manufacturing employers that would better promote entry into the advanced manufacturing field.

Prior to the start of the CBJTG-funded *SMART Initiative*, CCCS offered SMART Level I Training at two community college campuses and SMART Level II Training at one campus. The CBJTG funding allowed expansion of SMART Level I Training to three additional CCCS campuses (Manchester, Naugatuck Valley, and Three Rivers Community Colleges) and one nonprofit training provider, Manufacturing Alliance Service Corporation. SMART Level I advanced manufacturing training offers students more intense and specialized training to build the Pre-Manufacturing Certificate program (or in the case of incumbent or dislocated workers, build on skills already acquired either in jobs or through previous training). The SMART Level I training typically features 600 hours of classroom and hands-on training in a range of skilled manufacturing fields, including CNC Machining Operator; Machine Technology; Manufacturing Electronics; Manufacturing Welding Technology; Precision Machining; Laser and Fiber Optic Technology, Computer-Aided Drafting (CAD).

Finally, the *SMART Initiative* enabled the CCCS to fund four “SMART roving mentors” who were responsible for developing strong linkages with manufacturing employers and providing guidance to students involved in SMART PMC, Level I, and Level II training programs to help them secure jobs and internships. Under a Memorandum of Understanding, ACC hired and monitored the activities of the roving mentors, but each roving mentor was assigned to assist with efforts at a minimum of one community college. The roving mentors worked with manufacturers in their respective regions to provide internship and employment placements for students enrolled in the three levels of SMART training at each college. The roving mentors are also active with the Smaller Manufacturers Association (SMA) of Connecticut, Chambers of Commerce, and other business organizations throughout the state. The four roving mentors conduct outreach to manufacturers throughout the state, informing them about the *SMART* program, engaging them in providing input on the structure/curriculum of the program and their training needs, and identifying potential internships and job openings into which program trainees could be placed. Roving mentors also assist community colleges with increasing the number of industry representatives who actively participate as members of manufacturing advisory boards. A collaborative effort between the MCC roving mentor and the Workforce Investment Board (WIB) located in Hartford, resulted in ITA funding for MCC students who successfully progressed into the Level I SMART program.

Key Implementation Lessons:

Economic conditions make a difference with regard to engaging employers. The CBJTG project began when Connecticut's economy was in good shape, but once the project was up and running, the state was hit hard by the recession (especially the manufacturing sector). The seasonally adjusted unemployment rate for the state was 5.1 percent at the grant start date in April 2008, but this nearly doubled by March 2011 (at 9.1 percent). The grantee could not have anticipated such a rapid deterioration in economic conditions, and yet, had to be sufficiently flexible to respond to the change. Because of quickly deteriorating economic conditions, it became difficult to place graduates of the PMC or Level I training programs with employers. With such a severe recession, manufacturers had few job openings and were looking to hire only experienced machinists. It became very difficult to find employers (who were often laying off workers, cutting back hours, or just trying to hold onto their existing workforce) to consider sponsoring internships. As a result of the recession, the program experienced a shift in the populations coming to orientations and interested in training. Employers also became, in some instances, more reluctant to provide workers with paid time off to attend the incumbent worker training offered under the initiative.

Careful consideration is needed in tailoring training to the requirements of employers and workers/students – mid-project adjustments may be needed. The pre-manufacturing certificate training program was originally proposed to provide 500 hours of classroom instruction. However, from the perspective of students anxious to secure jobs, the duration of training was too long, especially if students were planning to pursue Level I and/or Level II training after successfully completing the pre-manufacturing coursework. The PMC program had to be trimmed 204 hours and supplemented (as appropriate) by an additional 96 hour "regional" elective that took into consideration the manufacturing base and employer requirements in the locality surrounding the community college. Additionally, in planning the curriculum and instructional methods, direct employer input is vital to ensure that training is targeted on employer needs/requirements and is up-to-date. During this project, the roving mentors and CCAT helped to ensure that employers provided substantive input on course curriculum and teaching methods employed in delivery of each training program.

A diverse range of partnerships is necessary to train participants and conduct other capacity-building activities under the grant. CBJTG funding brought together a diverse range of public and private (non-profit) organizations to conduct the outreach/recruitment, training, and other capacity-building initiatives undertaken during the project. This included bringing together six community colleges spread across the state to provide the bulk of the training offered under the initiative. Each college brought different perspectives, experiences, and levels of commitment to the project. Additionally, each college faced a different set of manufacturing employers with varying workforce requirements. As a result, there needed to be some flexibility with regard to implementing a standardized curriculum for the PMC and Level I training offered under the initiative.

Outreach efforts can make a difference in changing perceptions about educational offerings and career choices. An important goal of this initiative was to begin to shift negative and incorrect perceptions and attitudes toward entering careers in the manufacturing sector among youth, teachers, and parents. The community colleges have experienced difficulties over the years in attracting well-qualified youth to even potentially consider entering training programs that would result in careers in manufacturing. Through extensive outreach efforts – some of which were aimed at populations that are not inclined to enter manufacturing jobs – the partnering colleges and non-profits were able to boost awareness and the image of manufacturing careers. Workshops were particularly helpful in bringing

into view the many high paying, cutting-edge, and high tech jobs that are part of today's manufacturing sector.

Key Partnering Agencies: CCCS brought together educational/training institutions, the local workforce agencies, employers, and several nonprofit organizations. Key partners were the six community college campuses, a nonprofit training provider (Manufacturing Alliance Services Corporation), the Connecticut Center for Advanced Technology (CCAT), Connecticut Women's Education and Legal Fund (CWEALF), local workforce invest boards (WIBs/One-Stops), and manufacturing employers. CWEALF engaged female youth in learning about advanced manufacturing (described in Pipeline Development). The LWIBs/One-Stops housed the Career Advisors playing a major role in recruitment, awareness, screening, and financial assistance. The college campuses and nonprofit training provider assisted in training development and provided the training opportunities.

The Connecticut Center for Advanced Technology (CCAT), which works with industry, government, and academia to strengthen technology-led economic competitiveness, was considered a lead partner in this project. CCAT brought industry perspective and employer input to the curriculum development process to make certain that the training provided was up-to-date and fully responsive to the manufacturing employer requirements within the state. This organization was also responsible for designing an Electronic Resume Bulletin Board system used by project participants to post their resumes, and used by Connecticut manufacturing employers to search for job seekers to fill job openings. CCAT also facilitated training at Manchester Community College by making a laboratory available and sponsoring a series of manufacturing consortium meetings of employers. Finally, manufacturing employers played a critical role in advising the grantee (and community colleges) on the curriculum to be used in the PMC, Level I, and Level II advanced manufacturing training programs. Employers also sponsored small numbers of internships, hosted tours of their manufacturing facilities for CBJTG participants, and in some instances, hired graduates of the program.

Post-Grantee Status (as of March 2011): No additional/alternative funding sources have as yet been identified to maintain the levels of training provided with CBJTG funds. Program administrators noted that it seemed unlikely that the Pre-Manufacturing Certificate program will be sustained after grant funds are exhausted. With no apparent funding source, one alternative would be to have the PMC curriculum incorporated piecemeal into the Level I certificate programs being offered at five community colleges. There is no apparent funding available for the "roving mentors." It is anticipated that the WIBs will likely retain some or perhaps all of the Career Advisors hired under the grant, but they will likely perform somewhat different roles within the one-stop system. Finally, Level I and II advanced manufacturing training will likely continue at the community colleges, but students will need Pell, WIA, other funding sources, or their own funds to pursue training in these programs.

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Healthcare as High Growth
(CCBC Healthcare 1)

Grantee:	Community College of Baltimore County (CCBC)
Location of Grant Activities:	Baltimore City, Baltimore County, and contiguous Maryland counties
Sector Targeted:	Healthcare
Type of Grant:	Training and Capacity Building
Grant Amount:	\$2,559,616 (after 1percent rescission due to reduction in WIA funding)
Match/Leveraged Amount:	\$2,257,793
Grant Period:	January 1, 2007 – September 30, 2010 (Extended from original end date of December 31, 2009)
Site Visit Dates:	July 6 and July 21, 2011

Workforce Context: According to the Baltimore Workforce Investment Board (2005), healthcare/life sciences was the largest employment sector in Baltimore at that time. Maryland’s Dept. of Education and Maryland’s Dept. of Labor, Licensing, and Regulation (2004) produced a report identifying 27 health occupations critical to Maryland’s future. Finally, the Maryland Hospital Association (2006) survey of its members across Maryland indicated a 9.2percent vacancy rate for all positions. A survey by the Baltimore Alliance for Careers in Health (BACH), however, indicated more pronounced turnover and vacancy rates for the eight Baltimore hospitals that responded. Thus, the Community College of Baltimore County (CCBC) was responding to many strong signals about current and growing health industry needs when it responded to the grant request. Through their own community contacts they were also aware of a number of incumbent worker training needs including: hospitals that needed help upgrading worker skills in the areas of medical laboratory technician (MLT) and nurse support technician (NST). CCBC’s School of Health Professions and Division of Continuing Education needed to add capacity both individually and together to meet these growing and diverse community needs.

Target Populations: The original target populations for the grant included youth, incumbent workers, dislocated healthcare workers, and other individuals who might be interested in a healthcare career.

Project Goals: The project was designed to meet the following three capacity-building goals:

1. Provide resources to complete three health career lattices through distinct capacity-building activities [medical laboratory, dental care, and nursing/patient care].
2. Create processes and criteria for intra-institutional articulation linking noncredit training and credit education.
3. Encourage incumbent workers to advance their careers through formal recognition of their knowledge, skills, and experience.

Major Project Components:

Recruitment and Community Awareness. CCBC utilized both targeted and broad recruitment and community awareness strategies to attract students into their programs. They had three primary targeted strategies. First, the grant funded a Healthcare Career Consultant through the Baltimore County Office of Workforce Development (BCOWD), the local One-Stop Career Center. The Healthcare Career Consultant recruited individuals through the One-Stop Career Center by informing other One-Stop Career Center representatives of the health career options at CCBC, educating individuals who were using the One-Stop services about health career options at CCBC, and facilitating the enrollment and funding of individuals who were participating in both One-Stop and CCBC services. Second, they targeted high school students through the development of the NST program at two local high schools and brochures/posters designed to attract high school student attention. Finally, they recruited employers to recruit their incumbent workers; they developed an employer brochure titled “Building the Healthcare Workforce” for this purpose. They also engaged in a broader, community approach to recruitment and awareness by creating posters and brochures for display at public libraries, schools, job fairs, open houses, around CCBC, and at the One-Stop Career Center. Because of CCBC’s growth, the health profession programs were also featured on three local TV networks, including both evening news and morning news segments.

Curriculum Development. Curriculum development focused on filling in career pathways through both credit-bearing courses and programs offered in the School of Health Professions and noncredit-bearing courses and programs offered through Continuing Education & Economic Development (CEED). Credit-based programs developed or enhanced through the grant include: the Dental Hygiene A.A.S. program, Medical Laboratory Technician (MLT) A.A.S. program, and the Associate to Master’s Degree in Nursing (ATM). Noncredit-based curriculum development or enhancement included: dental assisting, introduction to laboratory techniques, certified nursing assistant (CNA), and nursing support technician (NST).

Healthcare Training. When CCBC wrote their grant, they intended to enroll 160 students through grant-supported credit-based training and 690 students through grant-supported noncredit-based training. In both cases they exceeded their goals with 232 students enrolling in credit-based training and 757 students enrolling in noncredit-based training. CCBC also exceeded their targeted number of students to receive scholarships with 839 students and incumbent workers receiving assistance (versus the 785 targeted). Numbers of individuals completing training, however, were somewhat lower than predicted. CCBC anticipated 68 students completing credit-based training, while only 52 did so. Likewise CCBC anticipated 586 students completing noncredit-based training, while 533 actually completed. CCBC notes, however, that completion rates for credit-based training appear lower than they actually are because students cannot complete many of the credit-based programs during the time provided in the grant. At the end of the grant period many students still had three-13 months remaining in their programs. Finally, CCBC had anticipated that 240 students would secure training-related employment upon completion of their educational programs. CCBC exceeded this figure with 350 students obtaining training-related employment despite the economic downturn that occurred during the grant period. CCBC considers these training and employment outcomes major accomplishments.

Career Pathway Development/Enhancement. The grant helped to support career pathway development in the health fields addressed by this grant by supporting four strategies. First, the NST was developed for implementation both at CCBC and at two local high schools which were already offering the CNA, allowing students at both the high school and college levels to upgrade their nursing

skills from a CNA to the next level. Second, within CCBC the grant supported the establishment of intra-agency articulation agreements between the Division of Continuing Education (noncredit-bearing courses) and the School of Health Professions. This allows the eligible CNAs to articulate into the credit-bearing Licensed Practical Nurse (LPN), dental assisting to articulate into the Dental Hygiene program, and introduction to laboratory techniques to articulate into the MLT program. Third, the grant supported the creation of the Associates to Master's Degree in Nursing (ATM) program offered in conjunction with Towson University which allows students with a bachelor's degree in another field to earn their Associate, Bachelor, and Master degrees in Nursing in three years by jointly attending CCBC and Towson University. Finally, the grant facilitated career pathways for incumbent workers by helping CCBC partially subsidize incumbent worker training for some of the partner healthcare institutions. Supported incumbent worker pathways included helping entry-level workers obtain CNA certificates, helping CNAs obtain NST certificates, and helping qualified individuals seek an Associate Degree in Nursing (ADN).

Renovating Space and Purchasing Equipment. CCBC renovated the Dental Arts building (which had been a day care center), including the dental hygiene labs, and two nursing simulation labs with support of the grant and leveraged funds. CCBC also purchased equipment for the Dental Arts building, MLT program, and the two nursing simulation labs with the funds.

Adding Faculty and Staff. The grant supported the addition of four faculty and three staff members. The four faculty members include the MLT Program Director, the MLT Clinical Coordinator, a dental hygiene faculty member, and a nursing faculty member. The three staff members include the Grant Administrator, the Healthcare Career Consultant (employed through the One-Stop Career Center), and a program assistant in dental hygiene. The grant also allowed them to leverage faculty from a local hospital to teach cohorts of ADN students including a mix of incumbent workers from the hospital and other students.

Key Implementation Lessons:

Partnership with industry is key. CCBC relationships with industry prior to the availability of the grant helped them determine which gaps in their curriculum to address, and how to address them in ways that best met industries' needs. In addition, the industry relationships helped them to develop special incumbent worker cohorts to help students advance their skills within their current work environments. Finally, within the healthcare field many programs cannot experience success without the clinical rotations provided by partner industry facilities.

Diverse partners are important too. CCBC attributes the number and diversity of their partner base to their success: "We could not have been successful without them."

Industry cohorts may require teaching or scheduling differently. Creating industry cohorts of students can be a great way to obtain industry participation, enroll larger numbers of students, and obtain some help from industry in supporting students through their programs. Industry partnerships may require that classes be run somewhat differently to accommodate times that incumbent workers can train, setting up cohorts of incumbent workers, and classroom procedures or discussions that must account for the mix of coworkers in the room.

The Economy Creates Cycles of Need. Industry is likely to push for and support incumbent worker training during times of economic strength, but then pull back during economic downturns. Cultivating strong relationships with industry partners can help alleviate the severity of these cycles, but

is unlikely to eliminate them. While economic downturns may mean that industry is less willing to invest in training, it does not necessarily mean that it has reduced hiring needs across the board.

Technology is important, but it doesn't run itself. Essentially technology, like the simulation center, can provide valuable new teaching opportunities. Selecting and purchasing the right equipment can present its own challenges, but helping people use the new equipment must be factored into the budget. Faculty have to be trained to see how simulations can enhance their curricula, how to use the actual machines, and to incorporate the entire experience into a set of learning objectives. Training must continue to be available to support changing curriculum needs and changing faculty. In addition, the lab doesn't maintain itself. The equipment must be reset and cleaned, and supplies replaced between simulations.

Grant managers can be important to success. Coordinating “the cast of staff, faculty, and partners” who contribute to elements of grant success requires a substantial amount of time. It is important to hire someone who can focus specifically on the grant requirements, help others to understand their roles and contributions, remind actors of deadlines, and corral everyone into doing their part. Over time this person can create organizational knowledge about grants-management and help the college not only manage present grants, but to solicit new ones.

Key Partnering Agencies: CCBC had a number of key partners without whom success would not have been possible. These partners included industry members such as hospitals (Good Samaritan, Franklin Square, and The Greater Baltimore Medical Center) and long-term care facilities (FutureCare and Genesis); other educational organizations including Towson University, Baltimore County Public Schools, Sollers Point High School (east-side), and Milford Mill Academy (west-side); the Baltimore County Office of Workforce Development (the local One-Stop Career Center); Baltimore County Government; and a community-based organization, the Baltimore Alliance for Careers in Healthcare (BACH). The industry members helped in curriculum development and recruitment of incumbent workers, while the county school system and high schools helped involve youth. The Baltimore County Office of Workforce Development (BCOWD) employed one individual funded by the grant – the Healthcare Career Consultant – who provided substantial outreach, served as a liaison between CCBC and BCOWD, and helped students find post-training employment. BACH helped in identifying some workforce needs and in curriculum development. All of the organizations contributed leveraged resources, either in-kind or in cash, to support the capacity-building efforts of CCBC.

Post-Grantee Status (as of July 2011): CCBC has maintained all elements developed by the grant and plans to do so in the future. All faculty, one program staff member, and equipment maintenance have been moved to operating budgets. The two other staff are being supported by another DOL grant at this time. For now, the high school NST program is being partially supported through a DOL ARRA grant that will expire in February 2013. It is hoped that by that time the Baltimore County School System will be able to support the program in their own budget just as they currently do for the high school CNA program.

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Building for Tomorrow
(CCBC Build)

Grantee:	Community College of Baltimore County (CCBC)
Location of Grant Activities:	State of Maryland, with an emphasis on Baltimore County
Sector Targeted:	Construction and Energy
Grant Amount:	\$1,904,179
Leveraged Amount:	\$155,042 (as of December, 2010)
Grant Period:	April 1, 2008-March 31, 2012 (Extended from original end date of March 31, 2011)
Site Visit Dates:	March 22-23, 2011

Workforce Context: There are several large energy and utility companies in the area surrounding CCBC, including Constellation Energy, serving the Baltimore area; and Pepco, and Washington Gas & Electric serving the Washington, DC area. These companies have traditionally preferred to hire workers with basic skills and an interest in the field, and then train them internally for a specific advanced level positions. Local industry is currently facing and anticipating future trouble recruiting skilled technicians for many positions including mechanical maintenance, electrical maintenance, instrumentation and control, line work, substation operator, and auxiliary operator. This shortage of qualified workers has several causes. First, the current workforce has a large portion of older workers nearing retirement. Industry representatives report that many of these older workers delayed retirement due to the recession; they predict as much as 40 percent of the workforce will retire in the next several years. Additionally, traditional pipelines into the construction, utilities and energy sectors such as vocational and technical schools, agriculture and the military are no longer producing large numbers of entry-level workers interested in the construction, energy and utilities fields. Finally, awareness and interest in the construction, energy and utilities fields among pools of potential entry-level workers is low.

The area was impacted by the economic recession, including hiring freezes and layoffs. Additionally Maryland received \$60 million in ARRA funding to weatherize low-income homes. The Maryland Department of Housing and Community Development and the Maryland Energy Administration each granted a consortium of Maryland community colleges \$1,000,000 to develop weatherization training programs. CCBC is the fiscal agent for the consortium, which was organized as part of the Community-Based Job Training Grant.

Target Populations: CCBC targeted a wide variety of prospective students including high school drop outs, GED candidates, non-traditional students, people on parole, dislocated workers, incumbent workers, and people interested in changing careers.

Project Goals: CCBC began with four main project goals, and made a handful of adjustments to these goals during early implementation. The first goal was to design and implement a pre-apprenticeship program to prepare 250 individuals for jobs and apprenticeships as skilled trades and utilities workers in the construction and energy sectors. The second planned goal was to create an Associate's degree track

in Energy Efficient Technologies, a continuing education certificate in Energy Efficient Technologies, and to update continuing education classes in the construction and energy fields with energy efficient technologies to train 560 students. CCBC modified this goal slightly, creating an AAS degree in Heating, Ventilation and Air Conditioning/Energy Technology (HVAC-Energy). The third project goal was to collaborate with partners and key stakeholders to create a more positive image of construction and energy technology as viable career options. The final goal was to develop a post-secondary consortium to cultivate course alignments and agreements to prepare students for current and future environmental, economic and technology related impacts on the construction and energy industries in Maryland.

Major Project Components:

Recruitment and Community Awareness. CCBC hired an outreach specialist to conduct an extensive grass-roots outreach campaign to raise community interest and awareness about job and training opportunities in the construction and energy sectors, particularly the pre-apprenticeship program. Outreach activities included presentations and passing out materials at area high schools, faith- and community-based organizations; email and call “blasts” through the Maryland Workforce Exchange registry of Unemployment Insurance recipients; and circulation of information about grant funded training through CCBC’s widely distributed course catalogue.

Curriculum Development. CCBC engaged in three curriculum development activities: developing the pre-apprenticeship program, updating an existing but inactive AAS degree in Heating Ventilation and Air Conditioning, and updating continuing education courses with “green technology.”

- *Construction Apprenticeship Preparation course series.* To develop curriculum for this pre-apprenticeship program in construction and energy, CCBC combined off-the-shelf curriculum provided by both union (AFL-CIO/National Labor College) and non-union (National Center for Construction Education and Research – NCCER) industry organizations. CCBC had planned to use off-the-shelf curriculum provided by the non-union NCCER; however the college’s union partners encouraged CCBC to adopt the AFL-CIO’s newly developed pre-apprenticeship curriculum. CCBC made the decision to incorporate both curricula. CCBC also developed a course that prepares students to take the Industry Aptitude test, required for many jobs in the construction and energy sector.
- *Associate’s Degree in Heating Ventilation and Air Conditioning – Energy (HVAC-E).* CCBC leveraged faculty time to upgrade an existing but inactive AAS degree in HVAC to include energy efficient technologies and techniques. The decision to create the AAS degree program by modifying an existing degree program allowed CCBC to secure curriculum approval from the state more quickly and easily.
 - *Upgrade Continuing Education and for-credit Classes with Green Technologies.* CCBC added a “green” element to a handful of existing construction continuing education classes, and developed other new courses.
- Delays in project start-up and faculty and staff turnover led CCBC to develop fewer continuing education classes than planned, and as of March 2011 there is not a certificate in Energy Efficiency.

Construction and Energy Training. The core curriculum for the Construction Apprenticeship Preparation course series runs 150 hours and includes six courses: construction safety, core construction skills, construction math, OSHA-10, first aid/CPR/AED, and blueprint reading. The curriculum includes soft skills training. After completing the core program, trainees can elect to continue in one of four specialty areas: carpentry, power generation, electrical or plumbing. The curriculum for the power generation specialty was developed by NCCER, Constellation Energy, and other energy company representatives. CCBC has adopted this curriculum.

As of mid-September 2011:

- 78 individuals have earned *Construction Apprenticeship Preparation* continuing education certificates.
- 9 individuals earned credit certificates in HVAC-Energy
- 16 individuals completed continuing education certificates in HVAC-Energy
- No individuals have as yet completed the green technologies continuing education classes.

Renovating Space and Purchasing Laboratory Materials. CCBC and Baltimore County leased and renovated a new facility, the Liberty Center, to house the *Construction Apprenticeship Preparation* and other training programs. The facility includes lab space for the pre-apprenticeship program, and space for a co-located Baltimore County Department of Economic Development Workforce Development center, and a satellite office of the Maryland Department of Social Services. CCBC also purchased an assortment of laboratory equipment and materials including: shop tables and stools; germicidal cabinets with safety glasses; eye wash units; tool cabinets, shelves, storage racks, and gang boxes; “smart cart” stations with computers; various saws, sanders, drills, grinders, and threaders; and lumber, nails, fasteners, wire, and other consumable supplies.

Adding Faculty and Staff. CCBC used grant funds to hire several project faculty and staff including a project director who splits her time between the CBJTG grant activities and CETEC, a part-time outreach specialist, a faculty member to teach and coordinate the pre-apprenticeship classes, and a career consultant housed in the Baltimore County Office of Workforce Development.

Capacity Building: Community College Consortium. CCBC planned to use grant funds to develop a consortium of community colleges in Maryland to offer aligned courses in the construction and energy sectors. The Construction and Energy Technologies Education Consortium (CETEC) started with three community college members – the Community College of Baltimore County (CCBC), Montgomery College, and Prince George’s County Community College. Frederick Community College and the College of Southern Maryland joined CETEC after receiving DOL grant funding in the construction sector. These five “charter members,” worked to coordinate course offerings and articulation agreements, each contributed \$10,000 towards management of the consortium, and hired a project manager. With the influx of federal Recovery Act funding for the weatherization program in 2009, CETEC expanded to all 16 Maryland Community Colleges, adding Baltimore City Community College as a “charter member.” CETEC serves as a centralized point of contact for the state’s community colleges, provides standardized weatherization training, and shares lab space and equipment. In addition to weatherization, CETEC has jointly pursued other funding and training initiatives.

Key Implementation Lessons:

Aligning the timelines and goals of partners requires patience, communication and understanding. Industry partners expressed some frustration with the bureaucracy, lengthy internal approval processes, and focus on “green” as opposed to traditional industry training. However, industry partners and the community college were able to work together to implement a training program that is advantageous for both parties. Additionally, CCBC staff experienced a number of delays related to securing the facility due to slower than expected community college and county approval processes.

A consortium of community colleges can allow easier access to the system as a whole, and can be useful for securing grant funding. CCBC reported that CETEC provided a valuable One-Stop Career Center access point to the Maryland community colleges, allowing the consortium to secure a number of funding opportunities. The consortium also allows potential clients easy access to training that does not have county delineations.

Grass-roots marketing campaigns, building connections with local organizations, can be very effective in recruiting out-of-school youth and other entry-level workers.

Program staff and faculty with industry experiences and personal histories similar to the program participants provide mentorship opportunities and help engage participants. Training staff reported that drawing on their own professional and personal backgrounds helped connect with students.

Combining union and non-union training curricula can be challenging but is helpful for students as they seek jobs and apprenticeships. Although merging the NCCER and AFL-CIO curriculum posed challenges, staff from both CCBC and partner agencies noted the value of providing pre-apprenticeship trainees leading to both union and non-union credentials.

Developing training programs and facilities within public community colleges facilitates program sustainability.

Key Partnering Agencies: CCBC had a number of key partners in the *Building for Tomorrow* project. The sixteen Maryland community colleges participated in the project as members of CETEC. Four charter members have contributed \$10,000 each to fund the management of CETEC, and one member contributed \$10,000 worth of in-kind graphic and printing services. All have committed to future contributions. In addition, each member of CETEC has attended regular consortium meetings. On the public workforce side, BCOWD partnered with CCBC to lease and renovate the Liberty Center. In addition the BCOWD pledged \$60,000 in Individual Training Account (ITA) dollars for qualified pre-apprenticeship enrollees, and the Liberty Workforce Development Center staff will conduct outreach to prospective and current students to co-enroll in WIA and plan for employment opportunities after completing training. Industry partners, particularly Constellation Energy, have pledged cash leveraged resources, participated in curriculum development, and connected program graduates with employment and apprenticeship opportunities.

Sustainability/Post-Grant Status: The grant is active through March 31, 2012. CCBC staff plan to continue all the core activities implemented under the grant after completion of the grant period. Annual pledges of \$10,000 from each of the charter members of CETEC, plus 10 percent of tuition from

all CETEC training programs will go toward funding a staff person to facilitate consortium meetings and activities. Additionally, CETEC will seek grant funding for continued activities. Industry partner Constellation Energy has committed additional cash donations and indicated interest in an ongoing partnership with the community college for training. After the grant period ends, the pre-apprenticeship classes will no longer include the 75 percent grant-funded tuition reimbursement, but as full, tuition-bearing classes they will be self-sustaining with sufficient enrollment. Additionally, the BCOWD staff will continue to work with CCBC trainees to secure WIA training funding. CCBC hopes to maintain the faculty and staff hired under the grant through general revenue and CETEC funding.

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Expanding Healthcare Opportunities in a Recession Economy
(CCBC Healthcare 2)

Grantee:	Community College of Baltimore County (CCBC)
Location of Grant Activities:	Baltimore City, Baltimore County, and contiguous Maryland counties
Sector Targeted:	Healthcare
Type of Grant:	Training and Capacity Building
Grant Amount:	\$2,550,170
Match/Leveraged Amount:	\$2,378,820 (as of 6/30/11)
Grant Period:	February 13, 2009 – September 30, 2012 (Extended from original end date of February 14, 2012)
Site Visit Dates:	July 6 and July 21, 2011

Workforce Context: The Community College of Baltimore County (CCBC) experienced skyrocketing demand for healthcare training programs in late 2008 (above and beyond the 7percent growth it experienced in the summer of 2008) despite the developing recession. The demand was in part due to people seeking careers in the “stable” healthcare field and in part due to rapidly changing healthcare industry standards, requirements, and technologies as well as evolving needs of an aging population. For example, the radiography field was seeking to hire individuals with skilled expertise in computed tomography (CT) and magnetic resonance imaging (MRI); community mental health organizations and employers were indicating the combined need for psychosocial rehabilitation skills and options for growing and developing current staff; and, the American Nursing Credentialing Center was increasingly discussing moving away from Associate’s degree-prepared RNs and toward a Bachelor’s degree requirement for RN certification (such a change would negatively impact both Associate’s degree-prepared RN’s and Associate’s Degree Nurse training programs at a time when demand for RN’s was rapidly accelerating). Meanwhile, national accreditation requirements for EMT certification were changing in a manner that would make it unrealistic for local fire departments to continue training their needed EMT personnel; changes in the long-term care industry model were indicating the need for additionally skilled front-line staff; and, students were demanding alternative course delivery options such as online and hybrid courses. CCBC was faced with numerous opportunities and expanding demands. The challenge was timely increasing accessibility and flexibility of programs for its populations while also being responsive to changing industry needs and technologies.

Target Populations:

1. Individuals interested in, and seeking to enter, the healthcare field for the first time;
2. Incumbent workers needing additional education and training to advance in their jobs and careers, including entry-level workers with no formal healthcare credentials;
3. Radiographers seeking additional training and specialty certifications in order to advance in their fields; and

4. Nursing students interested in moving seamlessly through an associate's degree to bachelor's degree in a nursing completion program and in conjunction with their familiar community college environment.

Project Goals:

1. Increase the number, and graduation rate, of students in high-demand health practice areas through increasing program specific resources
2. Address needs in emerging high-demand areas through diversification of offerings, modalities and availability of program-specific healthcare curricula
3. Increase workforce development in the grant-supported programs by expanding outreach, recruitment, training, and education

Major Project Components:

Recruitment and Community Awareness. The Healthcare Career Consultant continued to provide community awareness and outreach through the Baltimore County Office of Workforce Development (BCOWD) targeting both the clients coming in for services and the other agencies co-located at the One-Stop Career Center. CCBC developed targeted outreach materials for employers who might have an interest in incumbent-worker-training and to attract students to the new healthcare curricula.

CCBC personnel reached out through community partners like local fire departments to reach individuals interested in grant program areas (e.g. EMT). Collaboration with Anne Arundel Community College resulted in coordinated web linkages to CCBC radiography web-pages which provided information on the newly developed CT and MRI programs. Coordinated mail outreach was also undertaken with previous students regarding the options and possibilities for skills updates and additional career training through the new programs. On a broader scale, CCBC conducted public information sessions, televised promotions on local TV stations, and information updates through growing technologies such as Facebook.

Curriculum Development. Except for two of the grant's programs, curriculum development focused primarily on updating existing programs to meet new industry needs and standards, and revising curricula for online and hybrid course delivery options. All of these newly developed curricula combine online and classroom learning with laboratory and clinical experiences:

- a. curricula was adapted for the Emergency Medical Technician (EMT) certificate and A.A.S. programs to meet new accreditation standards;
- b. for the Mental Health track, the general A.A.S. program was updated in order to offer a hybrid program (i.e., partially online);
- c. new psychosocial rehabilitation certificate was developed in response to industry demand as well as to upgrade mental health practitioners' skills and simultaneously, enhance their career track;
- d. the Radiography track was expanded to cover new certifications in two evolving, specialty areas, CT and MRI; and

- e. In conjunction with Towson University, CCBC is creating the Associates Degree (ADN)-to-Bachelor of Science in Nursing (BSN) curriculum that will allow qualified students to progress seamlessly, and more quickly, through to achieve a Bachelor's degree in nursing.

With the exception of the Eldercare Specialist (originally proposed as the Household Associate) certificate, curricula development involved credit-bearing programs in the School of Health Professions. The Eldercare Specialist certificate is offered through CCBC's Continuing Education Department and is a noncredit-bearing program. This certificate program was developed to upgrade the skill sets of Certified Nursing Assistants (CNAs) and Geriatric Nursing Assistants (GNAs). The program provides skills and training needed to provide services in long-term care facilities undertaking a new model of care called the Eden Alternative or Greenhouse Model. CCBC adapted the research of Dr. William Thomas and his Eden Alternative model to fit CCBC's curriculum and career pathways requirements.

Healthcare Training. The *Expanding Healthcare Opportunities during a Recession* grant is ongoing. It is scheduled to end September 30, 2012. As planned, the grant began enrolling students in 2010 with the start of an incumbent-worker training program at Mosaic (the new, mental health psychosocial rehabilitation program). All programs are enrolling students except the new Eldercare Specialist certificate program and the BSN-completion program, the latter of which was only slated to be developed under this grant. The Eldercare Specialist incumbent worker training is scheduled to begin in September 2011, with open enrollment beginning in January 2012. The Mental Health-psychosocial program will begin open enrollment September 2011, building on the pilot program that started in April 2010.

CCBC is progressing toward enrollment goals in all currently available programs. Enrollment will continue to ramp up as the programs continue. Enrollment goals and progress toward meeting those goals as of June 30, 2011 are: EMT (goal 195, enrolled 52, graduated 16), MLT (goal 86, enrolled 38, graduated 12), Respiratory Therapy (goal 117, enrolled 72, graduated 34), Mental Health-general track (goal 36, enrolled 32, graduated 6), Mental Health-psychosocial track (goal 37, enrolled 13, graduated 2 [but the current cohort is expected to graduate in November 2011]), and the CT or MRI specializations for Radiography (goal 100, enrolled 38, graduated 35). Of the 105 graduates to date, 51 have obtained training-related employment.

Renovating Space and Purchasing Equipment. CCBC renovated the Respiratory Therapy laboratory and classroom to accommodate more students per lab session. The Medical Laboratory Technician (MLT) Laboratory was also renovated to provide a more appropriate and safe teaching space in order to meet the requisite accreditation requirements for an accredited MLT program. Leveraged funds purchased state-of-the-art ventilators and simulation equipment for the new respiratory therapy lab.

Adding Faculty and Staff. CCBC utilized grant funds to support the addition of new faculty and staff to develop new curriculum, teach new classes, support the expanded enrollment of students, develop new clinical rotation sites, and coordinate laboratory operations. Two staff members, the Grant Administrator and the BCOWD Healthcare Career Consultant, whose positions were started during a previous DOL grant, have been continued through this grant. Similarly, the MLT Clinical Coordinator faculty position started with a previous DOL grant and was continued with this one. The grant also funded four new faculty full-time positions, one each for respiratory therapy (teaching and lab operations), EMT teaching, MRI certificate program coordinator, and CT certificate program coordinator. In addition, the grant provides funding for: current faculty members to devote part of their time to BSN

development; an adjunct faculty member to provide courses in psychosocial rehabilitation; and, a continuing faculty member to develop curriculum for the Eldercare Specialist certificate.

Key Implementation Lessons:

Partnership with industry is key. On-going relationships with industry are important to understanding the changing needs in the field and developing forward-thinking program options. These on-going relationships are essential in the healthcare field as programs require student clinical field rotations. Building capacity within the college would be counter-productive without ensuring commensurate capacity for students in the field at clinical rotation sites. CCBC successfully partners with approximately 70 clinical sites in order to provide quality clinical rotation experiences for students.

Emerging fields generate continued uncertainty. The Eldercare Specialist is an emerging position in long-term care facilities that are revamping their living units and services toward the “green” model, where residents live in an atmosphere resembling more that of a group home and less a traditional, medical model. When designing the grant’s initiatives, CCBC anticipated partnering with industry groups Erickson Retirement Communities and Arapaho Community College which were already working on a curriculum based on an existing Erickson OJT program. As CCBC began to research the skills needed for the Eldercare Specialist, it was decided that a more intensive and structured model would more closely match educational standards, practices and the school’s philosophy. Thus, the partnership which started CCBC down the path of an emerging field evolved during the curriculum and program development stage. While it is hoped that Erickson and Arapaho will participate in the upcoming CCBC Eldercare Specialist training program, CCBC continues to expand its partner network for the program.

Evolving accreditation requirements leads to new community partnerships. The changes in national EMT requirements caused some traditional community vendors of the program (local fire departments) to stop offering the training. Local fire departments and CCBC are now collaborating more in order to develop and implement a program in line with the changed requirements. The local fire departments and CCBC continue to work together to provide information about CCBC’s EMT programs to interested individuals. It is anticipated that local fire departments will eventually contract with CCBC to offer EMT training to fire department personnel.

Grants enable productive risk-taking, program evolution and acceptance of new ideas. As one CCBC administrator says, “Often it is not feasible for the institution to entertain new program start up in light of broader needs and competition for resources. At times outside resources provide the opportunity to prove the viability of the program and its ability to attract students and respond to community needs.” When that viability is demonstrated, the institution is able to sustain it. Once a grant is successfully implemented, other levels of the organization begin to think beyond the boundaries of their current programs and budgets. This allows for an environment of regular program evaluation and better response to evolving industry advancements and changes in the regulatory environments.

Conflicting academic and grant calendars delay implementation. Colleges and universities operate primarily on academic calendars around which primary functions are scheduled, including hiring of staff, introduction of programs, and delivery of courses. At times, this calendar is at odds with grant fiscal calendars. Starting a grant in the middle of a semester can pose challenges for the academic environments because the expectations of the funder to begin immediately clash with the institution’s reality of the academic calendar. This is particularly true for credit-based programs and courses.

Credit-based and noncredit-based program development and implementation place different demands on staff time. Credit-based program workload tends to come in concentrated bursts that correspond with the academic calendar. Non-credit-based program workload tends to be continuous throughout the year.

Key Partnering Agencies: Without industry partnerships for clinical rotations, CCBC could not expand its healthcare education offerings the way it has. It currently about 70 such partners (twice the number estimated in the proposal). Mosaic Community Services, a community-based 501(c) (3) behavioral healthcare provider, served as a key partner for mental health clinical rotations and the development of the Mental Health-psychosocial rehabilitation certificate program, testing a pilot of the program with a cohort of their staff members. CCBC and Towson University teamed up again to create a program that provides incentives for new nursing students to select a compressed BSN curriculum rather than simply achieving an ADN as they prepare for an RN license. Both schools are able to draw on their previous experiences in developing and implementing their joint Associates to Master's in Nursing program. BCOWD, local One-Stop Career Center, is also a continuing team partner with the Healthcare Career Consultant position that has been so successful in recruiting participants, educating service agencies, and helping students obtain employment in previous grants. The Governor's Workforce Investment Board (GWIB) is co-sponsoring a symposium with CCBC (anticipated in March 2012) to bring together organizations in the public, private, and nonprofit sectors to discuss the new neighborhood model for assisted living and long-term care. While CCBC had hoped to team up with the Baltimore County Public Schools for training in the originally planned Household Associate certificate program (now Eldercare Specialist), the requirements of the new program prevent that from occurring – candidates must be high school graduates.

Post-Grantee Status (as of July 2011): This grant continues through September 30, 2012. Preparations for sustainability are underway at CCBC as the academic budget planning processes begin more than one year in advance.

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RN Job Fulfillment Partnership
(SPC RN)

Grantee:	St. Petersburg College (SPC)
Location of Grant Activities:	Pinellas County, Florida
Sector Targeted:	RN Job Fulfillment Partnership Program
Type of Grant:	Training and Capacity Building
Grant Amount:	\$1,653,765
Match/Leveraged Amount:	\$1,271,323
Grant Period:	November 1, 2005 – April 30, 2009 (Extended from original end date of October 31, 2008)
Site Visit Dates:	February 22-24, 2011

Workforce Context: At the time the grant proposal was written, hospitals in Pinellas County were experiencing double-digit vacancy rates for nursing RN positions, nurses were expected to age out of the workforce at an increasing rate, and the need for nurses was expected to increase. At that same time, SPC was struggling to meet the demand for RNs. Although they were graduating 200-250 students eligible to sit for RN licensure per year, they had a waiting list of over 300 students because they did not have enough faculty, enough training equipment, or enough space to serve more students.

Target Populations: Incumbent workers were the primary target population to increase their education either to an RN or from an RN to an advanced certificate or MSN. There was, however, emphasis on increasing the youth pipeline by helping youth better understand the requirements and competitive nature of a nursing program. Finally, some effort was made to recruit underserved workers through WorkNet Pinellas, the One-Stop Career Center.

Project Goals: The *RN Job Fulfillment Project* had one overall goal: increase the supply of RNs. SPC created a variety of strategies for increasing both short-term and long-term supply. Most of those strategies focused on building the capacity of the college to develop more RNs, and strategies to keep more RNs in the field once they were trained. SPC articulated the following objectives, most of which had both training and capacity-building components:

Objective A: SPC and its partners will increase the supply of nurse faculty and nurse managers through support of bachelor degree RNs returning to school to acquire MSN degrees. (Capacity-building)

Objective B: To recruit/retain/upgrade workers to receive RN licensure-eligible A.S. degrees, with an emphasis on identifying alternative labor pools and providing incentives for RN education to fill the double-digit opening at area hospitals and use advanced technology-based teaching modalities to educate up to 48 more nurses employed in industry locally. (Capacity-building and training)

Objective C: The Pinellas County School System will help SPC expand the pipeline of youth entering healthcare by promoting a Summer Nursing Academy. (Capacity-building and training)

Objective D: Provide a 9 credit hour Advanced Technical Certificate in Critical Care, which can be completed entirely online, to RNs throughout Florida and nationally. (Capacity-building and training)

During the no-cost extension period, one final objective was added: Decrease attrition in the LPN-to-RN transition program.

Major Project Components:

Pipeline Development. Even though SPC had waiting lists for enrollment in the RN program, the college believed it was important to educate high school students about the nursing profession. The three-week summer academies consisted of two weeks in the classroom and the last week job-shadowing in hospitals. During their weeks in the classroom, they learned about the effects of drugs and alcohol through the use of a simulation center.

Curriculum Development. Curriculum for four courses was developed or updated to provide an opportunity for nurses who already have their RNs to earn specialty certificates that would allow them to perform duties in more areas of the hospital. The Critical Care Nursing Certificate, a three-course, 100percent online certificate program was updated to comply with the new Advanced Cardiac Life Support (ACLS) accreditation requirements. In addition, a one-credit Emergency Care Course allows the nurse with a Critical Care Certificate to receive an Emergency Care Certificate. This course was developed from scratch for online delivery. The RN curriculum was also updated to conform to new accreditation standards and adapted for online availability.

During the grant extension period, the curriculum for the LPN-to-RN transition program was updated to increase the retention rate in the program. This Transition to Professional Nursing course allows the LPNs to convert their previous credits and time in the field into eleven credit-hours in the RN program.

Healthcare Training. A number of hospitals in the area partnered with SPC. Most of the additional 48 students in the RN program were sponsored by a hospital. In some cases, hospitals sponsored students through tuition scholarships or stipends for books. In other cases, sponsorship entailed no funding but it did create the likelihood (but not guarantee) of subsequent employment. The RN program at SPC requires full-time attendance, but students can either choose a daytime schedule or an evening schedule (3pm-11pm).

- 48 more students will enroll in the RN from the program (incumbent workers and underserved populations); 90percent entering the program will complete it; 90percent of completers will pass licensure exam; hospitals will report 10percent in increased promotions and 90percent in increased retention
 - 48 students enrolled in the RN program, and 47 completed. 100percent of those 47 obtained their licensure, obtained or maintained employment, and were still with the same employer at the end of 6 months. All but 10 of the students were incumbent workers. Twenty-four of the 47 individuals received a

promotion, and 38 received a raise within the first three quarters after completing the program.

- 100percent of students enrolling in the RN program received PDA with instruction on how to use them and an electronic library loaded onto them.
- 100 RNs will earn the Critical Care Certificate online; 90percent will increase earning capacity; 100percent of partners will report an 80percent retention rate
 - 106 students enrolled in and completed the three online courses for the Critical Care Nursing Certificate (a specialization for RNs). Although all were eligible to obtain the certificate, only 36 students actually applied for it.
 - 36 students enrolled in and completed the Emergency Care Nursing course.
- 120 tenth and eleventh grade high school students will participate in a three-week Summer Nursing Academy to better understand what it takes to become an RN
 - 90 tenth and eleventh grade students participated (30 per summer). They did not officially track how many students from High School Academy entered the program, but they know of one student that did for sure.
- Decrease attrition in the LPN-to-RN transition program.
 - Prior to the grant only about 75 percent would make it through the transition. During the grant period the completion rate for the 36 students participating was about 94 percent.

Technology. A large portion of the grant funds was devoted to updating and developing Simulation Center for Excellence in Nursing Education (SCENE). Grant funds were used to purchase simulation equipment, other medical equipment, and supplies. The eleven simulators purchased include a simulation baby and a simulation birthing mother. SCENE has not only enhanced the regular classroom experience by simulating real health scenarios to which the students learn how to react without endangering lives, but it sometimes also served in place of clinical rotations. This was particularly true for obstetrics and pediatrics rotations which are harder to schedule. Florida law allows up to 25percent of clinical time to be spent on simulators rather than real people [Florida Statute 464.019 (1)(b)2.(c)]. The simulation mannequins can simulate breath, tummy, and heart sounds. They can also be programmed for a crisis situation or “code” that students are unlikely to experience in their field rotations. Faculty members indicated that they have received feedback from industry that students who have practiced in The SCENE have high skill levels in the field.

Faculty Development. A shortage of qualified nursing faculty is one of the problems in providing an education for more nursing students. This grant allowed four bachelor’s prepared RNs to receive scholarships to receive a Master’s in Nursing. The scholarships required that the individuals teach for one year at St. Petersburg College after receiving their Master’s degree. All four individuals completed their Master’s degree and at the time of the final report, all four individuals were teaching at St. Petersburg College.

Key Implementation Lessons:

Partnership with industry is key. SPC and their industry partners agree that partnership with industry is key to creating a training program that really meets industry needs. Phrases characterizing a

model partnership include: “it can’t be a one-way street,” “it isn’t a rubber-stamp process,” and you must come into the relationship with “open arms.” SPC staff indicated that key elements in their successful partnership with industry include inviting industry to provide ideas, willingness to devote resources to carry out the ideas, and motivating collaboration at all levels of the college system, starting with college leadership. In the nursing program, the loaned-faculty partnership has been particularly important to enabling the college to match enrollments to industry needs.

Hospital sponsorship of students can increase the capacity of schools to serve more students. Hospital sponsorship of students was a key element of SPCs capacity-building model to educate more RNs. The sponsorship hospitals contributed loaned faculty, clinical preceptors, and in some cases tuition scholarships with stipends for books. In return, they would be able to fill their vacant employment slots with the students when they graduated. Students were required to complete a personal contract with the sponsoring entity which sometimes included a work requirement post-graduation, and waived FERPA privacy rules so that the hospital could see their school records. SPC provided the teaching space, curriculum, case management, and access to simulators and other teaching equipment. Some, but not all, of the sponsoring hospitals have maintained their sponsorships beyond the grant period; some of the smaller hospitals couldn’t get a sufficient return-on-investment.

Within this model there were a few specific lessons learned. Sponsoring works better for the hospital if their loaned faculty are paired with the students sponsored by their hospital. This requires that the loaned faculty members progress through the program with the students teaching all levels of courses, but it is this consistency of interaction that creates the relationship with the potential employee that is part of the hospital’s ultimate goal; when the student becomes employed by the hospital, the faculty member serves as a mentor during a two-year transition period in an effort to reduce turnover. In addition, the hospitals are the ones who select the students from a list pre-approved by the university. At the beginning of the grant, the hospitals spent 20-30 minutes per interview but that became unwieldy with the approximately 160 applicants. The hospitals moved to a “speed-screening” format for the first round of interviews.

Simulators serve as important teaching tools. Faculty (including loaned faculty) and staff expressed enthusiasm for the simulators and the dimensions they add to the teaching process. They emphasize that the point is not to replace time that students spend bedside, but rather to maximize that time by giving them a safe place to make mistakes. They emphasized the importance of simulators in allowing instructors to run through scenarios slower than real-time situations to slow down the thinking process for students. Such practice can help students learn how to react to the real-time scenarios rather than to panic when they get into their clinical rotations.

Technology is important, but it doesn’t run itself. Essentially technology, like the simulation center, can provide valuable new teaching opportunities. Selecting and purchasing the right equipment can present its own challenges, but helping people use the new equipment must be factored into the budget. Faculty have to be trained to see how simulations can enhance their curricula, and then they must be trained on how to use the actual machines. Training must continue to be available to support changing curriculum needs and changing faculty. In addition, the lab doesn’t maintain itself. The equipment must be reset and cleaned between simulations.

Creating standardized curriculum and course content is useful, but instructors may find it challenging to teach a class not of their own making. Sharing curriculum and course content across instructors is useful for creating consistency for students and decreasing course development time for instructors, but it doesn’t save as much time for instructors as might be imagined. As a work-around,

SPC developed a process whereby all key faculty participate in the creation of a “master course” which forms the core of key courses. Faculty members can then embellish on the core to personalize the class for their teaching style and experiences. At the same time, the students still feel like they are all learning the same things.

Grant implementation timelines can create the pressure to make changes quickly, but there is a need to manage that change with students and faculty. Grant timelines create the need for institutions to act quickly to accomplish the changes they have promised. That need to act quickly can negate the buy-in process that may usually occur with both students and staff during a typical change process. College staff need to carefully consider how students and staff will react to a changing landscape, especially if more than one change will be implemented quickly.

Supporting students is an important element to retaining them in the program and assuring their success. This project provided the first opportunity to offer case-management of students in the RN program. SPC found the case-management approach to be so successful in improving retention rates of students that they have incorporated this as a routine element of their program. Although faculty also provide mentoring, the case management services assure consistent, proactive support to students and a liaison with partnering hospitals. The case manager can follow up on test scores, help students balance school with work and home life, address study skill issues, advise them on coursework, and direct them to financial resources.

High school students and college students need different structures, supports, and rules. SPC ran three high school Summer Academies through the grant. They indicate their lessons learned include start the day later, create short sessions with a lot of hands-on learning, set a dress code, and don't set your expectations too high about what you can accomplish in a summer.

Key Partnering Agencies: Industry was a crucial partner in the RN Job Fulfillment program. Industry partners provided loaned faculty members, provided clinical sites, contributed ideas and assisted in securing some materials for the simulation lab, interviewed and sponsored students for the program, and provided some scholarships for students. Industry also helped support the program by providing tuition reimbursement to incumbent employees, and hiring a number of graduates. SPC notes Bayfront Medical Center, All Children's Hospital, Baypines Veteran's Hospital, and HCA Hospitals as their primary industry partners. The local school system (Pinellas County Schools) was critical to creating a youth pipeline for the future, particularly in facilitating recruitment to the youth for the Summer Academy. The local Workforce Investment Board (Pinellas WorkNet) facilitated awareness strategies with the broader community.

Post-Grantee Status (as of February 2011): Maintaining faculty has become more of a challenge since the grant ended. Since the grant period ended, many private colleges have emerged. The private colleges can pay faculty almost twice as much as what SPC (a public college) can pay. One strategy that is working, however, are faculty loaned from the hospitals. The hospitals are the employing organization, and they pay the faculty member a 12-month salary. When the faculty member isn't teaching classes, they work at the hospital. Moving from a hospital employee to a loaned faculty member has become a career progression step for some long-time hospital employees. This approach also facilitates easier scaling up or scaling down of numbers of nursing cohorts based on employer needs.

Making full use of the technology purchased has been another challenge. Two years after the grant completion, SPC indicates that they were finally able to hire a simulation skills lab facilitator to run the lab and program the simulations (a position they have wanted for a long time). While faculty can contribute to lab operation, it is hard for them to fully incorporate the technical knowledge that the lab requires into their daily routines. Now that they have a lab facilitator, SPC is exploring the idea of renting the lab out on weekends to generate maintenance revenue.

The Summer Academy was not continued beyond the grant because it was a very labor-intensive program and funding was not available to support it. A local hospital, however, did start up their own version.

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Building the Healthcare Informatics Workforce
(SPC Informatics)

Grantee:	St. Petersburg College (SPC)
Location of Grant Activities:	Six County Area (Sarasota, Manatee, Hillsborough, Pasco, Hernando, Pinellas) in Florida
Sector Targeted:	Healthcare (Informatics)
Type of Grant:	Training and Capacity Building
Grant Amount:	\$1,234,400 (after 1percent rescission due to reduction in WIA funding)
Match/Leveraged Amount:	\$1,531,485
Grant Period:	January 1, 2007 – June 30, 2010 (Extended from December 31, 2009)
Site Visit Dates:	February 22-24, 2011

Workforce Context: A survey of employers conducted by St. Petersburg College in 2005 revealed that 86 percent of responding hospitals and physicians’ practices had a need for specialized training or degree programs in healthcare information technology (IT). The survey also revealed that the largest healthcare employer in the area – BayCare healthcare systems – was getting ready to switch to electronic records for its 16 area hospitals. This switch would necessitate the training of at least 10,000 workers. At the time of the survey, there were no Healthcare Informatics programs in the state of Florida, and almost none nationwide. During the grant period, the economy tightened but the healthcare sector was only moderately affected. The demand for healthcare informatics skills remained strong because of federal initiatives illustrated within the *HR.1: American Recovery and Reinvestment Act of 2009* to support the “goal of utilization of an electronic health record for each person in the United States by 2014.” Title 21 CFR Part 11 provides further guidance on electronic medical records and Section 1561 of the Affordable Care Act further communicates standards.

Target Populations: The original target populations for the grant included youth in two magnet high schools, incumbent workers in the area healthcare facilities, and the broader community. Because the economy worsened as the project was underway, the grant funded program also served a number of dislocated workers.

Project Goals: The project was designed to increase the capacity of the college and the community to meet health informatics needs, and to provide Healthcare Informatics education through associate in science (A.S.) and certificate programs. Specific goals included:

- Training: To increase the number of individuals with the healthcare informatics skills needed to fill healthcare job openings. Specific training goals included:
- Increase new enrollments in healthcare informatics at SPC.
 - Increase the number of completers or graduates from healthcare informatics programs at SPC.

- Eighty five percent of SPC healthcare informatics certificate/degree program graduates obtain employment in a healthcare informatics related job or continue their education by Year three.

Capacity-Building: To increase the capacity of the SPC to prepare a workforce with the healthcare informatics skills needed by the healthcare industry.

- *Curriculum:* Increase healthcare program offerings by developing six healthcare informatics courses for incumbent training during Year one and offering a certificate and A.S. degree program by Year two of the project.
- *Faculty Development:* Increase the skills of 15 faculty to deliver state-of-the-art training for healthcare informatics workforce by the end of Year one of the project. *(This strategy changed during implementation. SPC created a scholarship for faculty/staff to pursue graduate-level training on health informatics. The three faculty/staff who received the scholarships had to sign contracts agreeing to teach adjunct health informatics classes.)*
- *Technology:* Increase the state-of-the-art technological resources available for training the healthcare informatics workforce by the end of Year one of the project.
- *Marketing and Recruiting:* Increase the overall community awareness of healthcare informatics career and training opportunities by Year three of the project.

Major Project Components:

Recruitment and Community Awareness. As an emerging field, Healthcare Informatics was relatively unknown. This meant that recruitment efforts needed to include awareness efforts. SPC relied on traditional outreach methods such as an online newspaper advertisement, a highway billboard, a program brochure, and Healthcare Informatics web pages on the College's web-site. Project staff also implemented more aggressive awareness strategies including: participation in job fairs put on by WorkNet Pinellas (the local workforce board) and others, presentations at area high schools, and an annual Healthcare Informatics symposium which was free to the public or available for a fee for continuing education credits. Throughout the project, SPC compiled contact information of individuals who made inquiries, participated on the advisory board, or attended related events. SPC was able to then use these contacts to send email blasts about program activities. Finally, SPC indicated that their best recruiting tool was a scholarship for Health Informatics Certificate participants; industry representatives and students quickly spread the word about the availability of the scholarships and the program.

Curriculum Development. Prior to the grant, SPC had no Healthcare Informatics course offerings. A scan of colleges around the country indicated that there were virtually no programs offered in the field. Appropriate textbooks were not available, as most were designed for graduate level coursework. SPC worked closely with industry to design curriculum that would deliver students skill sets demanded by healthcare informatics employers. Industry wanted students to emerge with content knowledge and critical thinking skills. While industry desired students with hands-on experience, they could not allow non-employees access to their health records systems due to HIPPA constraints limiting the possibilities for experiential learning. SPC also considered the student experience, and strove to create rich content and a user-friendly design in their all online certificate program.

Healthcare Training. SPC developed two formal training options: the Healthcare Informatics Certificate (18 credit hours) and the Healthcare Informatics Associate in Science (A.S.). Both programs required a full-time commitment and both are delivered entirely online. The Certificate program yields a transferrable, academic certificate (not a certification) after three eight-week ‘mod-mesters’ (two courses for six credits each eight weeks) of online coursework³. Students may enter the Certificate program by testing at the college level and passing a computer literacy pre-requisite class. The Certificate program articulates into the A.S. degree, a 67 credit hour, two-year program⁴. SPC purchased access to CERNER, an electronic medical records database system, which provides a hands-on learning component in both the Certificate and the A.S. degree.

- SPC’s original goal for certificate completion was 80 students.
- SPC’s original Associate completion goal was 55 students; by grant completion nine students actually earned an A.S. degree. The A.S. degree took longer to develop and the full-time, two year schedule is less compatible with students’, particularly incumbent workers’, needs for training.
 - By the end of the grant period, a total of 163 students had completed either a certificate or an A.S. degree, with the majority completing the certificate.
- SPC also created informal training to help the community and future college students better understand healthcare informatics. This included speaking at local high schools, hosting an annual symposium, and making a web-based tutorial on health informatics available on the web-site.
- Through these informal training activities SPC planned to reach 300 youth; by grant completion they reached 318 youth.
- SPC planned to reach 500 individuals through the Symposium; by grant completion they reached 481.
- SPC planned to reach 1,550 individuals through the web-based tutorial on health informatics; by grant completion they had reached 1,106.
- Finally, SPC provided incumbent worker training during the grant period through three primary avenues: presentations by the project coordinator to various industry associations and medical centers; workshops on Electronic Medical Record preparation, vendor consultation, and basic computer and information literacy skills; and an online incumbent worker electronic health/medical record course to help them “retool” their skills.
 - SPC planned to educate 500 incumbent workers; by grant completion they reached 801.

Capacity Building. The CBJTG allowed SPC to increase their capacity in at least three ways: increased faculty skills, increased staff skills, and increased capacity to meet the needs of industry. The curriculum development and new course offerings increased SPC’s capacity to meet industry needs. SPC also implemented several strategies to improve faculty and staff capacity. First, the grant provided funding for three individuals to obtain graduate-level coursework in Healthcare Informatics. Second, the grant provided staff time to devote to project start-up, rather than fitting in startup activities around other responsibilities. One staff member said: “[This was] one of the best experiences I ever had. I had never worked on a grant before. Our team was awesome. My skill set expanded three-fold by going

³ See: <http://www.spcollege.edu/program/HCINF-CT>

⁴ See: <http://www.spcollege.edu/program/HCINF-AS>).

through this experience.” SPC indicated that this devoted time facilitated organizational and personal learning.

Key Implementation Lessons:

Partnership with industry is key. SPC and their industry partners agree that partnership with industry is key to creating a training program that really meets industry needs. Phrases characterizing a model partnership include: “it can’t be a one-way street,” “it isn’t a rubber-stamp process,” and you must come into the relationship with “open arms.” SPC staff indicated that key elements in their successful partnership with industry include inviting industry to provide ideas, willingness to devote resources to carry out the ideas, and motivating collaboration at all levels of the college system, starting with college leadership. Workforce Investment Boards (WIBs) can play a key facilitative role in helping colleges and industry get to know each other by holding annual industry forums and educational summits.

While Associate Degree programs are important, they may not be the best starting place. The Associate Degree program at SPC was less successful than the Certificate. SPC attributes this result to three issues. First, the three-year time period of the grant made it impossible to both craft a two-year A.S. program and have students complete it. Second, the Certificate, a shorter-term training opportunity requiring minimal pre-requisites, was a more attractive starting place for many students including incumbent workers looking to retrain or add on a new skill set. Finally, within the college itself, the new A.S. degree created competition with the similar Registered Health Information Technician A.S. degree.

Alignment with federal scholarship options can affect success. SPC did not realize until after they had finalized their Certificate program that it would not qualify for Pell Grant assistance because it did not require at least 24 credit hours. Eventually SPC received a waiver for to allow Pell Grant access but it did affect initial enrollment in the program.

Health Informatics cannot be approached the same way as Allied Health. Health Informatics crosses over more knowledge areas both within the healthcare field and across into the IT field. For health informatics, you are not just trying to produce people with a title; people with all kinds of titles need the skills.

Traditional marketing may not be the best way to get the word out. SPC found the best way to market their new Health Informatics Certificate program was to create a scholarship program to provide support for tuition and books, or for books only. An innovative book loan program allowed students to purchase the books at the end of a semester if they wanted, or turn in books from one semester to get the next semester’s books as a loan. Both students and industry spread the word about these funding opportunities for the Certificate program.

Emerging fields generate continued uncertainty. As an emerging industry, the on-going workforce needs and standards in the healthcare informatics industry are relatively unknown. While industry could define the workforce needs for the switch from paper records to electronic records, they did not know which positions would be short-term vs. long-term. Standards for coursework and teaching credentials continue to develop as more people participate in the field.

Key Partnering Agencies: Industry was a crucial partner in the Healthcare Informatics program. Industry partners helped SPC to understand the changing workforce needs, to craft curriculum that prepared students for the workplace, and to incorporate hands-on learning. Industry helped SPC select a hands-on learning system, and secure the system at a discounted rate. Industry also helped support the program by providing tuition reimbursement to incumbent employees, and hiring a number of graduates. The local school system (Pinellas County Schools) was critical to creating a youth pipeline for the future. The local Workforce Investment Board (Pinellas WorkNet) facilitated awareness strategies with the broader community.

Post-Grantee Status (as of March 2011): The Certificate and A.S. degree programs in Healthcare Informatics are continuing. The Healthcare Informatics Certificate has more graduates per year than any other certificate program at SPC. SPC staff continue to remain abreast of changes in the health informatics field to ensure continued industry relevance.

SPC continues to involve industry in shaping and reshaping the program. The Advisory Board SPC created to launch the Health Informatics program continues to exist, although it has been merged with the HIM board and meets less frequently than in the startup phase. At the request of industry, SPC is redesigning the certificate program into modules that can be used for noncredit, corporate training. The corporate training will allow for “professional credit.” Other project elements like outreach to youth and the community have ended.

SPC notes that these on-going industry partnerships are crucial for sustainability: “the government can pay for all the equipment they want, but it won’t last forever,” and the school will need partners to help with replacement costs in future. One sustainability challenge identified by SPC and their industry partners is that long-term workforce needs in the Healthcare Informatics field are unknown. Right now the industry is “scrambling to become informaticized,” and that has created a lot of entry-level jobs, but no one is sure those jobs will exist in the longer-term.

Finally, SPC took some steps before the grant ended to prepare for sustainability. While they have shared and remain willing to share information about how their program was developed, they have protected some of the information. As an online program, the service delivery areas are not clearly demarcated, and SPC took this action to prevent the program from being undermined by competition. In addition, SPC planned ahead for program changes, including estimating the need for new books in 2014 and a corresponding curricular update.

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Biotech KY
(OCTC Biotech)

Grantee:	Owensboro Community and Technical College (OCTC)
Location of Grant Activities:	The "Greater Owensboro Region," a nine county area in Northwest Kentucky and Southern Indiana
Sector Targeted:	Biotechnology
Type of Grant:	Training and Capacity Building
Grant Amount:	\$816,531 (after 1percent rescission due to reduction in WIA funding); \$810,445 actual expenditure
Leveraged Amount:	\$887,229
Grant Period:	January 1, 2007 – December 31, 2009
Site Visit Dates:	January 5-6, 2011

Workforce Context: At the time of grant application, OCTC was offering a two-year degree program in biotechnology that had been created at the behest of industries in the area. As reflected in industry comments captured in the Greater Owensboro Economic Development Corporation (GO-EDC) 2006 strategic plan, industry leaders felt that OCTC capacity needed to be increased in three areas to better support the burgeoning biotechnology industry: pipeline recruitment and retention, training avenues for developing skill competencies, and public outreach and image. The low enrollment in the biotechnology program at OCTC and growth and diversification in the biotechnology field in the Owensboro area were cited as the reasons for increased training and capacity-building activities funded under the CBJTG. Six Owensboro employers, including the largest employer in the area, were involved in biotechnology endeavors spanning pharmaceutical development and cancer research, bio-diesel fuels, and genetically-modified crop production. All of those industries were expected to generate employment growth in the biotechnology sector through 2010. Despite several plant closings and an overall increase in area unemployment during the grant period, the biotechnology sector did grow as anticipated creating demand for new entrants to the biotechnology field in the locality.

Target Populations: OCTC targeted adults, youth, incumbent workers, and other untapped members of the workforce for training in its Biotech KY project. In addition, OCTC was striving to improve awareness about the biotechnology field and career opportunities throughout the region.

Project Goals: This project was designed to address the three capacity-building areas identified in the GO-EDC 2006 strategic plan through the following goals and strategies:

1. Develop a youth pipeline and strategies to retain students.
 - Implement a comprehensive recruitment campaign targeting students at feeder high schools in the OCTC service area; dislocated workers wishing to change careers; and targeted populations, such as minorities, persons with disabilities, and other underrepresented groups.

- Provide advising, counseling, and support services to students enrolling in biotechnology/life science programs to promote student retention.
- 2. Create more training avenues for developing skill competencies of both incumbent and non-incumbent workers.
 - Incorporate two biotechnology laboratory courses modeled after successful National Science Foundation projects (Biotechnology Techniques I and II).
 - Offer real-life industry exposure through internship opportunities to youth and to adults.
 - Offer training opportunities to incumbent workers at area biotechnology and life science employers with topics and activities appropriately suited to the industry.
 - Offer professional development opportunities to teachers from OCTC's feeder schools at various levels of the education continuum, from elementary to high school, to promote the inclusion of biotechnology concepts and competencies at the pre-college level.
 - Promote a career pathway in biotechnology from the senior level of high school through the baccalaureate level (2+2+2), including alternative delivery models.
- 3. Engage in public outreach and image building.
 - Implement an intensive, region-wide marketing campaign.

Major Project Components:

Recruitment and Community Awareness. Biotechnology is a relatively new field that is not well understood by the larger Owensboro community. Some students are afraid to enter the field of biotechnology because science and math requirements appear daunting. Thus, OCTC focused efforts on allaying these fears and on making the community (including prospective students, parents, and teachers) more aware of career and educational opportunities in biotechnology and life sciences. OCTC hired a recruitment director to conduct outreach to increase community awareness of career and educational opportunities in the biotechnology field, and in particular, to increase awareness of OCTC's biotech and life sciences programs. Major recruitment activities fell into three main areas: (a) targeted high school recruitment, (b) general community awareness and outreach, and (c) outreach through OCTC's "Discover College" dual enrollment program. The targeted high school recruitment included presentations to area high school science classes; outreach to high school science teachers, agriculture teachers, and counselors; and, helping K-12 teachers learn more about biotechnology by providing professional development training opportunities (see training section below).

General community awareness and outreach strategies included radio ads, billboards, distribution of brochures throughout the community, public service announcements on OCTC's television channel, and presentations at job fairs. OCTC estimates that over 35,000 individuals were reached through these community awareness efforts. OCTC also targeted recruitment to students who were already enrolled at OCTC, but undecided about a major or entry into a specific occupation or field. The staff used posters, brochures, and presentations to targeted classes of students to make them aware of biotechnology courses available at OCTC and to encourage these already enrolled students to consider entry to the field. Finally, staff from OCTC's Discover College program worked to recruit students for dual enrollment in the biotechnology and life sciences programs. The primary challenge recruiters faced for this dual enrollment was the concern about the difficulties of undertaking a "hard"

sciences curriculum. *“Traditionally, when a student and parents look at [a] heavy science field they think Doctor, now they have opened their eyes to see that you can take the same education and use it in other fields. They see life sciences as less intimidating and [opening] more possibilities.”*

Pipeline and Career Pathway Development. OCTC used two strategies to encourage entry of students into biotechnology and life sciences. Educating the K-12 teachers about the biotechnology field by engaging them in professional development opportunities was one element of the pipeline development strategy in the nine-county region served by OCTC. This strategy was aimed at expanding knowledge about biotechnology among K-12 teachers, who in turn would be more likely to incorporate instruction on biotechnology/life sciences (including about potential careers and educational opportunities into their classrooms). Additionally, OCTC introduced a “2+2+2” strategy, which allows students at the junior level in high school to apply 24 hours credit hours earned in high school to an AAS degree in Biotechnology, and then allowing them to further articulate their AAS into a bachelor degree program at Western Kentucky University (which has opened a branch campus right across the street from OCTC).

Curriculum Development and Modification. OCTC developed two new courses, modified five existing courses for hybrid delivery, and created an internship component for biotechnology students.

- New course development: A biotechnology professor developed a new laboratory course with CBJTG funds, entitled *Biotechnology Techniques I and II*. These newly developed OCTC for credit courses utilized new laboratory equipment purchased under the grant and provided hands-on experiences for biotechnology and life sciences students. The Kentucky Community and Technical College System (KCTCS) approved the courses to serve as electives (versus required coursework) in the certificate and associate’s degree level program at OCTC. While the college had hoped that these laboratory courses might become required courses under the biotechnology program, KCTCS policy limits the number of total hours of required coursework allowable under an AAS degree at community colleges in the state. As a result, to add courses would have meant other courses would have to be removed. It was determined at the local level that those courses already required in the degree program were important to local industry and would need to remain. KCTCS ruled that these two new laboratory courses could be offered as electives (but not as requirements). As a result, the two laboratory courses are offered at OCTC and the Bluegrass Community and Technical College, but enrollment in the courses to date (because they are not required courses) has been limited to four students.
- Modifying curriculum for hybrid and online delivery: Five courses in the biotechnology curriculum were modified to allow them to be offered through technology-based alternative delivery models. The five courses were: Introduction to Biotechnology, Botany with a Laboratory, Zoology with a Laboratory, Introduction to Cell and Molecular Biology, and Biotechnology Techniques I. Online lectures, coupled with hands-on lab sections at OCTC, allow students the flexibility afforded by not having to be at a physical location at a specified time for class lectures. During the grant period, 155 students participated in these redesigned classes (less than goal of 255). The grantee indicated, however, growing interest in online/hybrid delivery, as enrollment in these classes has increased substantially since the CBJTG ended.
- Developing Paid Internships: The grant-funded a full-time OCTC Internship Coordinator who worked in conjunction with economic development partners to survey biotechnology employers, assess the skills they sought in interns and employees, and then used that information to guide appropriate internship placements and curriculum development. Under the CBJTG, youth and adults were afforded the opportunity for hands-on, paid internship

experiences at several area employers, including Kentucky BioProcessing, the Owensboro Museum of Science and History, the Owensboro Cancer Research Center, and Unilever Best Foods. WIA youth funds and Owensboro Biotech Alliance funding were leveraged to support four to twelve week internship experiences. Seven biotechnology and life sciences interns were placed during the grant period. The primary reason for the small numbers of internships was the small size of the participating employers; they simply couldn't handle more students. Another factor that limited the number of interns placed was the preparation requirements of interns, based on company expectations. For example, some companies required that specific courses be completed prior to an internship placement.

Adding Faculty and Staff. The grant allowed OCTC to hire a full-time biotechnology professor to develop curriculum, teach biotechnology and life sciences classes, and advise biotechnology students. As a result of the CBJTG, OCTC was also able to engage in intense outreach services by hiring of a Recruitment Director and to jumpstart internship development with employers through the hiring of an Internship Coordinator.

Purchase of Simulators and Equipment. OCTC developed a biotechnology laboratory with the grant funds allowing students throughout the biotechnology program to engage in hands-on learning activities. Equipment was purchased to outfit this laboratory, as well as to update other biotechnology and life sciences laboratories, and to provide mobile equipment for incumbent worker training.

Biotechnology Training. Biotechnology training was provided to three groups of individuals: college students (including high school students enrolling for college credit), primary and secondary level teachers, and incumbent workers. College students benefited from new course offerings, new hands-on learning opportunities, and adaptations of classes to technology-based formats (see curriculum development for more information). OCTC also engaged in additional efforts to retain students in their training programs including academic advising, assistance in accessing scholarship funding (some provided by the grant) and WIA ITA funding, referral to tutoring and other academic assistance programs, referral to other college and community-based support services, and assistance applying for internships made available through the project. Among the principal accomplishments under the grant with respect to providing biotechnology training were the following:

- 180 college students enrolled in biotechnology and life sciences training (exceeding the goal of 120); 95 of these were high school students (exceeding the goal of 90). Students entering OCTC course had to go through and meet normal enrollment procedures and requirements at the community college. OCTC also offered a remediation program to bring interested students up to the entrance requirements for the college, as well as entrance to the biotechnology/life sciences program.
- Of the 180 students enrolled, 115 had exited with 86 successfully completing their goals.
- 155 students benefited from the adaptation of five biotechnology courses to technology-based learning (fewer than the 225 estimated); OCTC indicates that its capacity to serve more students in the courses has increased since the grant ended.
- 4 students received training in the two new elective laboratory courses modeled on successful National Science Foundation projects (fewer than the 60 estimated).

Primary and secondary level teachers benefited from ten professional development workshop offerings including: *Become a BioGENEious*, *Investigating Biotechnology in Agriculture*, *Get Infected with Biotechnology*, *Teachers in the Workplace*, *Mechatronics/Biotechnology Boot Camp*, *Dead Man Talking*,

Investigating Biotechnology in Agriculture (two class offerings), Dead Man Talking—Follow-Up Offering, BioAid: First Response to Terrorism, and Engineering Expo. These intensive workshops/courses offerings ranged in length from one to six days and included employer tours and hands-on laboratory experiences. The teachers were provided grant-funded stipends to attend the training.

- 129 K-12 teachers serving 2,787 students participated (exceeding the goals of 90 teachers and 1,800 students)

Incumbent workers benefitted from 11 customized short-term training opportunities, which were delivered either at the industry site or on campus based on needs. Customized training courses included: *Introduction to Biotechnology, Bloodborne Pathogen Training for the Biomedical Research Laboratory, Advanced Bloodborne Pathogen Training for Frontline Emergency Personnel, BioAid: First Response to Bioterrorism, Microbiology for Line Workers, Medical Microbiology, Biotech Seed Development Training, Medical Microbiology, BioAid: Law Enforcement Bioterrorism Training, Zoonotic Diseases of People and Pets, and Project Management Training.*

- A total of 158 incumbent workers received training under these customized training courses (exceeding the goal of 150). Grant administrators noted that because of the recession (which occurred during the grant period) that some employers had greater concerns about the “bottom line” and were sometimes reluctant at times to give employees paid time off to attend incumbent worker training.

Key Implementation Lessons:

Strong partnerships with economic development and industry are key to developing internships and aligning training programs with workforce needs. OCTC had developed relationships with economic development and the biotechnology industry prior to the grant. The application for the grant was a continuation of these partnerships to better serve the biotechnology needs of employers in local area. As one college official said, *“We would have moved forward without grant funding but with the grant we moved much faster, and that pleased the community.”* OCTC benefited from industry and economic development input on hiring staff and faculty, purchasing laboratory equipment, curriculum development, and internship placements. While internships were valued by industry and students, small firm size in the biotechnology sector can limit internship opportunities. Industry also benefited from the grant, *“The grant has helped this community build traction in attracting biotech companies to this area. They [economic development officials] can say [to employers interested in locating new facilities in the local area that] we have a school that can produce a trained workforce.”*

Strong partnerships with high schools are key to recruitment of youth. OCTC’s Discover College dual enrollment program for high school juniors and seniors, as well as presentations and outreach to area high schools, and professional development for K-12 teachers in the biotechnology field helped recruit youth to the biotechnology and life sciences program. Prospective students became more aware of the biotechnology/life science field (and potential occupations within the field) and less intimidated to make application to OCTC’s biotechnology program.

Articulated educational pathways were developed to link high school students to post-secondary education opportunities in the biotechnology field (at community college and four-year institutions). OCTC developed a 2+2+2 educational pathway allowing high school students to earn academic credits during their junior and senior years of high school counting towards both high school graduation and an

associate's degree at OCTC. Additionally, under this program, an articulation agreement with Western Kentucky enabled those earning an AAS degree in biotechnology at OCTC to automatically enter into the bachelor's degree program at Western Kentucky University. In addition to keeping costs of education affordable for students, the 2+2+2 approach accelerated students' movement towards receipt of AAS and bachelor's degrees in biotechnology/life sciences and provided a clearly specified educational pathway into biotechnology fields.

Economic conditions affect willingness of employers to sponsor internships and make incumbent workers available for upgrade training. Industry is likely to push for and support incumbent worker training during times of economic strength, but then pull back during economic downturns. When economic downturns hit, employers become more concerned about the "bottom line" and may be reluctant to sponsor internships and/or making workers available for additional training during work hours. Cultivating strong relationships with industry partners can help alleviate the severity of these cycles, but is unlikely to eliminate them.

Strong relationships with federal program officers are important. Federal program officers can be an asset in helping grantees understand expectations and requirements. It is important to work together as decisions are made to ensure that all parties are thinking similarly about the project development.

Key Partnering Agencies: OCTC had five major partners in the Biotech KY project: the Greater Owensboro Economic Development Corporation (GO-EDC), the K-12 education system, Kentucky Bioprocessing (KBP), Green River Area Development District (WIA partner), and Western Kentucky University (WKU). GO-EDC provided the major impetus to the local focus on the biotechnology sector and worked with OCTC on the grant project from the start. During the grant period, GO-EDC assisted with recruitment of area biotech firms to sponsor internships, served on the biotechnology professor hiring committee, and promoted OCTC's biotechnology training program as part of a regional economic development strategy in the biotech field. The K-12 system in the nine-county service area was also an important partner, making teachers available for professional development, opening science classrooms for OCTC staff presentations/recruitment efforts, and referring interested students to the program.

KBP sponsored internships for OCTC biotechnology students, served on the hiring committee, reviewed equipment purchases for the biotech lab, made their facilities available for tours, and considered OCTC biotechnology graduates for employment opportunities. The lead scientist at KBP also taught the online *Intro to Biotechnology*, course for the community college. The Green River Area Development District played an advisory role on the hiring committee, referred participants to the training program, and leveraged WIA training funding for several program participants. WKU negotiated and signed an articulation agreement with OCTC allowing OCTC Biotechnology Associate (AAS) degree graduates to be automatically admitted to the baccalaureate degree program in the life sciences at WKU (and receive full credit for two years of study toward a four-year degree). Additionally, WKU recruited and hired a plant biologist for the WKU's satellite campus in Owensboro.

Post-Grantee Status (as of January 2011): The core activities initiated under the grant continued after the December 2009 end to the grant. The biotechnology faculty member hired under the grant was retained by OCTC with regular college funding and continues teaching biotechnology courses and advising students. Outreach and recruitment in the high schools has become part of OCTC's regular recruitment activities and continues through OCTC's Discover College program. The two laboratory

courses developed with grant funds and the five hybrid/online courses developed with grant funds continue to be offered as part of OCTC's regular course offerings under its Biotechnology associates degree program. Enrollment in the biotechnology and life sciences programs continues to expand. The biotechnology laboratory established under the grant continues to be used by teachers and students involved in the biotechnology and life sciences courses at OCTC, as well as by the biotechnology faculty at the WKU satellite campus. GO-EDC and the area biotech firms continue to promote the OCTC lab and biotechnology program as part of an ongoing economic development strategy to bring new biotech/life sciences employers to the Greater Owensboro area.

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Energy for Tomorrow
(MSUB-COT Energy)

Grantee:	Montana State University – Billings College of Technology (MSUB-COT)
Location of Grant Activities:	Billings, MT
Sector Targeted:	Energy
Type of Grant:	Training and Capacity Building
Grant Amount:	\$1,978,896 (after 1percent rescission due to reduction in WIA funding)
Leveraged Amount:	\$726,557.58
Grant Period:	January 1, 2007 – December 31, 2010 (Extended from original end date of December 31, 2009)
Site Visit Dates:	May 24-May 25, 2011

Workforce Context: Historically, extractive and energy-based industries are a strong part of the Montana economy. This grant was written to respond to workforce training needs in the energy field for current and future employment. During the first year of the grant, the state of Montana was experiencing steady economic and population growth, with Western and Central regions leading the way. The Eastern part of the state was struggling with high unemployment and population decline. Within the grant period the western part of Montana began experiencing a significant decline, and the central and eastern part of Montana (where MSUB-COT is located) experienced economic growth fueled by energy development. Business, community and educational leaders foresaw a continued industry expansion given expected establishments moving business to the region. Unemployment in the region was low, the population was aging, and there was a growing demand for new workers and higher skilled incumbent workers in the energy industry. During the recession, the boom turned into a bust. The region experienced major layoffs and expected establishments deferred openings. MSUB-COT knew, however, that the MT economy tended toward large boom-bust swings so the program was constructed with flexibility in mind and the region is beginning to sense an economic comeback.

Though demand was growing at the time of the grant award, the workforce pipeline was fractured because many individuals were travelling out-of-state to receive training. Montana did not have training programs sufficient to meet the workforce needs. Students (and employers) were typically going to North Dakota and Wyoming to meet training needs. In some cases, trainers were available but the training equipment was not sufficient. In other cases, there was a deficit of both trainers and equipment.

Target Populations: Target populations included youth, incumbent workers, and untapped members of the workforce. Dislocated workers were not an intended target, but during the course of the grant a major layoff occurred and many dislocated workers benefitted from the training options available.

Project Goals: The project was designed to increase the capacity of Montana State University Billings College of Technology and to provide a skilled workforce for the growing energy sector in Montana. Capacity-building goals included: replacing old equipment with modern industry equipment; expanding

the availability of equipment to allow more students to be served at once; updating and expanding curriculum to incorporate new industry standards and new equipment training; and increasing the faculty knowledge base with both new faculty and professional development opportunities for existing faculty to enable up-to-date, relevant, regularly available training for students and on-demand, tailored incumbent worker training for industry.

Major Project Components:

Recruitment and Community Awareness. To recruit a new generation of individuals into the energy field, MSUB-COT wanted to dispel the perception that energy jobs are dirty and impart the message that computer and technology skills are needed to operate large equipment like backhoes and motor- graders. MSUB-COT faculty and program managers attended job fairs, career fairs, and county fairs where they had tables displaying pamphlets and flyers with program information. Many of the fairs had attendees from MSUB-COT adult and children target populations. They reached out through partner agencies to ensure that children and adults knew about the career and training opportunities. Once the Mobile Training Lab was purchased and outfitted, they travelled with it to several fairs for career demonstrations and also featured it in an on-campus event highlighting the opportunities at MSUB-COT. They also performed outreach through print media, radio, television, email, and web-site development. According to their counts, 11,700 individuals were exposed to outreach materials/events.

Pipeline Development. During the grant period, MSUB-COT facilitated the development of a youth pipeline into energy-related education and employment through three avenues: (1) they promoted awareness through outreach events; (2) they continued their pre-grant participation in Montana's statewide articulation agreements, known as CTE START, which allowed the new programs developed under *The Energy for Tomorrow* grant to qualify for high school coursework articulation; and (3) they formally explored how to make dual enrollment possible for students at the Billings Career Center (the local vocational high school). While they were not able to resolve the issue of differing credential requirements for high school and college instructors during the grant period, MSUB-COT is now (Fall Semester 2011) helping COT faculty earn a Class 8 secondary license, which is required by Montana Board of Education to allow college credits to count at the high school level (<http://www.opi.mt.gov/pdf/arm/57chapter.pdf>).

Curriculum Development. Support of curriculum development was a major capacity-building element of *Energy for Tomorrow*. The grant supported modification of existing curriculum (partly to update classes for new technologies) in Welding and Metal Fabrication, Power Plant, Process Plant, and Diesel Technology; creation of new curriculum in Welding and Metal Fabrication, Power Plant, HAZMAT, and Engineering Technology (Dawson Community College); purchase and customization of curriculum in OSHA and NIMS; and purchase of curriculum in Heavy Equipment Operation, Introduction to Welding, and Wire Feed Welding. The new curriculum provides MSUB-COT with a more comprehensive package of training options (both credit and non-credit based) to support work in the energy industries, and updates the training to include the latest technologies.

Energy Training.

- 256 individuals received train-the-trainer instruction in one or more of the program supported by Energy for Tomorrow. These individuals include MSUB-COT instructors, high school instructors, and other community members.
- 804 individuals enrolled in and 801 individuals completed a short-term (non-credit based) training program supported by Energy for Tomorrow.

- 383 individuals enrolled in credit-based training (at both MSUB-COT and Dawson Community College) supported by Energy for Tomorrow.
 - 147 completed degrees or certificates, 89 dropped from the program, and the balance continued or status was unknown
- 551 individuals who completed either credit-based or noncredit-based training were employed at follow up
 - Of 140 who were not employed prior to the start of the program, 54 have become employed since exit.

Purchase of Simulators and Equipment. Lack of adequate laboratory equipment and simulators to allow for up-to-date hands-on training was a serious impediment to meeting industry needs and expanding the programs at MSUB-COT. About 50percent of the grant was focused on purchasing needed equipment, and nearly all of the leveraged funds were in-kind gifts of equipment. The purchases made transformed MSUB-COT into a state-of-the-art training facility, with the capability of bringing training to the community through a Mobile Training Laboratory and providing local industry with in-house incumbent worker trainings. Instructors indicate that providing students the opportunity to “see, feel, and touch the machines” and providing them “hands-on” time with a range of equipment currently used within the industry ultimately give them an advantage in the hiring process.

Capacity Building. As of 2002, the newest piece of equipment for hands-on student experience and training had been purchased in 1988. This was a significant impediment for providing students the skill sets desired by industry. Through the grant (and leveraged funds) the college upgraded diesel, welding, process and training lab, and pieces of heavy equipment. The purchasing of up-to-date equipment and the ability to bring it out to employers through the mobile lab has made both the non-credit and credit-based training programs relevant to industry. As one interviewee said, “Those industries are really grateful to college for what it’s been able to do for them. The impact it had in tandem with the impact on the students. From the short term students to the long term certificate students. They are walking out of here with amazing education experiences and lab experiences. And ability to work on equipment that truly is current.”

Key Implementation Lessons:

Tracking program participation and student outcomes can be challenging. Students don’t always respond to requests for follow-up information and if your state systems don’t talk to each other (like Department of Education and Workforce) it can be hard to get data on student employment outcomes.

Create relationships before asking for something. Partners need to be sustained over the long-term. It is important to invite industry and community partners to the table even prior to a specific initiative. Asking for their opinions and needs is important in demonstrating to them that you can be counted on and are involved. Then, when you ask them for help they’ll be willing to give it. Capacity-building grants can especially support the growth of partnerships because they provide the extra staff time to listen and cultivate the relationships, as well as funding to purchase industry relevant equipment that will then leverage more partner support.

You can't count on industry to follow the path they plan to take. Industry is an important partner, but circumstances beyond their control (like the overall economy) may cause them to change their future plans without warning. Training programs need to be able to cope with such unexpected changes.

Creating a sustainable program may require a longer implementation time period than originally anticipated. These demonstration grants are designed to get projects off the ground quickly, but colleges must implement with an eye toward sustainability. It may take longer to initiate a program that will be sustainable.

Don't forget to promote your successes. MSUB-COT is concerned that the state legislature does not understand the impact the federal dollars have had in building not only the capacity of post-secondary education, but in building the economy of Montana. Future decisions about federal dollars may not reflect the impact of those funds in Montana.

Good faculty are hard to retain. There is tremendous competition with industry for the instructors, and industry typically wins out because the pay is better. As one interviewee noted, "The skills these people have command very high salaries in the oil fields and mining. These folks could easily get \$100,000 paying jobs." The legislature has frozen the pay of faculty members, and there are compensation rules which limit the amount of extra income they are allowed to earn. The college notes that each summer they find themselves searching for new faculty members.

Don't forget about apprenticeship programs in articulation-building. Before the Energy for Tomorrow project, the apprenticeship programs essentially ignored any coursework completed in post-secondary schools. Now the apprenticeship programs consider the coursework as they evaluate trainees, and may allow them to skip apprenticeship years based on what they learn in the program.

College purchasing processes can make procurement of equipment a challenge. Staff were not familiar with the college purchasing processes for high cost items, nor were they particularly knowledgeable about drawing up specifications for the specialty items they knew they needed to purchase. This created a longer than expected time period to purchase equipment identified to support grant outcomes (especially the mobile training lab).

Make the most of peer networking opportunities. USDOL provided workforce innovation meetings with other grantees. The *Energy for Tomorrow* project learned from the work done in at least two other states.

Cross-college collaboration (instead of competition) is important and possible. In Montana, this collaboration includes not only state institutions but also tribal entities. All parties are beginning to see that they can do more together. The mobile training unit purchased with the *Energy for Tomorrow* grant is helping to foster new collaborative opportunities as it enables MSUB-COT to deliver training in places where it might not otherwise be available.

Key Partnering Agencies:

Partnerships with Job Service (the local One-Stop Career Center), MSUB-CPSLL, Billings Career Center (a vocational high school), and Billings School District #2 were key to reaching out to and connecting with industry, social service agencies, community organizations and the women's prison, and school-age children and youth. The following organizations partnered with MSUB-COT to provide

training to specific populations: the Billings Fire Department, the Montana Safety Services Council, Red Rocks Community College, Montana Manufacturing Extension Center, Montana Office of Public Instruction/Tech Prep, Little Big Horn/Many Stars CTL, and Montana State University Northern and Great Falls. Other organizations that helped the MSUB-COT connect to business include: Big Sky Economic Development Authority, Beartooth RC&D, Dawson County Economic Development, and the Stillwater Chamber of Commerce.

Representatives from industry served on advisory boards, helped to identify training needs and skill sets, assisted with curriculum development, donated leveraged resources, spoke at career fairs, and provided internship sites for students (mostly unpaid) to support *Energy for Tomorrow*. These industries include: Aspen Air, Berry Y&V, Billings-Logan Airport Emergency Services, Caterpillar, CHS Refinery, ConocoPhillips-Billings Refinery, Exxon Mobil – Billings Refinery, MMEC, Montana Contractors, Montana JATC, PPL Montana, Stillwater Mining Company, T & E Equipment Company, Taisei Techno, and Yellowstone Co.

MSUB COT became the Montana Host Site for the Rocky Mountain Education Center - OSHA Training Institute Region VIII during the grant period and is authorized to offer OSHA specific training courses as needed by industry. This partnership is on-going and will assist in the sustainability of the Workforce Training Center initiatives.

Post-Grantee Status (as of May 2011):

- “The DOL grants have had significant impact on this community and this community college to help support the development of skilled workers for industry. It’s really tough. Every state is facing declining. We just got 9percent budget cut. Without these additional funds, it’s nearly impossible to do this stuff.”
- They indicate that the equipment has a good shelf life and isn’t easily damaged, but within 10 years the equipment will need to be updated or replaced. They are hoping that the value they demonstrate to industry will help them secure additional industry dollars in the future to replace the equipment as needed.
- They lament not being able to keep the program income to jumpstart their sustainability: “we started really ramping up and we had to spend out the program income by the end of the grant. We could have used that program income to sustain us. If we could use that income to continue it would be good. All the money we worked to raise, we don’t have it any more. With limited resources, that has been challenging.”
- They indicate that one of the hardest areas to sustain will be community outreach because without the grant there is no regular funding to support that kind of effort.

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Leveraging Innovation Assets to Alleviate Critical Healthcare Worker Shortages
(Tri-C Healthcare)

Grantee:	City of Cleveland, Department of Economic Development (Division of Workforce Development) ⁵
Location of Grant Activities:	Cleveland, OH / Cuyahoga County, OH
Sector Targeted:	Healthcare
Type of Grant:	Training and Capacity Building
Grant Amount:	\$2,483,714
Leveraged Amount:	\$2,740,862 (as of 6/30/2011)
Grant Period:	April 1, 2008 – December 31, 2011
Site Visit Dates:	August 11-12, 2011

Workforce Context: The healthcare sector is a focal point of the Cleveland, OH metropolitan area, with The Cleveland Clinic and University Hospitals (employing over 70,000 healthcare workers in northeastern Ohio) being two of the largest employers in the state. At the time the grant was written, there was a strong demand for a wide range of healthcare workers in northeastern Ohio. There were tight labor markets reported for the six healthcare occupations targeted by the grant: Medical Assistant, Occupational Therapist Assistant, Physical Therapist Assisting, Health Information Technician, Physician Assistant, and Nursing Assistant. The strong demand was partly linked to the limited capacity of local area colleges to increase the pipeline of skilled workers required by employers in the targeted professions. Insufficient laboratory facilities/space and a lack of faculty with appropriate accreditation at colleges offering training in the six targeted occupations made it difficult to expand educational slots in the training programs (limiting expansion of slots in these training programs). Local colleges were also constrained by the lack of interest in these fields which was in part due to the lack of understanding and awareness among youth, unemployed workers, and low-income/disadvantaged individuals about the wide variety of healthcare careers and educational opportunities.

Despite starting amidst the Great Recession, healthcare employer demand and healthcare sector growth has been steady in the northeast Ohio area. The northeast Ohio area has been hard hit by the recession and, within the first few months of the grant, the unadjusted unemployment for Cuyahoga County was 8.8 percent (July 2008). However, the hiring of workers trained in the six occupations targeted by the initiative has remained strong throughout the initiative and employment within the healthcare sector is expected to continue to expand over the coming decade.

Target Populations: The target populations for the training components of this program (conducted primarily by Cuyahoga Community College) were individuals interested in health careers that were able to meet community college entrance requirements for each of the training programs offered under the grant. This included a focus on the unemployed and underemployed individuals (including

⁵ Cuyahoga Community College serves as fiscal agent for this grant and has been responsible for project start-up and ongoing implementation/administration of the CBJTG, as well as accounting for most project expenditures to date.

disadvantaged inner city residents) and incumbent workers interested in making a career change to a healthcare profession. A portion of the grant – aimed at increasing awareness of healthcare careers and the requirements for entry into healthcare training programs – focused on 5th and 6th graders in city/county school districts of Cuyahoga County.

Project Goals: This CBJTG project was designed to increase the number of training slots offered by Cuyahoga Community College (“Tri-C”) in six high demand healthcare professions and to increase the pipeline of workers interested in and appropriate for entry to health careers in order to meet the demands of a robust and growing healthcare sector in Cleveland, OH and surrounding areas. Specific goals of the training and capacity-building components of this project included the following:

- Expand training slots available in six healthcare professions offered by Cuyahoga Community College to increase the pipeline of skilled workers to meet employer demand and alleviate waiting lists to gain admittance to health career training programs (with an overall goal of increasing the number trained across the six healthcare occupations by 350 total slots, beyond the current training capacity of Tri-C);
- Increase awareness of and interest in health careers (especially among 5th and 6th graders) to expand the pipeline of appropriately prepared youth for healthcare professions training programs;
- Provide healthcare services at two preventive care centers equipped and opened with grant funding (located at Tri-C Metro and East campuses), which provide healthcare screenings and physical/occupational therapy at no cost to uninsured and under-insured patients;
- Create new laboratory space with state-of-the-art equipment (at Cuyahoga Community College) to handle increased numbers of students to be trained in the six occupations targeted under the CBJTG;
- Provide tuition assistance for students in the five training programs (Physician Assistant, Occupational Therapy Assistant, Physical Therapist Assisting, Medical Assistant and Health Information Technician) who likely would not have been able to pursue training in a health career;
- Increase the pool of clinical instructors in occupational training programs by development and implementation of a train-the-trainer online training curriculum; and
- Purchase and installation of electronic medical record (EMR) software to provide hands-on training for students involved in the six training programs targeted by the grant.

Major Project Components:

Recruitment and Community Awareness. In order to expand awareness of the wide variety of careers available in healthcare (e.g., outside of being a doctor or nurse) and to increase the pool of qualified applicants to the six health training programs targeted under the CBJTG, Cuyahoga Community College utilized a number of outreach and recruitment strategies. Outreach efforts to increase awareness of the health professions training programs offered by Tri-C (and generally of careers available in health careers) included: designing and placing advertisements on buses; placing eye-catching posters and flyers at high schools, college campuses, libraries, One-Stops and other community locations; placing advertisements in a local employment/help wanted newspaper; placing informational

and promotional materials on health careers and training offerings on the community college's website; and exhibiting materials and staffing job fair booths. Additionally Tri-C partnered with the Cleveland Metropolitan School District (CMSD) to engage youth through a variety of youth pipeline development activities as described below.

Pipeline Development. To further develop youth awareness of health careers and interest them in one day entering a healthcare career, Tri-C and the CMSD partnered to create three youth pipeline development strategies targeted toward 5th and 6th grade students in the Cleveland Public School District: an interactive computer game, a classroom instruction kit, and a Healthcare Summer Academy. *The Amazing Medical Center Challenge*, a web-based computer game available through Tri-C's website, is both fun to play and features information about careers in the six targeted health professions. The *Healthcare Careers Classroom Kit* is a curriculum kit which included: a kit instruction sheet for educators; a health career DVD (about 45 minutes in length) with five video segments and matching classroom activity worksheets; a packet of publications for students to take home to parents (in both Spanish and English); a poster highlighting the Tri-C website and health careers; and pencils advertising *The Amazing Medical Center Challenge* computer game located on the Tri-C website. About 300 kits were produced and distributed to teachers in the Cleveland Public School District and the greater Cleveland area. The teachers could use the kit to teach several classroom sessions throughout the regular school year.

Finally, the Healthcare Summer Academy built on a previous partnership of Tri-C and CMSD which had resulted in a Summer Exploration for students in high school. The Summer Academy conducted under the CBJTG targeted a younger cohort -- 5th and 6th graders -- and was intended to increase interest in healthcare professions much earlier so that students would begin focusing on acquiring required math and reading skills for entry to training programs. During the two-week summer camp, students participated in activities focused on the heart and circulatory system (1st year) and the brain and nervous system (2nd year), reading and math skills, hands-on projects to stimulate interest in health careers, tours of healthcare facilities, and interactions with guest speakers from area healthcare organizations. The Healthcare Summer Academies were held during two summers.

- 129 youth attended

Training Expansion. To provide more skilled workers for area healthcare employers, Tri-C increased enrollment in six existing health careers training programs offered by the college: (1) Health Information Technician (30 additional slots); (2) Physician Assistant (30 slots); (3) Medical Assistant (30 slots); (4) Occupational Therapist Assistant (30 slots); (5) Physical Therapist Assistant (30 slots); and (6) Nursing Assistant (200 slots). In total, under the CBJTG, the goal was to enroll an additional 350 workers across the six healthcare professions.

- As of June 2011 (with the grant due to conclude in December 2011), the program had trained a total of 268 healthcare workers across the six professions.

To enroll in five of the six training programs (excluding Nursing Assistant), students had to meet the community college's normal entry requirements for each training program. With regard to the Nursing Assistant program, students were not required to have a high school degree or GED, but had to have attained at least eighth grade reading and math levels and be able to meet entry requirements for a job as a nursing assistant (e.g., not have a disqualifying criminal offense). The six training programs varied in their duration --six to eight weeks for the Nursing Assistant program; one year for Medical Assistant program; two years for Occupational Therapist Assistant, Physical Therapy Assistant, and Health Information Technician programs; and 27 months for the Physician Assistant program. All of the training programs provide classroom instruction, laboratory instruction, and hands-on clinical

experiences at healthcare employers. Participants were all enrolled at Tri-C. Students enrolled in the Physician Assistant program were dually enrolled at Cleveland State University (CSU) and receiving instruction at both Tri-C and CSU. Those graduating from the Medical Assistant and Nursing Assistant programs received certificates of completion, while those in the Occupational Therapist Assistant, Physical Therapy Assistant, and Health Information Technician programs each received an Associate Degree of Arts and Sciences. The Physician Assistant graduates receive a certificate of Physician Assistant studies from Tri-C and a Master's Degree (Physician Assistant) from CSU.

The CBJTC provided additional tuition assistance to attract additional students to the healthcare training programs. Tuition assistance using CBJTG funding was provided up to a maximum of \$4,000 per year (depending upon need) and could be for a maximum of two years (a total of \$8,000 per student) depending upon the duration of each training program. Tri-C also offered an additional \$500 in scholarship aid (through the Cuyahoga Community College Foundation) to provide additional financial assistance for students based on need.

Develop state-of-the art training and prevention facilities. CBJTG funding was critical for equipping and opening two preventive care centers that served as laboratories for classroom instruction and provided free health services to community members. Lack of adequate laboratory equipment and space was a serious impediment to meeting industry needs and expanding the programs at Tri-C. Leveraging \$2 million of in-kind construction donations from the college to build out the two preventative care centers, Tri-C focused grant funds to outfit the centers with state-of-the art quintessential instructional and training equipment such as an audio-visual system, BTE machines and important supplies such as physical therapy beds, wheelchairs, ultrasound machines, exercise tables, scales, and weights. Instructors and students also utilized the preventative care centers to serve low-income communities at Tri-C's Metro and East Campuses, in Cleveland. The two centers were open to the public six hours per week to provide health screenings (e.g., blood pressure, glucose check, HIV testing, bone density testing) and physical/occupational therapy at no cost to area residents, particularly targeting uninsured or under-insured individuals.

Instructor Development. To increase the pool of clinical instructors across the allied health disciplines, Tri-C developed a 4.5-hour online self-directed clinical instructor training curriculum. In order to transform their in-class Train-the-Trainer curriculum into an online interface, Tri-C used grant funds to hire two subject matter expert consultants—one practicing nurse and one continuing education instructor—and a company to assist in the design of the instructional interface. Additional partners that assisted in the development of the design were a team of staff and instructors from the college and two healthcare organizations.

The nine month curriculum and design development of the online course began in the second year of the grant and was followed with by a pilot phase. The pilot version of the curriculum consists of six learning modules and one mentor section where the student must find a mentor and send to Tri-C required documentation of activities with the mentor. The six modules are designed to instruct both college instructors and practicing health professionals across all health disciplines. The online course was piloted with 30 individuals was especially important for Tri-C and its partners as it enabled them to identify gaps and strengthen several instructional components of the online curriculum. As one respondent noted, "Online [instruction] is very different. It needs to be more robust to make sure all the information is there."

In addition to providing clinical instructor credentials, the course could potentially provide continuing education unit (CEUs) credits if approved by each health profession's governing institution.

Tri-C is currently waiting for responses from the Ohio League of Nursing and the American Association of Respiratory Care to know if the online trainer curriculum will be approved as CEUs for individuals in those particular health fields. Tri-C is hoping to officially launch the curriculum at the end of October 2011.

Key Implementation Lessons:

Clarifying roles of key partnering organizations and hiring a Project Director is vital to efficiently implement grant activities. Planning and early implementation of the CBJTG was lagged due to the division of work and management between the grant recipient and the grant's fiscal agent. Under this CBJTG, the grant recipient (the City of Cleveland's Department of Economic Development - Division of Workforce Development) and fiscal agent (the Cuyahoga Community College or Tri-C) were different entities, and as a result, it initially took some time to sort out organizational roles and get the training program up and running. Initially, the grantee (the City of Cleveland's Department of Economic Development - Division of Workforce Development) did not have the capacity to plan/implement the grant, in part because the bulk of the program training and staffing for the grant was to be undertaken at Tri-C.

The grant's implementation also lagged because of the timing in hiring a Project/Grant Director. The grant called for the hiring of the Project Director during the second program year since the majority of the first year's program activity involved setting up the preventive care centers and laboratory facilities. In undertaking the lead on the major components of the grant and hiring of the Project Director, Tri-C greatly increased the capacity and effectiveness of providing training and expending most of the grant resources. Such administrative effectiveness by Tri-C was due in part to their previous experience implementing an earlier CBJTG.

Obtain written and signed agreements for leveraged resources and seek cash/in-kind contributions early in the grant period. During the grant proposal process, the grantee received oral and written commitments of leveraged resources from several partner agencies. After the grant was awarded, the leveraged funds were not immediately sought or collected. Over time, Tri-C found it difficult to collect resources as changes in personnel at partnering organizations made the nature of commitments to provide leveraged resources less clear, and in one case there was no written and/or signed documentation to back up specific commitments of leveraged resources. While the grantee has been able to collect \$2.7 million in leveraged resources with six months to go in its period of performance (nearly reaching its goal of \$3.075 million in leverage resources under the grant), grant administrators noted that some difficulties had been encountered in collecting on the commitments of all partners.

Insurance costs impact the capacity of healthcare training. Grant administrators were eager for the two preventive care centers both to provide clinical experiences for students going through the various training programs sponsored under the grant and to meet the healthcare needs of uninsured and under-insured residents living in the neighborhoods surrounding the two centers. While the two preventive care centers were both opened and offered state-of-the-art equipment for screenings and rehabilitation services, it proved not possible to secure the malpractice insurance necessary so that a physician could supervise students involved in the Physician Assistant program. Because the clinic sites did not serve as clinical rotations for students, the number of hours that clinics were open to the public and the extent of healthcare services provided fell short of what could have been possible had malpractice insurance been obtained.

Tuition Assistance is a strong incentive and support for potential healthcare workers and enabled students to enter the healthcare industry. The program experienced no difficulties in finding qualified recruits for any of the six training programs offered. The tuition assistance attracted the targeted populations, many of whom would not have otherwise been able to enter the training programs funded under the initiative, into the six training programs offered and enabled trainees to complete training while accumulating little or no student loans. Following completion of their coursework and internships, program participants had little difficulty finding jobs with healthcare employers, with some finding employment with the employers that had been part of their clinical rotations during their studies.

Enrolling youth participants in pipeline activities may have impacts in preparing a new generation of healthcare workers. Grant administrators indicated that the collaboration with the Cleveland public schools (and other surrounding school districts) to offer a summer camp for 5th and 6th graders was a great success in spurring enthusiasm among students and parents for careers in the healthcare sector. Initially, however, enrolling targeted youth in the summer camp was difficult as awareness of the program was not yet widespread and program enrollment relied greatly on parental constraints of transportation and work hours. Despite enrollment challenges, the summer camp enrolled a total of 129 youth over the two summers and engaged a new pipeline of youth—many 5th graders who attended in the first year of the camp returned as 6th graders for a second year of camp. The summer camp also made parents and students more aware of the requirements for entry into the various health professions and though it is too early to tell, grant administrators think that their efforts will pay dividends over the long haul, resulting in a much larger and better prepared pipeline of future students.

Key Partnering Agencies: The key partnership in this CBJTG-funded initiative was between the City of Cleveland’s workforce development agency and Cuyahoga Community College (Tri-C), which served as the fiscal agent and, overtime, took the lead on rolling out and administering most activities under the grant. Tri-C implemented most grant elements. The City of Cleveland’s workforce agency worked closely with Tri-C, providing guidance and oversight of grant activities. The workforce agency’s One-Stop Career Center helped to recruit training participants (especially for the Nursing Assistance program) and provided a lab/classroom where Tri-C instructors taught the six to eight week Nursing Assistant program. Equipment for the lab was provided by the grant. Tri-C and the Cleveland Metropolitan School District partnered to engage youth through pipeline development activities described above. Cleveland State University, an undergraduate and post-graduate university within the Ohio public university system, recruited, enrolled, and provided instruction to students in the master’s level Physician Assistant training program. Students from that program partnered with the Tri-C students in the Physical Therapist Assisting program to provide services to members of the community in the Preventative Care Centers each year of the grant during the spring semester. Finally, the University Hospitals system, along with a host of other healthcare employers (e.g., hospitals and nursing homes) provided clinical internships for students enrolled in the six health professions training programs offered with CBJTG funds.

Post-Grantee Status (as of August 2011): Training will be continued by Tri-C in each of the six health career training programs supported by the CBJTG funds. It is anticipated that the expanded number of training slots in each of the 6 training areas will remain (at total of 350 additional slots). It is possible if other grant funds are not received from the state/federal governments or foundations that incoming students may have to pay for more of the costs associated with training (e.g., with their own funds, Pell

grants, and/or by securing loans). It is anticipated that the two preventive health clinics will continue to be open to the public for a period after the grant, but unless additional funds for operations are received, these clinics will be restricted to use as laboratory training by students and teachers during the training programs. Although the sources of funding are not yet clear, Tri-C and the Cleveland Metropolitan School District plan to sustain the summer camp and year-round classroom workshops for 5th and 6th graders initiated under the CBJTG. Finally, the curriculum and websites designed and implemented under the grant will remain available through Tri-C.

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Joined By a River: Logistics Programming in the Quad Cities
(EICCD Logistics)

Grantee:	Eastern Iowa Community College District (EICCD)
Location of Grant Activities:	The “Quad Cities” – five cities straddling the Mississippi River (Davenport and Bettendorf, IA; and Rock Island, Moline and East Moline, IL)
Sector Targeted:	Logistics
Type of Grant:	Training and Capacity Building
Grant Amount:	\$1,548,372 (after 1 percent rescission due to reduction in WIA funding)
Leveraged Amount:	\$672,107
Grant Period:	January 1, 2007 – December 31, 2010 (Extended from original end date of December 31, 2009)
Site Visit Dates:	March 28-29, 2011

Workforce Context: When the Eastern Iowa Community College District (EICCD) applied for the grant, the economy in the region was booming. In response to industry interest, the local chambers of commerce had created a Logistic’s Roundtable, and the local community colleges (EICCD in Iowa and Black Hawk in Illinois) had already begun investing in logistics coursework. A 2006 survey conducted by EICCD and Black Hawk College (BHC) indicated that local employers needed to hire more than 2,000 employees with logistics training over the next five years. An additional sign of future demand for trained logistics professionals, Wal-Mart had announced that they would soon require their top 100 vendors to use radio frequency identification tracking (RFID), an inventorying technology with applications in the logistics field.

By the time the grant funds had arrived, however, the economy had changed. The five separate chambers of commerce found it necessary to merge into one, and the Logistics Roundtable was largely disbanded. Businesses were contracting, jobs for new workers were scarce, and Wal-Mart decided this was not the time to mandate use of a new technology. Existing businesses, however, still had a need to upgrade the skills of their employees, and a pipeline for future growth in logistics was still needed in the Quad Cities area.

Target Populations: Target populations included high school youth, incumbent workers, dislocated workers, Temporary Assistance for Needy Families (TANF) participants, the underemployed, and low-skill, low-wage entry-level workers in Iowa and Illinois.

Project Goals: The project was designed to increase the capacity of the colleges and the community to meet the training needs of local employers in the logistics field, to design and provide logistics education with a variety of entry and exit points, and to develop a model for collaboration between community college systems. The overall, original goal of the project was:

To meet the local and regional logistics needs in eastern Iowa and western Illinois through a partnership of the Quad Cities Logistics Roundtable and two community colleges. The project used four strategies to meet this goal; each strategy had capacity-building and training sub-strategies. Each of the strategies is listed below with the capacity-building and training strategies following.

Strategy 1: Provide career awareness and preparation in the high school and adult market to fill the logistics need.

Capacity-Building: Branding, Marketing and Recruiting. Develop a community understanding of logistics, an awareness of logistics careers, and an awareness of logistics training opportunities.

Training: Career Information. Provide logistics career information to high school students and adults that leads to enrollment in logistics programs and continued pursuit of logistics careers.

Strategy 2: Provide training for incumbent workers to increase their skills in the logistics area.

Training: Employer Demand. Provide contracted, customized training to incumbent workers on behalf of their employers.

Capacity-Building: Curriculum. Develop logistics training programs customized to employer needs.

Strategy 3: Provide seamless pathways for credentialed and ladder training in the logistics field.

Capacity-Building: Curriculum. Develop a continuum of logistics training programs (both credit and non-credit) with easy entry and exit at EICCD and BHC; create career academies in logistics at local high schools; develop customized logistics training for incumbent workers.

Capacity-Building: Technology. Increase the ability to offer online and hybrid coursework, increase access to college library resources, and improve the hands-on training experiences.

Training: Enrollment. Enroll students into the credit-based logistics program striving for an 80 percent completion rate, 85 percent retention rate in the industry, and a 10 percent transition rate to a Bachelor's degree.

Strategy 4: Disseminate and serve as a model for other colleges/communities to collaborate rather than compete to serve local needs.

Capacity-Building: Modeling. Create a joint web-site and develop a model for collaboration between community college systems that can be replicated elsewhere.

Training: Dissemination. Share collaborative model through the web-site, fairs, and conferences.

Major Project Components

Recruitment and Community Awareness. "Not many kids grow up and say, 'I want to be a logistician.'" Logistics is an emerging field and thus not well-defined. Creating a common understanding

of logistics was an important early step in the project. EICCD and BHC facilitated a workshop with representatives from 13 employers that yielded the following definition: “logistics is the art and science of planning, implementing, controlling, and evaluating the safe, effective, and efficient flow and storage of goods, services, and information from origin to destination” (p. 13, Logistics pathways to hot! careers). For branding and marketing purposes, however, they agreed on the shorter version: “the right thing, in the right place, at the right time” (p. 13, Logistics pathways to hot! careers). The workshop also led to the identification of a variety of front-line careers in four logistics areas: inventory management, regulation compliance, transportation, and distribution & warehousing. These careers and associated skill sets became the foundation for the curriculum development, as well as forming the information base for marketing logistics careers to high school students, their parents, and the community at large.

Grant staff and partners distributed brochures, DVDs and pamphlets through job and career fairs, visits to employers and human resource agencies, community mailings, county fairs, newsletter distribution, college recruitment events, Chamber of Commerce events, fifth grade and eighth grade career days, presentations at the high schools (to students, parents, guidance counselors, principals, and school board members), high school guidance counselor luncheons, and presentations at the One-Stop Career Centers (more than 12,000 contacts were logged). Marketing and recruitment were also facilitated by the joint web-site providing information on the *Joined by a River* logistics programs. This site had more than 4,000 web hits by the end of the grant period.

Pipeline Development. Dual credit “Career Academies” were created at six local high schools (in Iowa and Illinois) to allow juniors and seniors to earn high school and college credit while exploring the logistics field. The career academies are structured differently at each high school. At two of the high schools, the career academies were facilitated through a community-based organization. Some high schools conduct the career academies as hybrid courses – partly online and partly with a college instructor who comes to the high school campus. Other high schools offer the logistics career academies in-person only. Students at two of the high schools also receive instruction and hands-on experience at the Rock Island Arsenal military installation. Students can earn between three to twelve credit hours depending on their high school’s model.

- 53 students were trained.

Curriculum Development. Prior to the *Joined by a River* project, both of the colleges had begun to develop logistics curriculum due to the growing industry interest in the field. EICCD had recently held a DACUM from which they had created a 160-hour non-credit Logistics Technician training program. Additionally, BHC had acquired but not yet delivered a five course Warehouse & Distribution Logistics training program created by Georgia Tech. However the initial industry workshop to define logistics indicated that many more courses were needed. EICCD hired a curriculum designer to assist it in creating the stackable Logistics & Supply Chain Management credit-based program and the Radio Frequency Identification (RFID) Certificate. BHC customized the Georgia Tech curriculum to include simulator training (with simulator hardware and software purchased by the grant), and some online elements. It was important to both EICCD and BHC to make their programs as accessible to students as possible with multiple entry and exit points, and the flexibility provided by online coursework. It was also important to both colleges to help students acquire the necessary skill sets and experience by incorporating hands-on and/or simulator experiences.

Logistics Training. The two colleges created seven credit-based logistics-oriented programs. EICCD created the Radio Frequency Identification (RFID) Certificate (12 credits) – the only RFID program

in the state of Iowa; the Logistics Certificate (18 credits); the Logistics Diploma (33 credits; stacks on to the Logistics Certificate); the AAS in Logistics & Supply Chain Management (64 credits, but stacks on to the previously mentioned certificates and diploma). EICCD offers all credit coursework in logistics in a hybrid format. EICCD developed each course in eight-week increments to allow for easy program entry/exit. Students take between one to three classes each eight weeks. Each three-credit course requires approximately 18 hours per week of student time to complete.

- By the end of the grant period (December 31, 2010) 100 students had enrolled in these programs, and the following credentials had been conferred: 18 RFID Certificates, 15 Logistics Certificates, 13 Logistics Diplomas, and 4 AAS degrees in Logistics & Supply Chain Management; the grantee expected five additional students will complete the AAS in May 2011.

BHC created the Warehouse and Distribution Specialist Program (10-credit hour), Inventory Specialist Program, and the 4+2 Supply Chain Management Program in conjunction with Western Illinois University.

- By the end of the grant period 109 students completed credit-based programs at BHC; and 79 Certificates were conferred (students must apply separately for a certificate).

Both of the community colleges also developed non-credit-based, customized training for employers to meet the needs of incumbent workers on a request-by-request basis. In addition, EICCD offered a 160-hour Logistics Technician Program designed for incumbent workers.

- By the end of the grant period BHC trained 272 incumbent workers, while EICCD provided 565 incumbent workers with customized training and 125 workers with the Logistics Technician Program.

Capacity Building. Project staff and partners reported that the *Joined by a River* project helped the Eastern Iowa Community College District and the Black Hawk College (Illinois) build their collective and individual capacities to meet the logistics needs of employers in the Quad City areas and provide career pathways in an emerging industry which tends to pay a living wage. Engaging in the project jointly allowed the schools to provide a wider variety of logistics-related programming rather than duplicating offerings. The project allowed the colleges to develop a community understanding of logistics and to develop marketing and branding materials (like the definition, logo, and web-site) that provide continuous awareness of logistics. The colleges were able to purchase both hardware and software to provide hands-on and simulation activities in areas such as RFID and forklift operating. They developed seven logistics curriculums and expanded their capacity to offer coursework online. In addition, EICCD was able to stock an electronic library of resources that can be used in the computer laboratory. Although the two college systems already had strong ties, the project increased their capacity to work together. EICCD also indicated that the project's support of hybrid course development helped them expand their internal capacity to offer more standardized coursework among the district's three community colleges. The district-wide curriculum developed in the logistics program has become a model for development of other district-wide programs.

As one staff member noted, the project provided the time to do outreach and planning to create a "high quality product the first time out."

Key Implementation Lessons:

It is important for the program to have a “face” that people outside the program can relate to and identify with. Both EICCD (who did hire a project director) and BHC (who did not) indicated that a project director who is focused specifically on implementing the grant is important not just for internal program coordination, grant tracking, and intense program effort. People outside of the primary grantee organization need a single point of contact and a person to which they can relate.

Training exit points need to take into account policies that affect trainees like unemployment insurance time limits, and employer preferences. The *Joined by a River* project found that eight weeks was the ideal time for the first program exit point so that participants could complete a unit during their unemployment insurance period. In addition, workforce partners may prefer training in “small chunks” that offer the opportunity for individuals to succeed quickly.

Tracking program participation can be more challenging than it seems. Creating multiple entry and exit points from training programs can facilitate greater participant access, but it can also create greater tracking confusion about when a participant has really left (versus temporarily exiting the program).

Success is all about relationship-building. Many unexpected things will happen during project implementation. Partners join with different goals and expectations which may change over time. Their intensity of participation may increase and wane throughout the project, but continuity of participation is not as important as relevant participation in particular stages of the project. Someone must be working throughout the project to solicit, develop, and strategically integrate partners.

You can’t count on industry to follow the path they plan to take. Industry is an important partner, but circumstances beyond their control (like the overall economy) may cause them to change their future plans without warning. Wal-Mart’s delay of the RFID requirement is an example of how training programs need to be able to cope with such unexpected changes.

Implementation timelines need to account for sequential program development stages. It is particularly difficult to create pipelines and marketing for programs that don’t exist yet. The original grant timeline had career academies starting at the same time as the other training programs. However, early on EICCD realized that they needed the program at the community college level to be in place before creating the pipeline career academies for high school students.

Creating standardized curriculum and course content is useful, but instructors “can’t just take the keys and drive.” Sharing curriculum and course content across instructors is useful for creating consistency for students and decreasing course development time for instructors, but it doesn’t save as much time for instructors as might be imagined. Instructors must still learn all the course materials before they can teach it.

Industry-experienced individuals may not be instant instructors. Hiring instructors from industry may be necessary to get individuals with the experience and knowledge needed, but they will need varying levels of support to succeed as instructors.

Providing course content online increases the potential instructor pool. Instructors are not limited to those individuals in the immediate area if the school can provide support to individuals at a distance. For example, the school was able to continue to a relationship with an instructor who had been deployed overseas.

Strong relationships with federal program officers are important. Joined by a River staff reported positive results from approaching their federal project officer as a partner, actively asking questions and sharing ideas.

Make the most of peer networking opportunities. USDOL provided workforce innovation meetings with other grantees. The *Joined by a River* project learned from the work done in at least two other states.

When creating a web-site as a grant product, it is important to devote equal time to functionality and content. In this case grantee staff spent more time on content development and wish they had spent more time on functionality to make the content easier to access.

State lines do not have to be a barrier to collaboration. The *Joined by a River* project bridged state-level differences in policies, procedures, and resources through flexible implementation and division of labor.

Key Partnering Agencies: A broad spectrum of partners made the *Joined by a River* project possible. Each partner enhanced the project's ability to reach particular populations. As the name of the project indicates, Black Hawk College was a particularly important partner in expanding the scope and reach of the project. Several other partners provided support to the project. The six high schools (in both Iowa and Illinois) made the career pipeline a reality through dual enrollment and career academy programs; in some cases these programs were also facilitated by a school-related, community-based organization. On the other end of the career ladder, an articulation agreement with a local Illinois university allowed for the extension of the career pipeline into the Bachelor's degree level. The Workforce Investment Boards (in Iowa and Illinois) and the Economic Development Corporation in Iowa supported the participation of dislocated, low-income, and low-skilled individuals through referrals, and support services. These workforce and economic development organizations also served as an important connector to industry. Industry itself was important as well, although their roll evolved through the life of the grant. Industry did instigate the grant process, provided key knowledge during implementation (mainly through individuals hired at the colleges who used to work in industry), one employer provided on-site logistics learning opportunities, requested support for incumbent workers, and industry will be important for sustaining the program now that the grant has ended.

Post-Grantee Status (as of March 2011): All aspects of the project have continued, and the duties once assigned to the grant manager are being dispersed throughout EICCD staff. Courses developed through the grant will be sustained through regular student tuition and fees, as well as scholarships provided through CareerLink (a state-funded employment readiness program which provides program completers with training scholarships), TANF, and WIA. Customized incumbent worker training is supported by employer fees and Iowa's Industrial New Job's Training Program (260E) which off-sets employer training costs for newly created positions (<http://www.iowalifechanging.com/business/260e.aspx>), and Iowa's Jobs Training Program (260F) which off-sets eligible employer training costs when training is provided by the community college (<http://www.iowalifechanging.com/business/260f.aspx>). (Links accessed on July 25, 2011). While the jointly created logistic web-site -- <http://www.logisticsqc.org/> -- continues to exist, staff expressed some concern about how to sustain it and keep it up-to-date following the grant end. Staff at both colleges continue to explore options for program sustainability.

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California Nanotechnology Collaborative
(SBCCD Nanotech)

Grantee:	San Bernardino Community College District (SBCCD)
Location of Grant Activities:	The “Inland Empire” - San Bernardino County and Riverside County, California
Sector Targeted:	Nanotechnology
Grant Amount:	\$2,000,000
Leveraged Amount:	\$668,079 (as of March 31, 2011)
Grant Period:	April 1, 2009 – March 31, 2012
Site Visit Dates:	May 16-17, 2011

Workforce Context: The National Science Foundation (NSF) predicts a growing worldwide workforce demand in the nanotechnology industry. In San Bernardino and Riverside County, SBCCD estimates over 17,600 new nanotechnology jobs will be created between 2009 and 2012. Although the newly emerging nanotechnology field currently employs primarily workers with advanced degrees, SBCCD has identified a potential demand for skilled, technician-level workers in the nanotechnology industry.

Traditionally strong sectors in the “Inland Empire” region include transportation, logistics, green energy, advanced manufacturing, aerospace, and healthcare. Layoffs due to the closure of a large steel processing facility and two Air Force bases in the 1990s depressed the regional economy. San Bernardino and Riverside counties were hard-hit by the recession, on a timeframe that corresponded with the grant award. Unemployment peaked in August of 2010 at 15.4 percent in Riverside County. Unemployment rates remain high, and both counties have persistently low high school completion rates. The area benefits from several large research universities and colleges in close proximity. Additionally DOL has awarded several grants in the region including a High Growth Job Training Initiative (HGJTI) grant to SBCCD in 2004 for advanced manufacturing.

Target Populations: The primary target populations for this project are unemployed, underemployed, and incumbent workers who already have a science background but want to upgrade their skills; current apprentices and journeymen who are seeking continuing education; and high school youths who are the future nanotechnology workforce. The not-for-credit nanotechnology sequence is targeted to individuals who already have a science background. However, those who have science related work experiences and those who have the desire to learn this new emerging technology toward a career goal are also considered.

Project Goals: The California Nanotechnology Collaborative project had four primary goals with a few major modifications to these goals. The first goal was to develop a nanotechnology training program suitable for preparing workers for entry-level jobs as technicians in nanotechnology-based industries, and train 450 adults. The second project goal was to assist in the development of programs to provide participants the opportunity to pursue certificate, two-year, four-year and/or graduate degrees in the nanotechnology-related fields. The third project goal was to establish a resources center, dubbed the

Center for the Advancement of Nanotechnology (NanoCenter) under the guidance and leadership of the California Nanotechnology Collaborative (CNC). The purpose of the NanoCenter was to hold conferences, symposia and workshops providing information, training and expert consultation to interested industry and educational representatives. The final project goal was to create a nanotechnology career pathway by working with local education, workforce investment boards, and faith-based partners to hold awareness activities for youth, and create transfer agreements for students in nanotechnology-related majors. An overall project goal, SBCCD staff report, was to create the workforce capacity for the San Bernardino and Riverside County area to become a hub for the nanotechnology industry.

Major Project Components:

Recruitment and Community Awareness. SBCCD implemented a variety of recruitment and outreach strategies to promote enrollment in the nanotechnology training program, and increase local interest in the nanotechnology field. Project staff developed printed outreach materials, conducted presentations at job fairs, Chambers of Commerce, various California Community Colleges sponsored conferences, and reached out to career-tech counselors at area high schools. Faith-based partners gave presentations at area high schools and churches. SBCCD career and technical education staff gave presentations on the nanotechnology program at job fairs, area high schools and the local American Association of University Women (AAUW). SBCCD ran advertisements in the local media, and SBCCD radio and TV channels. The local media showed interest in nanotechnology, and project staff were invited to give interviews and presentations on local TV and radio. Additionally, SBCCD held four outreach events, open to the public and targeted to industry, education and community representatives. These events included presentations by experts in the field, and were designed by SBCCD to increase community interest and awareness, and develop potential recruitment possibilities.

Curriculum Development. SBCCD developed a six-course not-for-credit sequence in nanotechnology with the support of faculty partners at the University of California, Riverside (UCR). In addition, they developed elective soft skills training for nanotechnology students.

- *Not-for-credit*⁶. Nanotechnology Six Course Sequence. With support from faculty partners at UCR, SBCCD developed curriculum for a six-course sequence in nanotechnology. The course sequence is designed to provide the technical knowledge and skills needed to fulfill a technician role in the emerging nanotechnology field, to upgrade the skills of incumbent workers and/or to prepare students for additional education in nanotechnology and related fields. Each course is 15 hours long.
- *Soft Skills Elective Training.* With the goal of improving program participants' job placement, SBCCD developed and offered short-term elective soft skills training to nanotechnology students. Recent classes have included resume writing, communication skills, business writing, interviewing, and emotional intelligence.

Nanotechnology Training. The six-course sequence lasts approximately eight weeks, and results in a certificate of completion. SBCCD offers class times in the afternoon and evening, to accommodate incumbent workers. Laboratory facilities and equipment purchased with grant funds, allowed SBCCD to

⁶ California has three types of coursework: for credit, non-credit, and not-for-credit. Not-for-credit typically represents short-term training for customized training and workforce development.

incorporate a great deal of hands-on learning opportunities for program participants. With this nanotechnology training sequence, SBCCD added 150 new training slots annually.

- As of March 31, 2011, 263 participants had completed the nanotechnology training program.

Purchase of Equipment and Renovation of Space. To provide program participants hands-on experience with equipment and procedures they would find at an employer in the nanotechnology field, SBCCD equipped a nanotechnology training facility at district's Applied Technology Training Center. Additionally, SBCCD equipped the clean room at UCR with mask and bond aligner nanotechnology equipment. Faculty partners at UCR consulted on the purchase of equipment and the development of the training facility and clean room.

Adding Faculty and Staff. The CBJTG grant supported a project director and assistant director, and partially supported a staff member to track training participants. UCR helped recruit instructors, including post-doctoral students and doctoral students in nanotechnology-related fields, to teach the nanotechnology training program and lab components.

Capacity-building: The NanoCenter. To provide a resource for educational and industry partners interested in the emerging nanotechnology field, SBCCD created a "NanoCenter" at SBCCD's Applied Technology Training Center. The NanoCenter houses the nanotechnology training program and provides a clearinghouse of information and expert consultation on technician-level training in the nanotechnology field.

Key Implementation Lessons:

Strong partnerships with research universities can bring cutting edge technology to the community college level. Partnerships with top academics in the field at NASA and UCR allowed SBCCD to develop high quality, technologically up-to-date training program. Through the NanoCenter, SBCCD seeks to disseminate this technical expertise to other community colleges.

Not-for-Credit courses can bring training programs online more quickly, laying the foundation for credit degree paths. By developing the nanotechnology training program as a not-for-credit program, SBCCD was able to avoid lengthy community college curriculum approval processes, and began offering training quickly. SBCCD plans to use the curriculum developed for the not-for-credit program as a basis for for-credit nanotechnology courses.

Embedding a vision for long-term sustainability at program inception guided the plans for a foundational - not-for-credit program, as part of the larger vision for broader educational and economic development efforts in the field. Project staff and SBCCD leadership envisioned the nanotechnology training program as part of a broader project to develop the region as a hub for nanotechnology-related industry. This vision guided and motivated program staff, and made sustainability planning an integral part of the project.

Key Partnering Agencies: SBCCD benefited from close partnerships with experts in the nanotechnology field. Partners in the UCR Electrical Engineering Department developed the curriculum for the nanotechnology training program, consulted on equipment purchases and facilities development for the SBCCD training lab and UCR training clean room, opened the main nanotechnology research lab on

campus to tours from middle and high school students and community college students, and recruited instructors to teach the program at SBCCD. Another key partner from the scientific community, a chief scientist at the NASA Ames Research Center for Nanotechnology serves as the Chair of the California Nanotechnology Collaborative Advisory Board and gave presentations and speeches at SBCCD nanotechnology events, and provided general expertise and advising to project staff.

SBCCD drew on partnerships with several other educational institutions to support curriculum development and outreach to potential participants. The California Community Colleges Chancellor's Office worked with SBCCD to approve the nanotechnology training and distribute the nanotechnology curriculum to the 110 California community colleges. Through a program called the Alliance for Education, the County of San Bernardino Superintendent of Schools provided outreach to middle and high school teachers and career counselors, assistance with curricular development and referral of eligible program participants. San Bernardino Valley College (SBVC) incorporated information about the nanotechnology training program into outreach and recruitment activities.

Faith-based, industry, workforce and union partners also provided support to the project. Faith-based partners Operation Grace and Praise Christian Fellowship presented information on the nanotechnology program to high school youth and parishioners, and connected trainees with support services. Industry partners Advatech Pacific, Agilent Technologies, and Kelly Space and Technology, served on the advisory council and worked with SBCCD to create internship opportunities for program participants. The San Bernardino County Workforce Investment Board assessed and referred qualified WIA participants to the nanotechnology training program and provided trainees with supportive services. The International Brotherhood of Electrical Workers and National Electrical Contractors Association, Inc. (IBEW/NECA), referred interested apprentices and journeymen to nanotechnology training program for continuing education credits, served on the advisory council, and reviewed curriculum.

Sustainability/Post-Grant Status (as of May 2011): The grant continues through March 2012, but SBCCD has plans in place to sustain and expand the project after grant completion. SBCCD plans to continue all aspects of the initiative including offering the nanotechnology training program, continuing development of the NanoCenter, building relationships with partners and convening the advisory board. SBCCD hopes to continue to develop both its own nanotechnology offerings as well as fostering additional educational and workforce opportunities in the nanotechnology field in the Inland Empire. To fund this continued expansion, the nanotechnology training program will become tuition bearing and SBCCD will look for industry sponsors for the training program. Additionally, SBCCD plans to seek grant funding to support continued economic development in the nanotechnology field.

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