

# APPENDIX 1

## WV BRIDGING THE GAP CONSORTIUM PROJECT NARRATIVE

WV's Bridging the Gap consortium, led by Bridgemont Community and Technical College (CTC), consists of 10 CTCs.<sup>1</sup> Since 2004, when the WV Legislature created the state's independent CTC system, members have rapidly expanded the number of career-technical program credentials offered (105 in the last 4 years) and credentials awarded (78%, 59%, and 13% increases in skill-set certificates, certificate degrees, associate degrees respectively). This project will bridge energy, manufacturing, information technology (IT), and construction trades career pathways, enhance academic instruction, and close student support gaps created during this period of rapid expansion, while strengthening an innovative Registered Apprenticeship Program (RAP) partnership and creating a culture of continuous improvement that will extend into the CTC system's second decade.

### I. Statement of Need

#### A. Serving Education and Training Needs of TAA-Eligible Workers

**Impact of Foreign Trade on WV Communities.** Since October 1, 2008, WV has had 70 TAA certifications affecting 3,333 workers. Table 1 summarizes the largest TAA certifications:

**TABLE 1: Large TAA Certifications**

TAW #	Company Name	Date	Workers
70017	Century Aluminum of WV	08/28/2009	650
81880(A)	RG Steel Wheeling/Mountain State Carbon, LLC	11/02/2012	496
81021	Bayer Cropscience, LP	02/03/2012	344
70776	Ravenswood Rolled Products	09/22/2009	220
74063	TRG Customer Solutions	10/06/2010	279
80422	Coastal Lumber Company	10/12/2011	250
80023/81050	Fenton Art Glass Company et al.	06/02/2011	124
81143	Armstrong Hardwood Flooring Company	03/13/2012	116

Additionally, Jackson County, WV has been certified by the U.S. Department of Commerce as a community impacted by foreign trade. The closure of Century Aluminum and

<sup>1</sup> They are Blue Ridge CTC, Bridgemont CTC, Eastern WV CTC, Kanawha Valley CTC, Mountwest CTC, New River CTC, Pierpont CTC (formerly known as Fairmont State CTC), Southern WV CTC, WV Northern Community College, and WVU at Parkersburg (WVUP).

complementary businesses like Ravenswood Rolled Products, both located in Jackson County, resulted 870 lost rural aluminum-processing and related jobs decimating the local economy.

Online learning programs offered through this grant will be designed to serve WV's TAA workers, veterans, and other adults, including those from rural areas like Jackson County. The online content will be delivered via a shared learning management system. For workers with limited or no internet access, the content will be accessible at campus computer laboratories and at the state's public libraries, where staff have received training from workforce professionals and education providers. Wrap-around academic and student support will be made available to TAA workers by using a peer coach, who will maintain regular contact with the student. TAA workers initially will be assessed for digital literacy and provided digital remediation, if appropriate, and encouraged to use a new "Earn College Credit" web portal for prior learning assessment and [REDACTED] for career planning assistance.

***Partnerships with Cooperating State Agencies That Operate TAA for Workers Program.*** The Bridging the Gap consortium has strong partnerships with WorkForceWV, which administers the State's TAA program and approves educational benefits for TAA workers; [REDACTED] which facilitates TAA certification and provides peer support for TAA workers; and regional Workforce Investment Boards (WIBs), which typically work with TAA workers to select programs and classes. The partnership includes formal systems for communicating TAA certifications, workers' educational needs, and outcomes. When Century Aluminum shut down in 2009, for example, consortium members joined WorkForceWV, [REDACTED], the Region 4 WIB, and economic development officials in meeting with TAA workers to explain available benefits and educational options. After initial meetings, peer coaches worked with TAA workers to assess their skills and needs, develop an

individualized education plan, and take advantage of available training. A plan generally incorporates multiple training components and includes a backup plan. The TAA worker and peer coach work with consortium institutions to implement the plan. To strengthen the partnership, the consortium will do three things: (1) use TAA peer coaches as instructors and participants in grant peer coach training; (2) incorporate TAA staff in the design and implementation of accelerated courses and new prior learning assessment and career planning systems; and (3) participate in TAA service provider coordination and training sessions.

**Education and Training Needs of TAA-Eligible Workers.** WV's TAA-eligible workers are not homogenous, even though they typically are older (50 vs. 38) and have earned higher wages (\$35,000 vs. \$23,000) than other adults served by workforce programs. Since October 2008, 77% have been male; 3% African-American or Hispanic; and 20% under 40 years old, 60% 40 to 59 years old, and 20% 60 years old or older. Educationally 56% have a high school diploma or GED, 17% have some college credits but no certificate or degree, and 23% have college degrees; and 60% accessed some form of training. Most come from rural areas. The primary industries losing jobs to foreign trade are manufacturing (57%) and call centers (18%). Table 2 summarizes skill sets common to workers in these industries:

**TABLE 2: Skill Sets Common to Industries and/or Occupations of TAA-Eligible Workers (Source: O\*NET, 2013)**

Industry	Occupation	Education, Knowledge, and Skills
Manufacturing	Structural iron and steel worker	<i>Education:</i> 4%--less than high school diploma; 64%--high school diploma or equal; 24%--some college, no degree <i>Knowledge:</i> Production and processing, mechanical, design, engineering and technology, building and construction, English language, math, customer and personal service, personnel and human resources <i>Skills:</i> Operation and control, operation monitoring, coordination, critical thinking, judgment and decision making, monitoring, time management, active learning, complex problem solving, active listening
	Chemical plant and system operators	<i>Education:</i> 59%--high school diploma or equal; 13%--some college, no degree; 18%--associate's degree <i>Knowledge:</i> Production and processing, mechanical, chemistry, computers and electronics, public safety and security, mathematics, law and government, administration and management <i>Skills:</i> Operation and control, operation monitoring, quality control analysis, critical thinking, active listening, judgment and decision making, reading comprehension, writing, monitoring, active learning
	Sawing machine setters, operators, and tenders	<i>Education:</i> 48%--less than high school diploma; 41%--high school diploma or equivalent; 11%--some college, no degree <i>Knowledge:</i> Mechanical, production and processing, mathematics <i>Skills:</i> Operation and control, operation monitoring, active listening, critical thinking, monitoring
	Glass blowers, molders, benders, finishers	<i>Education:</i> 27%--less than high school diploma; 35%--high school diploma or equivalent; 28%--some college, no degree <i>Knowledge:</i> Production and processing, mechanical, customer and personal service, administration and management, English language proficiency <i>Skills:</i> Monitoring, operation and control, operation monitoring, quality control analysis, complex problem solving, judgment and decision making, reading comprehension, speaking, coordination

Industry	Occupation	Education, Knowledge, and Skills
Call Centers	Customer service representatives	Education: 48%--high school diploma or equal; 24%--some college, no degree; and 23%--associate's degree Knowledge: Providing customer and personal service, administrative and clerical procedures and systems, English language proficiency Skills: Active listening, speaking, service orientation, persuasion, reading comprehension, critical thinking, writing, coordination, social perceptiveness, negotiation

While not all TAA workers held these jobs (they also worked in quality assurance, maintenance, bookkeeping, etc.), they illustrate skill gaps frequently found among TAA workers. First, many will need adult basic and developmental education. Indeed 21% of those who accessed TAA training in WV received remediation, primarily in math and often to raise performance by more than one academic level. Second, many will have some technical skills convertible to college credit. Third, many are unlikely to have the cross-cutting skills preferred by advanced manufacturing employers or to be able to transition seamlessly to energy, IT, or construction jobs without additional training.

To learn more about TAA workers and their needs, the Bridging the Gap consortium hosted three focus groups of TAA workers and people who serve them. Most TAA workers had dependents at home and extended family nearby, did not want to relocate, and were very concerned about their ability to find living wage jobs. Workers generally wanted technical skills education and liked the idea of converting what they already knew to college credit. They also wanted to get in and out of school as quickly as possible, but found college processes confusing and options and requirements overwhelming. TAA agency partners generally agreed with workers' assessments, but also emphasized the need for remediation and career planning.

## **B. Evidence of Job Opportunities in Targeted Industries and Occupations**

***Employer Demand in Targeted Industries and Occupations.*** The National Skills Coalition reports that WV has a middle-skills gap with 54% of job demand being for middle-skill workers, while only 45% of workers have been trained to the middle-skills level.<sup>2</sup> The Bridging the Gap consortium proposes to focus on closing that gap in four industry sectors: energy

<sup>2</sup> National Skills Coalition (2011). Driving innovation from the middle: Middle-skills jobs in the American South's economy.

(NAICS Codes 21, 22, 23), manufacturing and mechatronics (NAICS Codes 31, 32, 33, 54), IT (NAICS Codes 51 and 54), and construction (NAICS Code 23).

Energy. The primary focus of consortium energy programs is Marcellus Shale jobs with secondary focuses on power generation. The consortium is establishing two new petroleum technology programs to meet rapidly expanding WV oil and gas middle-skill jobs demands. According to a recent report on Marcellus Shale’s impact, oil and gas extraction jobs increased 9.5%, related construction jobs increased 50%, and support activities such as excavation and well surveying increased 36% between 2008 and 2011, with 10,580 total sector jobs.<sup>3</sup> This expansion is expected to continue with 600 to 1,000 new wells being drilled in 2013 and 2014.<sup>4</sup> WorkForceWV projects an increase of 800 workers per year over the next 5 years with 200 students annually referred for oil and gas training. Of the 15 key oil and gas occupations identified by WorkForceWV, 12 require training beyond high school, but less than a 4-year degree. There also is demand for power plant technology, line installation/repair, and surveying jobs. Table 3 shows projected job opportunities:

**TABLE 3: Other Selected Energy Opportunities Within Consortium (Source: EMSI, 2013)**

SOC Code	SOC Title	Current Jobs	Openings 2016	Openings 2020	Avg. Wage
17-1022/3031	Surveyors, surveying, and mapping technicians	368	21	17	\$29.91
49-9050	Line installers and repairers (electricity/telecomm.)	1,681	43	59	\$26.33
51-8013/8090	Power plant operators/misc. plant and syst. operators	1,558	37	66	\$29.45

Manufacturing/mechatronics. WV is home to more than 2,250 manufacturing firms, including 12% in chemicals and allied products, 11% in industrial machinery and equipment, and 10% in fabricated metal products.<sup>5</sup> Overall, WV manufacturing jobs are expected to decrease over the next few years, but with two important exceptions.<sup>6</sup> First, the explosive growth in natural gas production is expected to spur related growth in plastics/rubber, which saw 1,275 new jobs

<sup>3</sup> WorkForceWV (2012). *The Influence of the Marcellus Shale on Employment and Wages in West Virginia.*

<sup>4</sup> World-Class Industrial Network, LLC (2011). *Direct Job Creation in West Virginia’s Marcellus Shale: The Demand Generated by the Natural Gas Industry.*

<sup>5</sup> Manufacturers’ News, Inc. (2013). *West Virginia Manufacturers Register.*

<sup>6</sup> WorkForceWV (2012). *Workforce Investment Act of 1998 (WIA) and Wagner-Peyser (W-P) Act and W-P Agricultural Outreach Strategic Plan;* West Virginia Department of Commerce (2013). *Announced Job Creation Per Industry (2005-2013).*

created between 2005 and 2013, as well as in certain chemicals. Second, transportation-related manufacturing, which saw 2,077 new jobs created between 2005 and 2013, is expected to continue to grow. Table 4 summarizes selected job opportunities:

**TABLE 4: Selected Manufacturing Opportunities Within Consortium (Source: EMSI, 2013)**

SOC Code	SOC Title	Current Jobs	Openings 2016	Openings 2020	Avg. Wage
17-3020	Engineering (including electronics) technicians	2,274	48	41	\$22.29
47-5040	Mining machine operators	3,278	152	81	\$24.90
49-1011	First line supervisors – mechanics, installers, repairers	2,891	74	75	\$26.06
49-2090	Electric, electronic equipment mechanics, installers	1,582	41	43	\$22.36
49-3011	Aircraft mechanics and service technicians	497	23	22	\$24.01
49-9040	Industrial machinery workers	3,541	150	117	\$20.01
51-4041	Machinists	2,084	40	32	\$17.08
51-8090	Misc. plant and system operators	1,169	19	33	\$25.33

IT. WV has a vibrant IT sector driven by government agencies and research, including networking, programming, software and application development, and cybersecurity, that will grow significantly over the next 7 years. Table 5 summarizes selected job opportunities:

**TABLE 5: Selected IT Opportunities Within Consortium (Source: EMSI, 2013)**

SOC Code	SOC Title	Current Jobs	Openings 2016	Openings 2020	Avg. Wage
11-3021	Computer and information systems managers	710	50	53	\$43.98
15-1130	Programmers, application developers and web developers	2,916	214	115	\$32.09
15-1142	Network and computer system administrators	914	72	50	\$29.53
15-1150	Computer support specialists	2334	129	41	\$20.60

Construction. Thanks in part to Marcellus Shale activity and in part to WV's general economic recovery, WV's construction industry and specialty trades like pipefitting expect to grow significantly over the next 7 years. Table 6 summarizes selected job opportunities:

**TABLE 6: Selected Construction Opportunities Within Consortium (Source: EMSI, 2013)**

SOC Code	SOC Title	Current Jobs	Openings 2016	Openings 2020	Avg. Wage
11-9021	Construction managers	818	28	29	\$37.24
13-1051	Cost estimators	790	39	38	\$25.59
47-1011	Construction/extraction first-line supervisors	4,314	171	145	\$33.94
47-2021	Brickmasons, blockmasons, stone masons	631	54	53	\$16.79
47-2031	Carpenters	3,569	116	97	\$15.46
47-2051	Cement masons and concrete finishers	648	36	34	\$14.88
47-2073	Operating engineers/construction equipment operators	6,749	250	200	\$17.75
47-2111	Electricians	4,672	152	130	\$24.44
47-2130	Insulation workers	423	16	17	\$23.27
47-2152	Plumbers, pipefitters, steamfitters	1,885	67	69	\$21.76
51-4121	Welders, cutters, solderers, brazers	2440	81	84	\$18.15

Table 7 contains a sampling of employers' current expected middle-skill job openings for each targeted industry:

**TABLE 7: Selected Employers' Expected Middle-Skill Job Openings for Each Targeted Industry**

Industry Sector	Employers
Energy	[REDACTED]
Manufacturing/ Mechatronics	[REDACTED]
IT	[REDACTED]
Construction	[REDACTED]

**Skills Required in Targeted Industries and Occupations.** With the exception of rapidly evolving Marcellus shale jobs, required skills can be found in competency models for energy generation, renewable energy, advanced manufacturing, mechatronics, IT, and residential, commercial, and heavy construction and in O\*Net's occupation database. For Marcellus shale jobs, ShaleNET, which includes Pierpont and WV Northern, is developing an oil and gas technology stackable credential model. The competency models illustrate significant skills overlaps among energy, manufacturing, IT, and construction workers. Table 8 summarizes cross-cutting (underlined) personal effectiveness, academic, and workplace competencies:

**TABLE 8: Cross-Cutting Personal Effectiveness, Academic, and Workplace Competencies (CareerOneStop.org)**

Types	Competencies
Personal Effectiveness	<p><u>Oil &amp; Gas*</u>: <u>Interpersonal skills</u></p> <p><u>Energy Generation</u>: <u>Interpersonal skills, integrity, professionalism, reputation, motivation, dependability &amp; reliability, self development, flexibility &amp; adaptability, ability to learn</u></p> <p><u>Adv. Mfg</u>: <u>Interpersonal skills, integrity, professionalism, initiative, dependability &amp; reliability, lifelong learning</u></p> <p><u>IT</u>: <u>Interpersonal skills &amp; teamwork, integrity, professionalism, initiative, adaptability &amp; flexibility, dependability &amp; reliability, lifelong learning</u></p> <p><u>Construction</u>: <u>Interpersonal skills, integrity, professionalism, initiative, dependability &amp; reliability, willingness to learn</u></p>
Academic Competencies	<p><u>Oil &amp; Gas*</u>: <u>Applied math, reading for information, locating information, computer literacy</u></p> <p><u>Energy Generation</u>: <u>Math, locating, reading &amp; using information; writing, listening, speaking, engineering &amp; technology, critical &amp; analytic thinking, science, IT</u></p> <p><u>Adv. Mfg</u>: <u>Science, basic computer skills, math, reading, writing, communication – listening and speaking, critical &amp; analytic thinking, information literacy</u></p> <p><u>IT</u>: <u>Reading, writing, math, science, communication, critical &amp; analytical thinking, fundamental IT user skills</u></p> <p><u>Construction</u>: <u>Reading, writing, math, science, communication: visual &amp; verbal, basic computer skills</u></p>
Workplace Competencies	<p><u>Energy Generation</u>: <u>Business fundamentals, teamwork, following directions, planning, organizing &amp; scheduling, problem solving &amp; decision making, ethics, employability &amp; entrepreneurship skills, working with basic hand &amp; power tools and technology</u></p> <p><u>Adv. Mfg</u>: <u>Business fundamentals, teamwork, adaptability/flexibility, marketing &amp; customer focus, planning &amp; organizing, problem-solving &amp; decision making, working with tools &amp; technology, checking, examining &amp; recording, sustainable practices</u></p> <p><u>IT</u>: <u>Teamwork, planning &amp; organizing, innovative thinking, problem solving &amp; decisionmaking, working with tools &amp; technology, business fundamentals</u></p> <p><u>Construction</u>: <u>Teamwork, following directions, following plans &amp; schedules, problem solving &amp; decision making, working with tools &amp; technology, checking, examining &amp; recording, craftsmanship, sustainable practices</u></p>

\*From ShaleNET stackable credential model, not Competency Model Clearinghouse.

There is overlap, moreover, among the technical skills needed by workers across these industries. Table 9 summarizes just a few of the overlaps across industries and occupations:

**TABLE 9: Cross-cutting Technical Skills (Source: O\*Net, 2013)**

<i>Skill</i>	<i>Energy</i>	<i>Manufacturing</i>	<i>IT</i>	<i>Construction</i>
<i>Mechanical</i>	Gas compressor, pumping station operator	Industrial machinery mechanic, machinery maintenance worker		Millwright, pipefitter
<i>Electrical</i>	Electrical power line installer/repairer	Electrical engineering technician		Electrician
<i>Instrumentation/Electronics</i>	Powerhouse, substation, and relay repairer	Electronics engineer technician	Computer user support specialist	
<i>Quality Control Analysis</i>	Environmental compliance inspector	Chemical plant operator	Computer programmer, software/web developer	

Required credentials vary across industries and occupations, but typically include nationally-recognized certifications, skill set certificates, certificate degrees, and associate’s degrees depending on the competencies acquired. The consortium will engage employers via sector partnerships to assess general industry needs, and DACUMs and cognitive task analysis to determine needed job skills. In most cases, employers will be directly involved in course design (e.g., student capstone games/simulations). In all cases, employers will review courses developed or refined through this grant to ensure that it meets employer needs.

**C. Gap Analyses**

***Gaps in Educational and Career Training Programs and Infrastructure.***

Lack of skilled workers. Many employers participating in community outreach activities reported difficulty finding skilled workers to fill vacant positions. Consortium members identified two reasons for the “pipeline” gap. First, recruitment for and persistence in technical programs has been weak. Second, institutions do not offer workforce-critical training programs, including petroleum technology in northern WV and mechatronics in southwestern WV.

Members identified two reasons for the “skills” gap. First, institutional programs vary in alignment with national standards or regional needs. Manufacturing and IT employers want nationally-recognized certifications, and the state’s two major electrical distribution providers want Center for Energy Workforce Development (CEWD) career pathways alignment. Second, instructors do not always have needed certifications nor are they using the latest equipment,

processes, and techniques. WV oil and gas producers, for instance, want technicians taught new drilling and production skills using real-world simulation in outdoor and indoor laboratories. Consortium members identified difficulty in recruiting faculty in technical disciplines and limited resources as especially difficult challenges. There is a heavy reliance on adjunct faculty (63% of faculty), which makes it difficult to develop and modify programs and curricula, and it is very difficult to start up new programs, especially at rural schools. Finally, employers desire improved academic and soft skills training in reading comprehension, math, critical thinking, active listening, speaking, and active learning.

Weak student support systems. Virtually all groups expressed concern about student support systems. A state labor leader opined that institutions need to “learn their students”; a college president urged colleagues to push services to students; and WorkForceWV’s Dislocated Workers Unit director stressed better career planning services for TAA workers. Data corroborate their concerns. The consortium’s current 6-year student success rate is 34%, but drops to 16% for students who take developmental courses. WV CTC students, moreover, report lower-than average use of advising and counseling, according to the leading student engagement survey, and consortium schools report a 1,500 to 1 student-to-counselor ratio.

Lack of Flexibility. Various groups expressed frustration with consortium members’ lack of flexibility. Issues identified include the time it takes students to earn credentials, failure to adjust schedules and modes of delivery to accommodate workers’ needs, and few students receiving credit for prior learning. The average WV community college student who earns an associate’s degree takes 5 years to do so and earns 39 more credits than needed in the process. In 2011-2012, students earned fewer than 20% of their credits in non-traditionally formatted classes.

Weak collaboration. While WV industry groups perceived state-level collaboration to be strong, many employers did not, especially locally. Consortium members and the public

workforce system generally indicated strong informal relationships, but few formal partnerships. Organized labor and Registered Apprenticeship Programs (RAPs), with which consortium members entered into the nation’s first comprehensive RAP/CTC articulation agreement, expressed concern that little has been done to implement that partnership. Consortium members reported numerous cross-institution collaborations, but few program partnerships and inadequate facilities for cross-institutional instruction. Finally, K-12 educators reported strong Adult Basic Education (ABE) collaborations, but weak technical program alignment.

**TAACCCT Project Research.** Table 10 summarizes TAACCCT projects that the Bridging the Gap consortium will build upon to address gaps identified in this proposal:

**Table 10: TAACCCT Projects Addressing Similar Gaps**

GAP	STATE LEAD/PROJECT NAME	SUMMARY OF INITIATIVE
<b>Lack of Skilled Workers:</b>		
Energy	PA – ShaleNET (Round II)	“Marcellus Shale” job credentialing system
	CO – COETC (Round I)	New energy certificates
	ND – TREND (Round II)	New oil and gas certificates
Advanced manufacturing	MD – National STEM (Round I)	Nationally portable mechatronics certificate
	MO – MoWINS (Round II)	NAM-endorsed certificate programs
	NC – Adv. Mfg Alliance (Round I)	Mobile learning applications/courses
IT	MD – National STEM (Round I)	Nationally portable cybertechnology certificate
	OH – Sinclair (Round II)	Competency-based online IT
<b>Weak Student Support Systems:</b>		
Career planning	NC – Adv. Mfg Alliance (Round I)	Success manager/career guidance digital content
	NY – CareerPATH (Round I)	Career mapping
Coaching/counseling	WV – BEACON (Round I)	Peer coach, faculty mentor, counselor
Data gathering/mining	VA - RETHINK (Round I)	E-WISe early warning and intervention system
<b>Lack of Flexibility:</b>		
Prior learning assessment	NY – TEAM (Round II)	Uniform state system of awarding credit
Compressed scheduling	MI – M-SAMC (Round II)	Accelerated bridge program
	CA – C6 (Round I)	Block scheduling
	PA – PCCC (Round I)	Rapid remediation
Online/blended learning	CO – COETC (Round I)	Online/hybrid energy courses
	IA – I-AM (Round II)	Online/blended; simulations in advanced mfg.
	SC – ASSIST (Round I)	Online developmental and TechMST course
<b>Weak Collaboration:</b>		
Work-based learning	IL – Earn and Learn (Round II)	Work-based learning program

**Impact of Gaps on Service to TAA Workers and Other Adults.** Each gap identified above impacts TAA workers, veterans, and other adults disproportionately. First, these groups are more likely to fill skilled worker gaps by pursuing manufacturing, energy, and IT credentials perceived to be pathways to good-paying jobs. Second, TAA workers and others, many of whom have been out of school for a long time, need stronger and different career planning and wrap-around student support services. Third, because so many have families to support, they

need an accelerated pathway to degree completion, including effective prior learning assessment, accelerated scheduling, and online and blended instruction. They also need stackable and latticed career pathways and modularized instruction where they learn primarily what they need for their next jobs.

## II. Methodology and Work Plan

### A. Evidence-Based Design

The Bridging the Gap consortium will implement a three-pronged evidence-based design: (1) enhanced and accelerated sector-driven career pathways; (2) contextualized, online, blended, simulated, and remote academic instruction; and (3) expanded and individualized student support strategies focused on strategic recruitment, college success courses, peer coaching, career planning, and data-driven decision-making.

#### ***Review of Evidence for Evidence-Based Design.***

Strategy 1 (Career Pathways): There is strong evidence that sector-driven education programs produce favorable economic outcomes for participants. Public/Private Ventures' randomized controlled study of participants in three mature, sector-driven programs found significant labor-market gains for low-income, disadvantaged workers and job seekers, including greater likelihood of working and working regularly with 18% higher earnings.<sup>7</sup> The Aspen Institute's comparison-cohort, longitudinal study of sector-based workforce development programs in six states likewise found that sector participants made 30% more and were twice as likely to have jobs than participants in traditional job search and work-first employment programs.<sup>8</sup> Other less rigorous analyses provide preliminary evidence of employer and community college

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<sup>7</sup> Maguire, S., et al. (2010). *Tuning in to labor markets: Findings from the sectoral employment impact study*. Public/Private Ventures.

<sup>8</sup> Zandniapour, L., & Conway, M. (2002). *Gaining ground: The labor market progress of participants of sectoral employment development programs (SEDLP Research Report No. 3)*. Aspen Institute.

benefits.<sup>9</sup> There is strong evidence that RAP participants earn more, with a 10-state comparison-cohort evaluation finding a \$6,000 difference in their 9th year post-enrollment and \$100,000 difference overall,<sup>10</sup> and preliminary evidence concerning the efficacy of CTC/RAP partnerships.<sup>11</sup> While the career pathways thesis that post-secondary education should be organized into manageable steps leading to successively higher credentials and employment opportunities has not been rigorously evaluated, a U.S. DHHS ISIS project analysis provides preliminary evidence for that proposition in a theory of change model.<sup>12</sup>

There is strong-to-moderate evidence supporting accelerated pathways to completion. First, Complete College America's synthesis of "tipping points" research from eight states provides strong evidence that "[c]ertificate achievement overall has positive earnings results," while "long-term certificates have significantly more labor market value and earnings return than short-term certificates."<sup>13</sup> Second, the City University of New York's Accelerated Study in Associate Programs ("ASAP") research provides moderate evidence that program acceleration improves persistence and completion rates. A comparison-cohort analysis of ASAP found two- and three-year graduation rates of 30.2% and 54.6% respectively, compared to 12.1% and 26.4% respectively for the control group,<sup>14</sup> which in turn will produce a \$46,500-per-participant long-term net benefit for taxpayers.<sup>15</sup> Third, Edgecombe's 2011 literature review found "limited" but

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<sup>9</sup> See Lamos, E., Simon, M., & Waits, M.J. (2010). *A sharper focus on technical workers: How to educate and train for the global economy*. NGA Center for Best Practices (finding changes in training of maintenance workers resulting from community college program and curriculum changes); Lea, C. (2004). BEST benefits: Employer perspectives. *Research and Evaluation Brief*, 2(4), 1-4 (63.6% of employers reporting cost savings as result of participating in Massachusetts' sector-based initiative).

<sup>10</sup> Reed, D., et al. (2012). *An effectiveness assessment and cost-benefit analysis of registered apprenticeship in 10 states*. Mathematica Policy Research.

<sup>11</sup> See Lerman, R.I. (2009). *Training tomorrow's workforce: Community college and apprenticeship as collaborative routes to rewarding careers*. Center for American Progress (stating collaboration "makes" sense because community colleges are well-positioned to provide academic and soft-skills and apprenticeship programs are well-positioned to provide occupational training needed by middle skilled workers).

<sup>12</sup> Fein, D.J. (May 2012). *Career Pathways as a Framework for Program Design and Evaluation: A Working Paper for The Innovative Strategies for Increasing Self-Sufficiency (ISIS) Project (OPRE Report 2012-30)*. U.S. Department of Health and Human Resources.

<sup>13</sup> Complete College America (CCA)/FutureWorks (2010). *Certificates count: An analysis of sub-baccalaureate certificates*.

<sup>14</sup> Kolenovic, Z., Linderman, D., & Karp, M.M. (2012). Improving student retention and graduation via comprehensive supports: Two- and three-year outcomes from CUNY's Accelerated Study in Associate Programs (ASAP). *Proceedings of the 8th Annual National Symposium on Student Retention*. 221-233.

<sup>15</sup> Levin, H.M., & Garcia (May 2013). *Benefit-Cost Analysis of Accelerated Study in Associate Programs (ASAP) of the City University of New York (CUNY)*. Columbia University, Teachers College, Center for Benefit-Cost Studies in Education.

“promising” (moderate) evidence for developmental education acceleration, including compressed, integrated, and paired courses and reductions in curricular redundancies.<sup>16</sup> Edgecombe et al. (2013) identified the Community College of Denver’s (CCD’s) FastStart program as a particularly promising model, with substantially higher gatekeeper math enrollment and passage rates, but not increased persistence and completion rates.<sup>17</sup>

Strategy 2 (Academic Instruction): There is strong evidence supporting contextualized, career-focused instruction. Multi-year comparison-cohort analyses of Washington State’s I-BEST program, for instance, found 10% higher credit and 7.5% higher certificate completion rate among I-BEST students,<sup>18</sup> while California community college comparison-cohort analyses found contextualized developmental math students were 27% more likely to pass the course, 15% more likely to take the follow-up degree-applicable course, and 17% more likely to complete it.<sup>19</sup> Perin (2011) also found support for contextualization in less rigorous studies.<sup>20</sup> There also is strong evidence supporting contextualized and structured work-based training, including apprenticeships, internships, and cooperative learning, with Reed (2012), discussed previously, finding RAPs having long-lasting financial benefits and Weible (2010) finding that internships provide students with job-specific, communication, and problem-solving skills, and interns receive more job offers, are hired more quickly, and receive higher starting salaries.<sup>21</sup>

There is strong, but mixed, evidence for online, blended, and remote learning. In its 2010 meta-analysis of 176 studies, the U.S. Department of Education found strong evidence that online and blended course learning outcomes were equal to or better than traditional face-to-

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<sup>16</sup> Edgecombe, E. (2011). *Accelerating the academic achievement of students referred to developmental education*. Community College Research Center (CCRC) Brief, 55, 1-4.

<sup>17</sup> Edgecombe, N., Jagers, S. S., Baker, E.D., and Bailey, T. (Feb. 2013). *Acceleration through a holistic support model: An implementation and outcomes analysis of FastStart@CCD*. CCRC.

<sup>18</sup> Zeidenberg, M., Cho, S., & Jenkins, D. (2010). *Washington State’s integrated basic education and skills training program (I-BEST): New evidence of effectiveness (CRCC Working Paper No. 20)*.

<sup>19</sup> Wiseley, W. C. (2011). *Effective basic skills instruction: The case for contextual developmental math (Pace Policy Brief 11-1)*.

<sup>20</sup> Perin, D. (2011). *Facilitating student learning through contextualization (CCRC Brief No. 53)*.

<sup>21</sup> Weible, R. (2010). Are universities reaping the available benefits internship programs offer? *Journal of Education for Business*, 85, 59-63.

face course outcomes.<sup>22</sup> Recent research of Washington State community colleges' wholly online offerings, however, cautions that they may negatively affect course persistence and grade,<sup>23</sup> and other research suggests that online and blended learning may not be effective for low income and underprepared students because of technical difficulties, absence of "teacher presence," feelings of social distance and isolation, lack of learner control, and limited online support services.<sup>24</sup> There is strong evidence for the National Center for Academic Transformation's (NCAT's) emporium model, which uses interactive tutorials, computational exercises, videos, practice exercises, and online quizzes, augmented by personalized on-demand assistance, in a modularized format and at scheduled places and times. Thirty-two NCAT institutions, including consortium partners Mountwest and WVUP, have seen a 51% increase in students completing developmental math and significant reductions in instructional costs (30% on average).<sup>25</sup> There is strong evidence from a large-scale, multi-year, randomized study for the effectiveness of remote laboratories and simulations on learning outcomes, especially when real (as opposed to simulated) data are used.<sup>26</sup>

Strategy 3 (Student Support Strategies): There is moderate evidence from Florida and Virginia community college systems longitudinal comparison-cohort studies that college success courses increase credit attainment and second-year persistence (FL and VA) as well as credential attainment (FL).<sup>27</sup> A recent Stanford University study provides moderate evidence that coaching focused on goal setting and execution, including time-management, self-advocacy, and study

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<sup>22</sup> U.S. Department of Education (2009, rev. 2010). *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies.*

<sup>23</sup> Xu, D. & Jaggars, S.S. (Apr. 2013). *Examining the effectiveness of online learning within a community college system: An instrumental variable approach* (CCRC Working Paper No. 56).

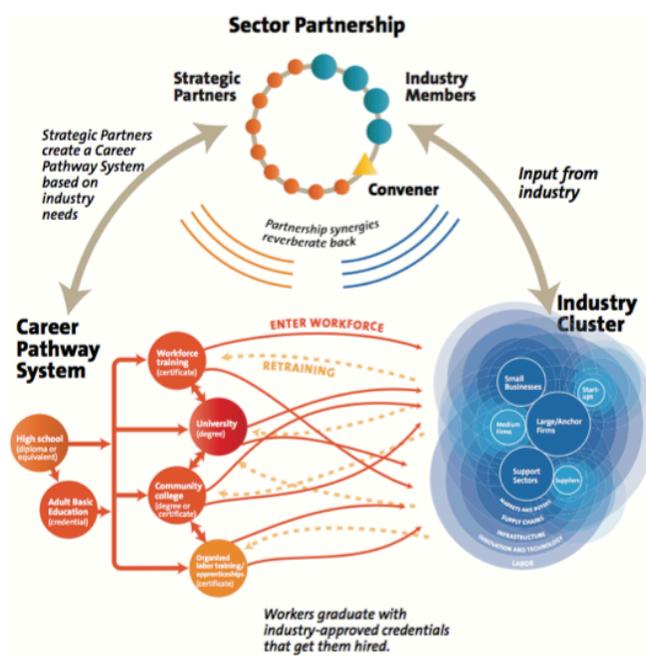
<sup>24</sup> Jaggars, S.S. (2011). *Online learning: Does it help low-income and underprepared students?* (CCRC Brief No. 52).

<sup>25</sup> Twigg, C. (2011). *Changing the equation: Scaling a proven innovation.* NCAT.

<sup>26</sup> Corter, J.E., et al. (2011). Process and learning outcomes from remotely-operated, simulated, and hands-on student laboratories, *Computers and Education*, 57, 2054-2067.

<sup>27</sup> Cho, S., & Karp, M.M. (2013). Student success courses in community college: Early enrollment in educational outcomes. *Community College Review*, 41(1), 86-103; Zeidenberg, M., Jenkins, D., & Calcagno, J.C. (2007). *Do student success courses actually help community college students succeed?* (CCRC Brief No. 36).

skills, works to improve student retention (5.2% after 6 months, 3.4% after 24 months).<sup>28</sup> There is preliminary evidence supporting Judith Scott-Clayton’s structure hypothesis: community colleges must actively help students decide what to do, plan how to do it, and follow through.<sup>29</sup> Mountwest, consortium participant and Round I grantee, currently is implementing a BEACON model that combines these elements and pushes services to students. BEACON is based on moderate evidence of success at Grossmont (CA) and Broome (NY) Community Colleges, which increased fall-to-fall at-risk student retention to 80% and 60% respectively, and at Quincy College (MA), which saw fall-to-spring retention increase by 30%. In its first full implementation year, Mountwest has seen fall-to-spring retention increase by 25%.



**Use of Evidence for Evidence-Based Design.**

Strategy 1 (Career Pathways): The Bridging the Gap consortium will replicate the National Governors Association sector partnership model,<sup>30</sup> which appears here, and apply the ISIS Project theory of change model, discussed earlier, with each region implementing vibrant sector partnerships

and career pathway systems in technical program areas covered by this proposal. The consortium also will implement RAP/CTC partnerships with the building and construction

<sup>28</sup> Bettinger, E.P., & Baker, R. (March 2011). *The effects of student coaching in college: An evaluation of a randomized experiment in student mentoring.*  
<sup>29</sup> Scott-Clayton, J. (2011). *The shapeless river: Does a lack of structure inhibit students’ progress at community colleges? (CCRC Working Paper No. 25).*  
<sup>30</sup> National Governors Association Center for Best Practices (2013). *State sector strategies coming of age: Implications for state workforce policymakers.*

trades ██████████ that will lead to CTC occupational development, construction management, and mechatronics credentials. Finally, the consortium will expand certificate offerings as part of career pathways realignments and accelerate credential attainment by strengthening prior learning assessment, adjusting program schedules, and implementing compressed and paired developmental education courses by replicating CCD's FastStart developmental education model.

Strategy 2 (Academic Instruction): The consortium will expand contextualization by developing and implementing: (1) new “technology gateway” courses that incorporate technical instruction consistent with I-BEST and Henry Ford Community College’s new Accelerated Manufacturing Bridge Program; (2) new “technology bridge” courses that combine cross-cutting technical skill sets; (3) construction-relevant topics into general education and management courses for apprentices and journeypersons; (4) a new apprenticeship program; (5) an expanded learn-and-earn work-based training program; and (6) new capstone courses to ensure that students can demonstrate mastery of foundational, industry, and occupation-related competencies.

The consortium will strengthen online and blended instruction by: (1) implementing the emporium instructional model for all developmental instruction; (2) incorporating, as appropriate, TAACCCT-developed modules and courses into technical programs; (3) creating and implementing online versions of RAP/CTC courses; and (4) developing and implementing blended content for use in technology bridge, technology gateway, and capstone courses.

The consortium will strengthen remote and simulated learning by: (1) creating and using a series of state-of-the-art classrooms to facilitate cross-institutional instruction for courses that otherwise could not be offered to students at locations; (2) implementing partnerships for new petroleum technology (Pierpont and WV Northern), mechatronics/engineering technology (Bridgemont and Southern WV), and IT (Blue Ridge and Mountwest) programs that allow

institutions to benefit from lead institutions' expertise and resources (e.g., new outdoor petroleum technology laboratory Pierpont and WV Northern both will use); and (3) incorporating simulations and games into courses, including capstone courses.

To ensure high-quality implementation, the consortium will: (1) use DACUMs and cognitive task analysis to develop all technical program content for which national or employer-approved standards are unavailable; (2) modularize all courses; (3) incorporate personalized learning components; and (4) build in assessment at the module level. In designing courses, the consortium will use an iterative (minimally viable product) process that combines collaborative design and rapid prototyping.<sup>31</sup> All activities will be undertaken in collaboration with employers.

Strategy 3 (Student Support Strategies): The consortium will replicate the two most successful components of consortium partner Mountwest's BEACON model: peer coaches and professional counselors, who will work with faculty to provide students with wrap-around services. Peer coaches will be recent graduates who work with potential and enrolled students to remove practical barriers to enrollment, persistence, and completion. Counselors, including job placement specialists, will provide career and other counseling services. Additionally, BEACON students will make formal, written commitments to complete their programs of study at enrollment. BEACON efforts will be complemented by: (1) a targeted recruitment effort focused on individuals likely to have technical work experience (e.g., veterans, TAA workers, apprentices, and journeypersons) and/or college credits but no credential; (2) a new web-based career planning system that incorporates academic planning, advising, and degree auditing; (3) course and retention analytics systems that allow institutions to target limited resources where they are most needed; and (4) a new job placement partnership with regional WIBs and benefitting from expanded employer interactions.

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<sup>31</sup> See U.S. Department of Education (Feb. 2013). *Expanding evidence approaches for learning in a digital world*.

## **B. Stacked and Latticed Credentials**

***Industry Engagement to Identify Credentials.*** At the national level, the Bridging the Gap consortium will work with the ShaleNET consortium, Center for Energy Workforce Development (CEWD), Manufacturing Institute (MI), AMTEC consortium and CSW to align programs and curricula to meet national industry standards, identify overlapping skill sets, and design effective career pathways. At the state level, the consortium work with an industry steering committee, consisting of representatives of major industry associations, employers, and project leads, to build and strengthen sector partnerships and identify portable skill sets, programs, and credentials valuable to employers. At the regional level, the consortium will work with employer-driven sector partnerships to assess regional industry-specific needs and ensure credentials, programs, and courses truly meet those needs.

***Plans to Stack and Lattice Credentials.*** The Bridging the Gap consortium will undertake a comprehensive top-down, cross-industry, and bottom-up skills-mapping process to better stack and lattice credentials across technical programs. To ensure national compatibility, the top-down process will involve working with national partners to ensure that nationally-recognized foundational (e.g., National Career Readiness Certificate), cross-cutting technical (e.g., Certified Production Technician, Energy Industry Fundamentals Certificate), and program-specific (e.g., Certified Welder) skill certifications are incorporated into existing programs, as appropriate. The cross-industry process will involve technical project leads and industry experts working with CSW to isolate cross-cutting workplace, industry-wide (e.g., safety, quality-control), and industry-sector (e.g., electrical and mechanical skills for energy manufacturing and energy jobs) technical competencies and combine them into modularized “technology bridge” courses and certificate programs to create more latticed pathways for students while simultaneously increasing institutional efficiency. The bottom-up process will involve sector

partnerships working to assess gaps in current programs, including sub-industry and occupation-specific competencies. The industry steering committee will oversee this process. WVCCTCE and consortium members will be responsible for obtaining institutional program review and governing board approval for curricular improvements.

The consortium proposes to offer the following existing and *planned* credentials:

**TABLE 11: Bridging the Gap Credentials**

<b>Bridgemont</b>	Associate's degrees: Adv. mfg. techn.; civil, drafting & design, electrical & mechanical engineering techn.; diesel techn.; IT; instrumentation techn.; welding Certificate degrees: Computer maint. and netw.; diesel techn. Skill-Set certificates: Electrical engineering techn.; diesel engine repair (basic & advanced) Certifications: AWS welder, CISCO CENT, CISCO CNA, MSSC certified prod. techn.
<b>Blue Ridge</b>	Associate's degrees: Computer applications; computer netw. engineering; cybersecurity; electrical distr. techn.; IT; mechatronics Certificate degrees: Certified netw. associate; certified netw. professional; computer applications; converged networking; electric distribution techn.; info. security; systems netw.; techn. systems; virtualization Skill-set certificates: Computer netw. engineering; computer forensics; ethical hacking; intrusion detection, LAN & WAN, netw. design; netw. fundamentals, netw. troubleshooting; netw. typologies; programming languages; routers & switches (basic & advanced); security assessment; server infrastructure; telecomm.; troubleshooting; Windows desktop support; Windows operating; wireless techn. Certifications: CISCO CNA, CISCO CNP, Microsoft Office specialist, Siemens mechatronics certification
<b>Eastern WV</b>	Associate's degrees: IT; wind energy techn. Certificate degrees: Computer applications specialist; electromechanical techn.; IT; wind energy techn. Certifications: CompTIA A+
<b>Kanawha Valley</b>	Associate's degrees: Applied process techn. (chemical); power plant techn.; computer and IT Certificate degrees: Chemical operations Certifications: CompTIA A+, CompTIA Security+, CISCO CAN
<b>Mountwest</b>	Associate's degrees: IT Certificate degrees: Certified network associate Certifications: CISCO CNA, Microsoft certified IT program
<b>New River</b>	Associate's degrees: Computer science; mechatronics; weatherization techn. Certificate degrees: Machining techn.; mechatronics; welding techn. Skill set certificates: Weatherization techn.; welding techn. Certifications: AWS welder; CompTIA A+, CompTIA Network+, Microsoft certified professional; NIMS machining/metalworking
<b>Pierpont</b>	Associate's degrees: Mechatronics, drafting/design techn.; instrumentation techn., petroleum techn.; power plant techn.; utility techn. Certificate degrees: Petroleum techn.; power plant technology Skill set certificates: Computer aided design Certifications: CompTIAA+, CCENT, CCNA, CCNA-Security; ATMAE; Autodesk
<b>Southern WV</b>	Associate's degrees: Electrical engineering techn.; mechatronics; survey techn.; IT Certificate degrees: Electrical engineering techn.; survey techn. Skill set certificates: Computer repair technician Certifications: Comp TIA A+, CompTIA Network+
<b>WV Northern</b>	Associate's degrees: IT; mechatronics; petroleum techn. Certificate degrees: IT; mechatronics; petroleum techn.
<b>WVUP</b>	Associate's degrees: Energy assessment and mgmt.; engineering techn.; IT; machining techn.; multi-craft techn.; solar energy techn.; welding Certificate degrees: Chemical/polymer operator techn.; electricity & instrumentation; energy assessment & mgmt.; solar energy techn.; welding Skill set certificates: Industrial controls and instrumentation; industrial electricity and power controls; industrial hydraulic techn.; introductory electrical certificate-residential; machining technician; mobile hydraulic techn.; mobile welding techn.; pneumatic techn.; programmable logic controllers; solar energy techn.; weatherization techn.; welding techn. Certifications: AWS welder; CISCO CCNA; HVAC NATE; MCITP; MOS; MSSC CPT; NIMS machining/metalworking
<b>All</b>	Associate's degrees: Technical studies; occupational development

Additionally the consortium expects to expand certifications, skill-set certificate, certificate degrees offerings as a result of career pathways realignment.

**Prior Learning Assessment (PLA).** The Bridging the Gap consortium will use the following tools to assess prior learning: (1) [REDACTED] and WV Board of Governors' AAS degree portfolio review processes; (2) nationally-recognized competency-based assessments, including CLEP and DSST exams, for common academic courses; (3) department-level assessments designed by faculty where other assessments currently do not exist; (4) expert military/veterans credit evaluations that expand upon American Council on Education Military Guide recommendations; (5) an established system for awarding academic credit for RAP and other work-based training; (6) professional training reviews; and (7) transcript reviews. The consortium will increase PLA usage by: (1) developing a PLA website that mirrors the Healthcare Virtual Career Network "Earn College Credits" web portal that will permit people to submit portfolios, exam results, and other PLA information online; (2) train peer coaches, counselors, and workforce professionals on PLA with assistance from the Council for Adult and Experiential Learning (CAEL); and (3) employ a person to work with veterans on PLA.

### **C. Transferability and Articulation**

**Strengthening Transitions from Non-Credit to Credit-Bearing Credentials.** The Bridging the Gap consortium has three systems to facilitate transitions from non-credit to credit-bearing credentials. First, consortium members participate in EDGE (Earn A Degree, Graduate Early), which allows high school career-technical students to earn college credits for high school coursework that duplicates foundational college coursework. Second, consortium members convert non-credit workforce-based instruction to for-credit instruction; 15 hours of lecture-based instruction, 30 hours of laboratory instruction, or 160 hours of on-the-job training equate to one college credit hour. Third, consortium members convert RAP

instruction and work-based training into college credit through an agreement among the State Office of Apprenticeship, AFL-CIO-WV, and WVCCTCE. The consortium will strengthen these systems by: (1) partnering with the WV Department of Education to better align pathways around two programs of study – energy and mechatronics; (2) partnering with the WV National Guard to increase awareness of credit conversion opportunities among veterans and active National Guard and Reservists; (3) engaging in targeted recruitment of individuals who previously completed non-credit workforce training or have college credits, but never earned a certificate or degree; and (4) embedding community college programs within apprenticeship programs. WVCCTCE will coordinate each of these activities.

**Establishing Transferability of Credit.** The Bridging the Gap consortium has a transfer agreement that facilitates credit transfer. Additionally, many consortium members have transfer agreements with community colleges in neighboring states. The consortium will strengthen transferability by: (1) expanding single-institution transfer agreements to include all consortium members; (2) working through MI and CEWD to ensure transferability of credit with other institutions implementing the MI and CEWD models; and (3) entering into a consortium-wide transfer/articulation agreement with the ShaleNET energy consortium in neighboring Pennsylvania, as well as other previous TAACCCT-funded programs offering similar programs and credentials. WVCCTCE will coordinate these activities.

**Establishing Articulation Agreements.** WV's 2- and 4-year institutions have weak articulation systems for students who pursue applied technology credentials. To address this deficiency, WVCCTCE has entered into two partnerships: (1) with WVUP to develop an online Bachelor's of Applied Science (BAS) program; and (2) with WVU to offer an online bachelor's degree in Multi-disciplinary Studies (BMS). The WVUP BAS program, [REDACTED]

██████████, allows students to earn an advanced technology associate's degree by taking general education courses traditionally required of students earning bachelor's degrees, but infused with instruction in personal effectiveness, academic, workplace, management, and entrepreneurship skills. The WVU BMS program allows students to count applied technology program credits toward a degree consisting of three minors (e.g., business administration, entrepreneurship, professional writing/editing).

The consortium will expand articulation efforts by: (1) ensuring that WVUP's BAS program has fully functional online and blended options by the end of the second grant year; (2) improving WVUP and WVU program marketing; (3) entering into new 2+2 articulation agreements with California University (Pennsylvania) (CUP), WVU Institute of Technology (WVUIT), Fairmont State University (FSU), and Bluefield State College (BSC), all of which have complementary 4-year technical programs; and (4) expanding the current RAP partnership to combine community college instruction and RAP credit conversion so future building trades earn associate's degrees.

#### **D. Online and Technology-Enabled Learning**

***Incorporation of Advanced Technology into Program Design and Delivery.*** The Bridging the Gap consortium will incorporate technology into academic instruction in four primary ways. First, it will implement NCAT's emporium instructional model for developmental education by using learning resource centers featuring online materials and on-demand personalized assistance. Second, it will use open source tools ██████████ to incorporate game design elements into instruction with the dual goals of ensuring that technical concepts are taught as effectively via online or remote simulation as face-to-face; and developing advanced capstone simulations/games in partnership with employers that allow students to demonstrate mastery of foundational, industry, and occupation-related

competencies. Third, it will expand online and blended course offerings by developing RAP, gateway, bridge, and capstone courses and course content and incorporating online content developed by other TAACCCT awardees into new and existing programs. Fourth, it will expand the number of technical program courses taught remotely by establishing state-of-the-art classrooms at each institution and allowing TAA workers and others from rural areas to take otherwise unavailable courses and engage in real-time collaborations with peers elsewhere.

The consortium will improve technology-based student supports in three primary ways. First, it will implement [REDACTED], a web-based academic advising tool and degree audit program that provides an academic roadmap for student success. The program details course requirements for certificate and degree completion, how completed courses can apply to other certificate and degree requirements, and what courses are required for degree completion. Second, it will develop and implement a web-based, technical-program-focused prior learning assessment system. Third, it will implement course-level analytics for wholly and partially online course offerings and retention analytics to refine predictive models and ensure that high-risk students are identified and interventions initiated promptly. All of these initiatives will be undertaken in partnership with WVNET, the WV higher education technology agency.

***Use of Technology Strategies to Positively Impact Program Outcomes.*** These initiatives will positively impact student outcomes in at least three ways: (1) by making career pathways more transparent to students; (2) by increasing access to technical program offerings for place-bound individuals, including TAA-eligible workers; and (3) by accelerating time to certificate or degree. These initiatives also will provide content of national significance in four areas: (1) online, contextualized RAP/CTC courses apprentices can take to earn an associate's degree; (2) employer-endorsed petroleum engineering, energy, mechatronics, and IT capstone simulations; (3) an online prior learning assessment system focused on technical program

participants; and (4) a set of course- and retention-analytics protocols that can be used to improve retention and completion rates. Finally, these initiatives will save institutional funds by reducing costs associated with starting costly new programs and outfitting laboratories.

## **E. Strategic Alignment**

***Alignment with Governor’s Economic Development and WIA-WP Plans.*** Bridging the Gap consortium project strategies align closely with the Governor’s economic development plan. First, this project focuses on three industry sectors at the heart of the plan: (1) advanced and alternative energy, including petroleum; (2) advanced manufacturing, including aerospace, automotive, chemicals, and specialty metals; and (3) high technology, including cybersecurity and data centers. Second, the project aligns with the newly-created Governor’s Workforce Planning Council, a component of the Governor’s plan that focuses on collaboratively “tak[ing] into account the specific workforce needs of the State’s business and industries” and “incorporating occupational training ... into the curriculum ... to prepare students for entry into the workforce.” Third, this project aligns closely with recommendations of the WV College Completion Task Force, including (1) reducing time to earn a certificate or degree; (2) improving developmental education; and (3) increasing adult completion rates by removing academic, social, and financial barriers to completion.

This project also aligns closely with the Governor’s WIA-WP workforce plan. First, the workforce plan focuses on increasing technical training generally (plan goal = 10% increase), but with a special emphasis on energy production and related downstream industries (e.g., chemical manufacturing), which are subjects of two of four plan goals. Second, this project will support workforce plan goals of broadening career paths, developing training back-up plans, and providing stronger academic and student support for TAA customers.

**Substantive Involvement of Employers.** The Bridging the Gap consortium has actively engaged all major industry groups and hundreds of employers in project design by holding six regional workforce forums across WV over the last four months. Topics discussed at those forums included occupational shortages, skill gaps and how to fill them, certifications, and WV's learn-and-earn work-based training initiative. The forums produced lists of workforce training needs, support for increased use of nationally-recognized certifications and commitments to collaborate. Five industry associations and 49 employers have made commitments to encourage greater recognition of nationally-recognized certifications; promote certificate and associate's degree attainment for incumbent workers; participate in an industry alliance/sector partnership; assist in defining educational program strategies and goals, developing and aligning career pathways stackable credentials, identifying industry competencies and skills, developing curricula, and/or helping with instruction; and/or consider credentialed CTC graduates when technical job opportunities become available. In addition, employers have made at least \$632,800 in contributions to sector-based programming thus far this year through the learn-and-earn work-based training program, equipment donations, the provision of scholarships and direct financial contributions.

**Provision of Work-Based Training Opportunities.** The Bridging the Gap consortium will provide work-based training through apprenticeship and learn-and-earn programs. The consortium will have approximately 100 individuals participating in occupational development programs while simultaneously participating in construction and auto manufacturing RAPs. The consortium also will strive to more-than-double its current number of learn-and-earn work-based training participants from [REDACTED] auto ([REDACTED]) and chemical manufacturing ([REDACTED]), where they now are

concentrated. To reach this target, the consortium will develop a work-based training expansion plan, employ a learn-and-earn coordinator to promote and implement work-based training, and provide state matching funds for businesses that provide work-based training. Given the rapid expansion of Marcellus Shale jobs, the consortium will concentrate first on expanding work-based training opportunities in that industry with a focus on internships that will teach students controls, mechanical, and electrical skills needed by petroleum, process, and industrial maintenance technicians, as well as more general workplace skills.

***Collaboration with Public Workforce System.*** The Bridging the Gap consortium will collaborate with TAA agency partners to strengthen TAA worker recruitment into and retention in applied technology programs. The consortium will work with TAA partners to develop and implement the “Earn College Credits” prior learning assessment system, the [REDACTED] degree auditing and tracking tool, and the BEACON student support model for TAA workers. The consortium will collaborate with regional WIBs to reach the WorkForceWV target of a 10% increase in technical program participants over the next five years. Using a collaboration model developed through another USDOL grant, WIBs will assist with recruitment by identifying and assessing skills of potential students, provide support services by facilitating peer mentoring, assist in job placement and tracking; and be leading participants in sector partnerships. Additionally, the consortium will collaborate with the WV Department of Education, which operates career technical and adult basic education centers, to strengthen manufacturing and mechatronics programs of study alignment, the EDGE credit system, adult basic/developmental education transitions, and data sharing and analysis. Finally, the consortium will collaborate with WorkForceWV, the State workforce agency, which is responsible for TAA programs and AJCs, to coordinate WIB training activities, support sector

partnerships, and assist with LMI and employment outcome data gathering and analysis. These partnerships are evidenced by partnership letters attached to this proposal.

**Linkages with Other Organizations.** The Bridging the Gap consortium has entered into collaboration agreements with the following business-related organizations: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] The consortium has received \$250,000 from the Benedum Foundation to launch new petroleum technology programs through WV Northern and Pierpont. The consortium will work with the CSW to strengthen sector partnerships and the National Energy Training Laboratories (NETL) on Marcellus Shale job skill set identification and will align energy and advanced manufacturing/mechatronics programs of study with assistance from the Southern Regional Education Board. The consortium also will incorporate the following projects and tools developed by other non-profit organizations: (1) the MI's manufacturing skills certification system, as evidenced by the incorporation of NAM-endorsed certifications into the consortium's credentialing system; (2) CEWD's energy generation, transmission, and distribution competency model, as evidenced by its incorporation into the consortium's credentialing system; (3) NCAT's program in course redesign, including its emporium, fully-online, and buffet (personalized) models; and (4) CAEL's LearningCounts service for conducting prior learning assessments. Finally, the consortium will work closely with three labor organizations [REDACTED]

[REDACTED] to implement the RAP/CTC construction partnership, and [REDACTED] will play the critical role of providing peer support for organized labor participants.

## F. Alignment with Previously-Funded TAACCCT Projects

The Bridging the Gap consortium has reached out to and will incorporate the work of a minimum of four previously-funded TAACCCT projects. First, the consortium has been relying on and will continue to rely upon the Pennsylvania College of Technology's ShaleNET US stackable credential model (Round II awardee) as an anchor for Pierpont and West Virginia Northern's new petroleum technology programs. Second, the consortium will review and incorporate the Community College of Denver's new online oil and gas technologies certificate degree content (Round I awardee) into its own online offerings. Third, the consortium will incorporate the Henry Ford Community College consortium's new accelerated advanced manufacturing gateway program (Round II awardee). Fourth, the consortium will implement major components of Mountwest's BEACON student supports model (Round I awardee).

## G. Project Work Plan

**TABLE 12: Project Work Plan\***

\*"Q" refers to grant quarter (Q1 to Q16) in which activity will be completed or deliverable provided to U.S. Department of Labor.

<b>Overarching Strategy:</b> Establish a culture of continuous improvement across consortium institutions						
<b>Activity/Deliverable</b>	<b>Implementer(s)</b>	<b>Costs:</b>		<b>Time:</b>		
Start-up, coordination, continuous improvement, scorecard, and project evaluation activities ▪ Sustainability plan (Q9) ▪ Employment scorecard (Q9)	Bridgmont, WVCCCTE (leads); all BTG institutions (implement change); WVCCTCE (implement plan/ scorecard); accountability/ testing coordinator, external evaluator (evaluate)	Strategy Total:	\$3,210,172	Start Date:	1 October 2013	
		Equipment:	\$0	End Date:	30 September 2017	
		Year 1:	\$1,034,618	Milestones:	Hire/designate project mgmt. team and institution transformation leaders (Q1)	
		Year 2:	\$1,002,046		Initial steering committee meeting (Q1)	
		Year 3:	\$1,013,704		External evaluation contract (Q1)	
		Year 4:	\$159,804		Complete data collection updates, tracking and reporting guide, and training (Q1)	
					Train implementers on agile/lean practices (beginning of Q2)	
					Complete sustainability plan (Q8)	
					Complete employment scorecard (Q8)	
					Project implementation (Q1-16)	
<b>Strategy I:</b> Enhanced and accelerated sector-driven career pathways						
<b>Activity/Deliverable</b>	<b>Implementer(s)</b>	<b>Costs:</b>		<b>Time:</b>		
I.0: Strategy I coordination activities	Pierpont, Bridgmont, Blue Ridge (industry leads); all BTG institutions (implement)	Strategy Total:	\$1,575,907	Start Date:	1 October 2013	
		Equipment:	\$0	End Date:	30 September 2016	
		Year 1:	\$1,042,766	Milestones:	Hire/designate BTG program transformation leaders (Q1)	
		Year 2:	\$530,891		Complete program materials hosting site setup (Q1)	
		Year 3:	\$2,250		Implement overall and career pathways transformations (Q2-12)	
		Year 4:	\$0			

1.1:	Strengthen sector partnerships by engaging employers and hosting state and regional workshops on technical workforce needs ▪ <i>Engagement plan (Q1)</i> ▪ <i>Report on meetings and workshops; workshop materials (All Qs)</i>	WVCCTCE, WorkForceWV (leads); CSW (plan); sector transformation leader, steering committee, WIBs, CSW (coordinate); BTG program coordinators, employers, labor, AJCs, USDOL-OA, workforce dev't, other education providers (participate)	Strategy Total:	\$573,658	Start Date:	1 October 2013
			Equipment:	\$0	End Date:	30 September 2016
			Year 1:	\$200,280	Milestones:	<i>Hire/designate BTG sector transformation leader (Q1)</i>
			Year 2:	\$188,200		<i>WorkForceWV, WIB, technical assistance (TA) contracts (Q1)</i>
			Year 3:	\$185,178		<i>Completion of initial regional p'ship launch events (Q2)</i>
		Year 4:	\$0		<i>Regional p'ship meetings/workshops (Q2-12)</i>	
1.2:	Align career pathways and credentialing system with national standards, regional employer needs, and other education providers and expand certificate and certification offerings ▪ <i>Phase I technical and specialized programs of study (Q5)</i> ▪ <i>Phase II, including K-12-aligned energy and mfg., technical and specialized programs of study (Q9)</i>	Pierpont, Bridgemont, Blue Ridge (program leads); program transformation leaders, steering committee, (coordinate); ShaleNET, NETL, CEWD, MI, AMTEC, CSW (align to nat'l standards); sector p'ships, employers (align with regional needs); SREB/WVDE (align with K-12); BTG BoGs (approve); BTG program coordinators (implement)	Strategy Total:	\$224,750	Start Date:	1 October 2013
			Equipment:	\$0	End Date:	31 March 2016
			Year 1:	\$151,500	Milestones:	<i>Alignment TA contracts (Q1)</i>
			Year 2:	\$73,250		<i>Program teams launch/training (Q2)</i>
			Year 3:	\$0		<i>Complete technical programs of study Phase I redesign (Q4)</i>
		Year 4:	\$0		<i>Institutional approval of Phase I technical programs of study (Q4)</i> <i>Complete Phase I faculty prof. dev't, including certification attainment (Q5)</i> <i>Complete technical programs of study Phase II redesign (Q8)</i> <i>Institutional approval of Phase II technical programs of study (Q8)</i> <i>Complete Phase II faculty prof. dev't, including certification attainment (Q9)</i>	
1.3:	Align construction and adv. mfg. pathways for apprentices and journeypersons ▪ <i>Construction RAP/CTC occup. dev't program of study (Q1)</i> ▪ <i>Adv. mfg program of study (Q3)</i> ▪ <i>RAP/CTC construction mgmt. program of study (Q3)</i>	WVCCTCE (construction lead); Bridgemont (mechatronics lead); RAP/CTC p'ship coordinators; Construction Works (facilitate); RAPs, employers, labor, USDOL-OA (develop), all BTG institutions, (implement) RAPs (implement)	Strategy Total:	\$152,960	Start Date:	1 October 2013
			Equipment:	\$0	End Date:	30 September 2016
			Year 1:	\$101,952	Milestones:	<i>Hire/designate RAP p'ship coordinators (Q1)</i>
			Year 2:	\$51,008		<i>Construction Trades and RAP/CTC p'ship agreements (Q1)</i>
			Year 3:	\$0		<i>Complete adv. mfg program of study (Q2)</i>
		Year 4:	\$0		<i>Complete RAP/CTC construction mgmt. program of study (Q2)</i> <i>Implement RAP pathways (Q3-12)</i>	
1.4:	Strengthen prior learning assessment (PLA) to accelerate credential attainment ▪ <i>Pilot "Earn Credits" web portal (Q5)</i> ▪ <i>Refined web portal (Q9)</i>	Kanawha Valley (lead); PLA coordinator (coordinate); CAEL (train) WVNET (web portal design); WIBs/AJCs, veterans' liaison (promote); BTG mentors, coaches, and counselors (promote and implement)	Strategy Total:	\$287,625	Start Date:	1 October 2013
			Equipment:	\$0	End Date:	30 September 2016
			Year 1:	\$124,250	Milestones:	<i>PLA coordination contract (Q1)</i>
			Year 2:	\$101,750		<i>"Learning Counts" and "Earn Credits" portal contracts (Q1)</i>
			Year 3:	\$61,625		<i>PLA launch/training (Q2)</i>
		Year 4:	\$0		<i>Mentor, coach, counselor, and workforce professional training (Q2, Q4, Q6, Q8)</i> <i>Pilot "Earn Credits" web portal (Q4)</i> <i>Refined "Earn Credits" portal (Q8)</i>	
1.5:	Adjust program schedules to accelerate credential attainment and promote efficiencies ▪ <i>Initial program schedules (Q4)</i> ▪ <i>Refined program schedules (Q7)</i>	Pierpont, Bridgemont, Blue Ridge (program leads); BTG program leaders/coordinators (compress); all BTG institutions (implement)	Strategy Total:	\$15,500	Start Date:	1 October 2013
			Equipment:	\$0	End Date:	30 June 2015
			Year 1:	\$10,500	Milestones:	<i>Efficiency expert contract (Q1)</i>
			Year 2:	\$5,000		<i>Program teams launch/training (Q2)</i>
			Year 3:	\$0		<i>Modify and publish schedules (Q3)</i>
		Year 4:	\$0		<i>Refine and publish schedules (Q6)</i> <i>Implement refined schedules (Q4-12)</i>	
1.6:	Implement compressed/paired developmental education to accelerate credential attainment ▪ <i>Compressed schedules (Q4)</i> ▪ <i>Paired schedules (Q4)</i>	WVCCTCE (lead); BTG dev'tal education leader/coordinators, ABE instructors (compress/pair); all BTG dev'tal education coordinators (implement)	Strategy Total:	\$1,812,849	Start Date:	1 October 2013
			Equipment:	\$0	End Date:	30 September 2016
			Year 1:	\$594,784	Milestones:	<i>Dev'tal FastStart launch/training (Q1)</i>
			Year 2:	\$600,789		<i>Launch compressed boot camps (Q4)</i>
			Year 3:	\$617,276		<i>Launch paired courses (Q4)</i>
		Year 4:	\$0		<i>Implement compressed boot camps/paired courses (Q4-12)</i>	

1.7: Strengthen technical program credit transfer and articulation	<ul style="list-style-type: none"> <li>▪ Transfer/articulation MOUs (Q5)</li> <li>▪ WVUP BAS program (Q5)</li> <li>▪ Initial tech. program crosswalk (Q6)</li> <li>▪ Bachelor's degree program recruitment materials (Q7)</li> <li>▪ Additional transfer/articulation MOUs (Q9)</li> <li>▪ Updated tech. program crosswalks (Q9)</li> </ul>	WVCCTCE (lead); WVUP (BAS design); transfer/articulation coordinator (coordinate); Bridgemont (NAM); Pierpont (FSU, ShaleNET, CEWD); Blue Ridge (CUP); New River (BSC); parties to current agreements, new 2+2 partners, TAA partners (partner and approve); BTG BoGs (approve)	Strategy Total:	\$59,090	Start Date:	1 October 2013
			Equipment:	\$0	End Date:	31 December 2015
			Year 1:	\$45,060	Milestones:	Transfer/articulation coordinator contract (Q1)
			Year 2:	\$14,030		Complete transfer MOU expansion (Q4)
			Year 3:	\$0		Complete and approve transfer/articulation MOUs (Q4)
Year 4:	\$0		Complete WVUP BAS design (Q4) Complete tech. program crosswalks (Q5) Complete WVUP BAS and WVU degree program recruitment materials (Q6) Complete and approve additional transfer/articulation MOUs (Q8) Complete updated tech. program crosswalks (Q8)			

Strategy 2:		Contextualized, online, blended, simulated, and remote academic instruction				
Activity/Deliverable	Implementer(s)	Costs:		Time:		
2.0: Strategy 2 coordination activities	Bridgemont, WVCCTCE (leads), all BTG institutions (implement)	Strategy Total:	\$3,563,853	Start Date:	1 October 2013	
		Equipment:	\$0	End Date:	30 September 2016	
		Year 1:	\$656,563	Milestones:	Hire/designate BTG instructional transformation leaders and course designers (Q1)	
		Year 2:	\$1,197,289		Complete setup of instructional materials hosting site (Q1)	
		Year 3:	\$1,710,001		Implement instructional transformations (Q2-12)	
Year 4:	\$0					
2.1: Implement technology gateway and bridge courses that contextualize technical program instruction and combine cross-cutting technical skills	<ul style="list-style-type: none"> <li>▪ Pilot energy, adv. mfg., and IT gateway courses (Q7)</li> <li>▪ Pilot technology bridge courses (Q9)</li> <li>▪ Refined technology bridge gateway and bridge courses (Q13)</li> </ul>	Bridgemont, Pierpont, Blue Ridge (instruction leads); course designers, program experts, employers (design); Pierpont, WV Northern (energy gateway pilots); Bridgemont, New River (adv. mfg. gateway pilots); Blue Ridge, (IT gateway pilot); Bridgemont, Pierpont, Blue Ridge (bridge pilots); all BTG institutions with relevant programs	Strategy Total:	\$105,500	Start Date:	1 January 2014
			Equipment:	\$0	End Date:	30 September 2016
			Year 1:	\$33,000	Milestones:	Complete energy, adv. mfg., and IT gateway course designs (Q4)
			Year 2:	\$37,000		Complete gateway pilots (Q6)
			Year 3:	\$35,500		Complete bridge course designs (Q6)
Year 4:	\$0		Refine gateway courses and complete prof. development for implementing institutions (Q7) Complete bridge pilots (Q8) Refine bridge courses and complete prof. dev't for implementing institutions (Q9) Implement fully gateway and bridge courses (Q10-12)			
2.2: Implement contextualized instruction for apprentices and journeypersons pursuing occupational development, construction mgmt., and mechatronics credentials	<ul style="list-style-type: none"> <li>▪ Contextualized construction trades and mechatronics courses (Q5)</li> <li>▪ Refined contextualized construction trades and mechatronics courses (Q13)</li> </ul>	WVCCTCE (construction lead); Bridgemont (mechatronics lead); RAP/CTC p'ship coordinators, Construction Works (coordinate); course designers, RAP instructors, labor, [redacted], USDOL-OA (design); all BTG institutions, [redacted], RAPs (implement)	Strategy Total:	\$1,548,561	Start Date:	1 November 2013
			Equipment:	\$0	End Date:	30 September 2016
			Year 1:	\$453,728	Milestones:	Complete construction trades technical writing, math, and computer literacy course redesign (Q2)
			Year 2:	\$535,355		Complete [redacted] mechatronics course design (Q4)
			Year 3:	\$559,478		Complete redesign of construction trades communications and natural sciences courses and design of construction mgmt. modules/courses (Q4)
Year 4:	\$0		Complete initial course pilots (Q5) Implement RAP/CTC partnerships (Q3-12)			
2.3: Expand work-based training via RAPs and learn-and-earn internship program	<ul style="list-style-type: none"> <li>▪ Engagement plan (Q3)</li> <li>▪ Report on meetings and workshops (All Qs)</li> </ul>	WVCCTCE, Bridgemont (RAP leads); WVCCTCE (learn-and-earn lead); learn-and-earn coordinator (coordinate); industry steering committee, sector partnerships (facilitate); all BTG institutions, RAPs, employers, USDOL-OA (implement)	Strategy Total:	\$145,589	Start Date:	1 October 2013
			Equipment:	\$0	End Date:	30 September 2016
			Year 1:	\$69,090	Milestones:	Hire/designate learn-and-earn coordinator (Q1)
			Year 2:	\$40,005		Complete engagement plan (Q2)
			Year 3:	\$36,494		Complete initial outreach to all sector partnerships and industry associations (Q4)
Year 4:	\$0		Implement work-based training (Q1-12)			

2.4:	Implement capstone course simulations that allow students to demonstrate mastery of foundational, industry, and occupation-related competencies and entrepreneurship skills <ul style="list-style-type: none"> <li>▪ Pilot petroleum technology, mechatronics, and IT capstone (Q5)</li> <li>▪ Refined capstone simulations/games (Q6)</li> <li>▪ Final capstone simulations/games courses (Q13)</li> </ul>	Bridgemont, Pierpont, Blue Ridge (instruction leads); course designers, program experts, employers (design); Pierpont, WV Northern (petroleum technology pilots); Bridgemont, New River (mechatronics pilots); Blue Ridge (IT pilot); all BTG institutions with relevant programs (implement)	Strategy Total:	\$83,300	Start Date:	1 January 2014
			Equipment:	\$0	End Date:	30 September 2016
			Year 1:	\$41,500	Milestones:	Complete initial dev't of petroleum technology, mechatronics, and IT capstone simulations/games (Q4)
			Year 2:	\$19,700		Complete pilot capstone simulations/games (Q6)
			Year 3:	\$22,100		Refine capstone simulations and provide training in preparation for expanded implementation (Q8)
Year 4:	\$0		Implement capstone simulations/games (Q9-12)			
2.5:	Expand online, and blended technical courses <ul style="list-style-type: none"> <li>▪ Online energy, adv. mfg., and IT modules/courses (Q5)</li> <li>▪ Online contextualized RAP/CTC and "Bridge" modules/courses (Q8)</li> <li>▪ Refined online modules/courses (Q13)</li> </ul>	Bridgemont, Pierpont, Blue Ridge (instructional leads); WVCCTCE (construction RAP lead); instructional leaders/coordinators, RAP/CTC p'ship coordinators, course designers, employers (design); all BTG institutions with relevant programs, [redacted] RAPs (implement)	Strategy Total:	\$269,500	Start Date:	1 January 2014
			Equipment:	\$0	End Date:	30 September 2016
			Year 1:	\$96,000	Milestones:	Incorporate TAACCT-developed and other online energy, adv. mfg., and IT modules/courses (Q4)
			Year 2:	\$113,500		Complete online conversions of contextualized RAP/CTC courses (Q8)
			Year 3:	\$60,000		Complete online/blended learning conversions of "Bridge" courses (Q8)
Year 4:	\$0		Implement shared, online, and blended technical courses (Q4-12)			
2.6:	Expand collaborative and remote technical program offerings and courses <ul style="list-style-type: none"> <li>▪ Remote site energy, mechatronics, and IT programs of study and courses (Q5)</li> <li>▪ Refined/expanded remote site programs of study and courses (Q9)</li> <li>▪ Final remote site technical programs of study and courses (Q13)</li> </ul>	Pierpont, WV Northern (energy partners); Bridgemont, Southern WV (mechatronics partners); Blue Ridge, local high school (mechatronics partners); Blue Ridge, Mountwest (IT partners); all partners, employers (design); all partners (implement)	Strategy Total:	\$1,578,054	Start Date:	1 December 2013
			Equipment:	\$1,162,600	End Date:	30 September 2016
			Year 1:	\$114,614	Milestones:	Hire remote laboratory instructors (Q2)
			Year 2:	\$148,679		Complete initial remote course collaboration agreements (Q2)
			Year 3:	\$152,161		Complete purchase and set-up of networked digital classrooms and installation of technical program equipment (Q3)
Year 4:	\$0		Complete development of remote programs of study and course collaborations (Q4)			
						Refine remote programs of study and course collaborations (Q8)
						Implement remote programs of study and course collaborations (Q4-12)

Strategy 3: Expanded and individualized student support strategies						
Activity/Deliverable	Implementer(s)	Costs:	Time:			
3.0: Strategy 3 coordination activities	Mountwest, WVCCCTE (leads); all BTG institutions (implement)	Strategy Total:	\$1,559,456	Start Date:	1 October 2013	
		Equipment:	\$0	End Date:	30 September 2016	
		Year 1:	\$505,660	Milestones:	Hire/designate BTG student support and technology transformation leaders and institution technology coordinators (Q1)	
		Year 2:	\$519,676		Implement student support transformations (Q2-12)	
		Year 3:	\$534,120			
Year 4:	\$0					
3.1: Implement BEACON peer coaching and counseling student supports model <ul style="list-style-type: none"> <li>▪ Peer coach online training modules (Q7)</li> </ul>	Mountwest (lead); student support transformation leader, institution transformation leaders (coordinate); peer coaches and counselors (implement) [In some cases WIB/AJC and [redacted] staff will serve as peer coaches.]	Strategy Total:	\$4,870,804	Start Date:	1 January 2014	
		Equipment:	\$0	End Date:	30 September 2016	
		Year 1:	\$1,102,460	Milestones:	Complete initial hiring of peer coaches and counselors (Q2)	
		Year 2:	\$1,861,904		Complete initial training of peer coaches and counselors (Q3)	
		Year 3:	\$1,906,440		Launch peer coaching and counseling (Q3)	
Year 4:	\$0		Complete online peer coach training modules (Q6)			
						Implement BEACON student support model; ongoing training (Q4-12)

3.2:	Improve career planning by implementing web-based academic planning, advising, and degree auditing <ul style="list-style-type: none"> <li>▪ Career planning needs assessment (Q3)</li> <li>▪ Initial career planning resources (Q3)</li> <li>▪ Career planning resources – phase I updates (Q6)</li> <li>▪ Career planning resources – phase II updates (Q10)</li> <li>▪ Final career planning resources (Q13)</li> </ul>	KVCTC (lead); career planning coordinator; technology transformation leader (coordinate); institution transformation leaders and technology coordinators (implement)	Strategy Total:	\$204,594	Start Date:	1 October 2013
			Equipment:	\$0	End Date:	30 September 2016
			Year 1:	\$91,890	Milestones:	Hire/designate career planning coordinator (Q1)
			Year 2:	\$76,310		Complete career planning system needs assessment (Q2)
			Year 3:	\$36,394		Complete initial inputting of program of study information and linking student information systems (Q3)
Year 4:	\$0		Complete implementation training (Q4) Complete update of program of study information based on Phase I changes (Q5) Complete update of program of study information based on Phase II changes (Q9) Implement ██████████ ongoing training (Q3-12)			
3.3:	Increase student recruitment by targeting veterans, TAA workers, apprentices and journeypersons, EDGE students, and people with non-credit workforce instruction, and with technical program credits but no credential <ul style="list-style-type: none"> <li>▪ Technical program student recruitment plan (Q3)</li> <li>▪ Targeted recruitment/marketing materials and web portals (Q4)</li> <li>▪ Final targeted recruitment/marketing materials and web portals (Q8)</li> </ul>	Mountwest, WVCCCTE (leads); student support transformation leader (coordinate); program, veterans', and student support coordinators, WIBs/AJCs, ██████████, WVANG (plan); all BTG institutions, veterans' coordinator, ██████████, WIBs/AJCs, peer coaches (implement)	Strategy Total:	\$605,658	Start Date:	1 October 2013
			Equipment:	\$0	End Date:	30 June 2016
			Year 1:	\$278,280	Milestones:	Hire/designate veterans' coordinator (Q1)
			Year 2:	\$215,200		Complete technical program student recruitment plan (Q2)
			Year 3:	\$112,178		Complete preparation of targeted recruitment and marketing materials; incorporate into (L)EarnMoreWV and CFWV web portals (Q3)
Year 4:	\$0		Complete initial EDGE, non-credit, and non-credentialed targeted recruitment (Q4) Refine targeted recruitment and materials and web portals (Q7) Ongoing recruitment of targeted groups (Q2-10)			
3.5:	Implement data analytics to improve student tracking, course completion, and overall retention and completion rates <ul style="list-style-type: none"> <li>▪ Student data-gathering and reporting protocols (Q5)</li> <li>▪ Course analytics protocols (Q9)</li> <li>▪ Retention analytics protocols (Q13)</li> </ul>	WVUP (lead); technology transformation leader, WVNET (coordinate); institution technology coordinators (technology systems); all BTG institutions, including faculty and staff (implement)	Strategy Total:	\$822,000	Start Date:	1 October 2013
			Equipment:	\$0	End Date:	30 September 2016
			Year 1:	\$277,000	Milestones:	Retention analytics contract (Q1)
			Year 2:	\$272,500		Complete student data collection, dissemination, and intervention gap analysis (Q2)
			Year 3:	\$272,500		Complete Phase I (data-gathering/reporting) implementation (Q4) Complete Phase II (course analytics) implementation (Q8) Complete Phase III (overall retention analytics) implementation (Q12)
Year 4:	\$0					
3.6:	Implement comprehensive job placement system that markets programs, credentials and participants and works with participants at program exits <ul style="list-style-type: none"> <li>▪ Job placement marketing plan (Q4)</li> <li>▪ Job placement marketing materials (Q7)</li> </ul>	WVCCTCE (lead); learn-and-earn coordinator (coordinate); BTG institutions, WIBs, industry steering committee, employers (plan and implement)	Strategy Total:	\$220,499	Start Date:	1 October 2013
			Equipment:	\$0	End Date:	30 September 2017
			Year 1:	\$23,000	Milestones:	Complete job placement marketing plan (Q3)
			Year 2:	\$90,005		Implement job placement plan (Q4-16)
			Year 3:	\$86,494		
Year 4:	\$30,000					

### III. Outcomes and Outputs

#### A. Analysis of Outcome Projections

**Outcome Projections.** The outcome projections in Table 13 include participants expected to start *and finish* their TAACCCT-program of study during the grant performance period:

**TABLE 13: Outcome Projections**

Outcome Measures		Targets for All Participants				
	Outcome	Year 1	Year 2	Year 3	Year 4	Total
1	Total Unique Participants Served	937	376	71		1,384
2	Total Number of Participants Completing TAACCCT-Funded Program of Study	26	250	531		807
3	Total Number of Participants Still Retained in Their Program of Study or Other TAACCCT-Funded Program	5	52	109		166
4	Total Number of Participants Completing Credit Hours	853	342	65		1260
5	Total Number of Participants Earning Credentials	27	258	549		834
6	Total Number of Participants Enrolled in Further Education	3	28	58		89
7	Total Number of Participants Employed After TAACCCT-funded Program of Study Completion	22	203	429	32	686
8	Total Number of Participants Retained in Employment After Program of Study Completion	20	183	386	29	618
9	Total Number of Those Participants Employed at Enrollment Who Received Wage Increase Post-Enrollment	3	31	57	4	95

**Targets.** Bridging the Gap consortium presidents and academic and student affairs leaders worked with the WVCCTCE to set these targets. Enrollment targets are based on historic enrollment data, employer needs, program capacity (e.g., qualified faculty, space), and WorkForceWV's goal of increasing technical credential attainment by 10%. Program retention and completion targets are based on WVCCTCE master plan targets and align with Complete College America recommendations. Credential attainment projections will result in members more than doubling present rates to 58%, but are consistent with results at high-performing institutions used as Bridging the Gap models and have been exceeded in selected consortium programs, such as Bridgemont's accelerated diesel technology and Blue Ridge's electrical engineering technology programs. Modest increases to 11% for technical program students pursuing additional education are projected because transfer options, while limited, are increasing and participants will be made aware of them. The consortium projects that 91% of graduates who do pursue further education will enter the workforce by the end of the first full quarter after credential attainment. While an aggressive goal, members believe stronger employer relationships, improved career pathways, more work-based training, and Marcellus Shale development will lead to high levels of employment. The consortium projects that 90% of graduates who find employment will remain employed, which is consistent with current

experience. Given that many incumbent workers benefitting from training through this project will be apprentices and journeypersons whose wages are set by union contract, it is difficult to project post-enrollment wage increases.

**Balance of Deliverables and Outcomes.** The Bridging the Gap consortium proposes to produce several large and important deliverables including: (1) seamless, stackable, and latticed industry-driven energy, advanced manufacturing, and IT career pathways; (2) a new series of contextualized and online courses that allow journeypersons to earn associate's degrees; (3) new gateway, bridge, and capstone courses; (4) a new web-based, technical-program-focused prior learning assessment system; and (5) new predictive course and retention analytics protocols and systems focused on improving course and credential completion. These changes will redound to the benefit of far more than the estimated 1,384 students included in outcome projections, including students nationally who will benefit from various aspects of this work; future technical program students, who may even start programs during the grant performance period, but not complete them in time to be considered as part of the cohort; and other WV CTC students likely to benefit from improved developmental education, career planning, coaching, and counseling.

## **B. Tracking and Reporting Outcome Measures**

**Existing Tracking Procedures.** As institutions within a single higher education system, all Bridging the Gap consortium members track and report outcomes in a nearly identical manner.

At the institution level, members collect almost all student, program, course, and outcome data [REDACTED]. Simple data extracts allow institutions to identify students, their programs of study, the courses they take and complete, whether they have earned all credit hours needed to earn a credential, and whether they indeed have been awarded that credential. Many members also collect and analyze employment outcome data, but not

necessarily as defined by ETA (e.g., entering employment in the quarter after the quarter of program exit). No member currently has a system in place for determining whether incumbent workers received pay increases post-enrollment. Each institution has a designated institutional researcher who is responsible for ensuring that accurate data are collected and reported.

At the state level, WVCCTCE requires all institutions to provide detailed student, program, course, and outcome data for review, analysis, and reporting, as well as inclusion in a longitudinal data system. To ensure data-gathering efficiency and accuracy, WVCCTCE and consortium members have established uniform data file specifications, systems for transferring data at pre-established times, scripts to facilitate the extraction of data [REDACTED], and data integrity checks that result in the rejection of data files if data are not reported uniformly or appear not to be correct. The primary data transfer occurs in October of each year. WVCCTCE can use this system to report on all educational outcomes at the project, institution, and program levels in a manner that is consistent with ETA's outcome definitions. WVCCTCE also has an agreement with WorkForceWV to use state unemployment insurance data to report generally on employment outcomes, including whether a participant was employed in any quarter, what he or she earned during that quarter, and whether the employer changed or the person became unemployed. At the state level, all data are stored in a [REDACTED] warehouse with robust reporting capabilities. WVCCTCE relies on a ten-person staff to handle data collection, analysis, and reporting, but they serve both two- and four-year institutions. Bridgemont will employ an accountability coordinator and rely on the WVCCTCE data collection system to meet annual outcome reporting requirements.

**Plan to Address Tracking Gaps.** The consortium, in partnership with WVCCTCE and regional WIBs, will address data gathering and tracking gaps. First, WVCCTCE will work with consortium institutions to gather and code the following data [REDACTED]:

(1) whether a student reports being an incumbent worker; (2) whether a student is a Bridging the Gap cohort participant; and (3) whether a student makes the BEACON completion commitment. Second, WVCCTCE will incorporate these data elements within its file specification system to ensure accurate outcome reporting. Third, WVCCTCE will work with WorkForceWV to determine whether unemployment insurance data is sufficiently robust to provide accurate job retention and post-enrollment wage increase information and timely employment outcome reporting. At present, WVCCTCE receives this information annually, and there is at least a six-month lag between the latest calendar quarter of available data and the quarter in which the data are received. If the data are not sufficiently robust and/or timely, WVCCTCE will renew a partnership, used to meet reporting requirements for another ETA grant, whereby regional WIB staff gathered and reported this information by verifying employment outcomes with project participants. The CTC/WIB partnership is relatively low-cost, produces timely and accurate employment outcome data, and has strengthened job placement collaboration. Funds for WIBs to perform this work and job placement work have been included in this proposal. Finally, Bridgemont will develop and disseminate, in collaboration with the program evaluator, a project tracking and reporting guide and provide initial and followup training sessions on tracking and reporting to ensure that everyone knows what data need to be gathered and reported, key definitions, and deadlines. All of this will be done during the first quarter of grant performance period. Additionally, project- and institution-level “mini-sprints,” discussed earlier, approximately two weeks after the end of each quarter will result in reports that address what has been accomplished, what remains to be accomplished, and barriers to success. The accountability coordinator will be primarily responsible for data-gathering and quarterly and annual reporting.

### **C. Using Data for Continuous Improvement**

**Plans for Formal Data Reviews.** The Bridging the Gap consortium is proposing to implement an agile/lean iterative project management model that breaks down projects into manageable tasks that can be accomplished during 2- to 4-week sprints. Sprint teams will consist of 4 to 8 people with sufficient (often cross-functional) skills to produce sprint deliverables during the sprint period. This project will result in four opportunities to formally review data. First, sprint teams will test all work being produced during sprints, whether it be by having a subject matter expert review a new instructional module or a current student take a new assessment. The accountability/testing coordinator will ensure that formative assessment is incorporated into every sprint. Second, each sprint will end with a sprint review meeting at which the sprint team presents its work to customers, in this case a steering committee member or employer, a project management team member, and a non-team member likely to use that work later. Third, all products created or modified during sprints will be made available for use immediately on a public content hosting site and include a system for users to provide feedback. Fourth, approximately two weeks after each quarter ends, consortium-level and institution-level project review mini-sprints will be conducted. The quarterly mini-sprints will review work done, work remaining to be done, current student outcomes, and barriers to project success moving forward. At the consortium level, mini-sprints will involve steering committee members, consortium-level project management staff, and project leaders. At the institution-level, mini-sprints will involve, at a minimum the institution project leader, institution project champion, technical program and developmental education faculty, lead student services office, and chief workforce office. Fifth, quarterly meetings with the external evaluator will

result in additional improvement tasks. Because this project is being implemented iteratively, identified improvement opportunities will be prioritized and incorporated into later sprints.

**Sustainability Plan.** The Bridging the Gap consortium will work aggressively to sustain this project beyond the grant period and expand it into other program areas, which will depend on the project's effectiveness at removing cultural, policy, and financial barriers to change. In terms of culture, the consortium will strive to become more student- and employer-focused institutions. The work plan will accomplish this by providing large amounts of training and technical assistance, creating communities of practice to support change, and engaging students and employers. In terms of policy, all institutions and WVCCTCE will review laws, rules, and policies carefully and modify them as needed to support student- and employer-focused change. It is likely that some institutions will need to modify policies related to the provision of student services and internal program and curriculum review to ensure employer engagement. Financial sustainability is the most challenging issue. The first concern is state-level performance funding. WV is considering a progressive performance funding model that rewards institutions for each student who earns a certificate degree or associate's degree and provides even larger rewards if the student needs developmental education or completes a high-cost technical program. The Legislature has appointed a Select Committee on Outcomes-based Funding models to study the benefits of such a model during its 2013 interim session. The second concern is employer support. Employers have been funding lynchpins for the state's most successful technical programs. Recognizing this, WVCCTCE and consortium members championed legislation and funding to match employer equipment donations and "learn-and-earn" wage payments and have the employer community at this initiative's heart. To ensure this support continues, BTG partners will devote significant time and resources to strengthen regional industry partnerships.

## IV. Organizational Profile and Project Management

**Effective Project Management and Staff.** Bridgemont CTC will employ a project manager, who will report to Bridgemont’s president and WVCCTCE’s chancellor; an agile/lean project leader, an accountability/testing leader, and a grant manager to oversee this project.

Table 14 summarizes their roles and qualifications or position requirements.

**TABLE 14: Selected Project Management Staff**

Position/Name	Qualifications or Position Requirements
<b>Title:</b>	<b>Role:</b>
Project manager	Provide overall project management under supervision of Bridgemont President and WVCCTCE Chancellor; oversee implementation, monitoring, and administration of project
<b>Name:</b>	<b>Qualifications/Position Requirements:</b>
[REDACTED]	[REDACTED]
<b>Title:</b>	<b>Role:</b>
Agile/lean project leader	Ensure projects are done on time and with best possible quality; maintain project backlog and work with project transformation leaders on sprint planning, implementation, and review
<b>Name:</b>	<b>Qualifications/Position Requirements:</b>
To be determined	<i>Education:</i> Bachelor’s degree in applied science, with an emphasis in project mgmt. or lean/agile certification <i>Experience:</i> At least 5 years managing large projects (\$1M+ annually) with multiple deliverables <i>Competencies:</i> Task mgmt., including diagnostic information gathering, analytical thinking, results orientation and attention to detail; people mgmt., including fostering teamwork and performance mgmt.; and communication, including impact awareness, influence skill, interpersonal awareness, concern for clarity, and self confidence <i>These qualifications were identified in collaboration with lean/agile employer partners, who will assist with hiring.</i>
<b>Title:</b>	<b>Role:</b>
Accountability/testing leader	Develop and implement continuous improvement protocol that includes productive/deliverable testing and redesign, serve as primary liaison to external evaluator, and conduct research and analysis
<b>Name:</b>	<b>Qualifications/Position Requirements:</b>
To be determined	<i>Education:</i> Master’s degree or higher, with an emphasis in project mgmt., lean/agile certification, or statistics. <i>Experience:</i> 5 years progressive experience in institutional effectiveness or institutional research. Experience working on a comprehensive research project and in a community college setting preferred. Strong interpersonal skills and ability to translate complex project goals into measurable tasks and activities. <i>These qualifications are consistent with those of high performing institutional researchers.</i>
<b>Title:</b>	<b>Role:</b>
Grant manager	Provide grant performance and fiscal reporting support; serve as programmatic link to administrative systems
<b>Name:</b>	<b>Qualifications/Position Requirements:</b>
[REDACTED]	[REDACTED]

The consortium will use a program of excellence model to oversee and coordinate major project initiatives. Pierpont, at the epicenter of Marcellus Shale development, will lead energy program and instructional transformations. Bridgemont, the only ABET-accredited institution, will lead advanced manufacturing and mechatronics transformations. Blue Ridge, located in close proximity to numerous government data centers, will lead IT transformations. WVUP, the only CTC with four-year programs and the largest number of online offerings, will oversee technology projects in collaboration with WVNET, WV's higher education technology agency. Mountwest, recipient of a Round I grant, will lead consortium-wide implementation of BEACON wrap-around student supports. WVCCTCE, coordinating agency for WV's CTC system, will oversee sector transformations. Table 15 summarizes roles of certain key staff:

**TABLE 15: Selected Project Transformation (Community of Practice) Leaders**

<b>Titles:</b>	<b>Roles:</b>
Program transformational leaders (2 of 3 ready to start)	<p>Lead career pathways alignment efforts, including alignment with national standards and regional needs, as was as efforts to lead technical programs instructions</p> <p><i>Energy:</i> To be determined</p> <ul style="list-style-type: none"> <li>• <i>Education:</i> Master's degree in applied science or applied engineering</li> <li>• <i>Experience:</i> 5 years serving as a faculty member in area of focus, preferably at community college; experience integrating cooperative education experiences into applied technology programs and K-12 and community college career pathway development</li> </ul>
<b>Title:</b>	<b>Role:</b>
BEACON student support transformation leader (to be determined)	<p>Facilitate institution implementation of BEACON student support model, including BEACON student commitments and wrap-around peer coaching and counseling</p> <ul style="list-style-type: none"> <li>• <i>Education:</i> Master's degree in student development, student services, enrollment management or adult education</li> <li>• <i>Experience:</i> 6 years of relevant academic experience in instruction and student support services; preference given to individuals with BEACON implementation experience</li> </ul>
<b>Title:</b>	<b>Role:</b>
Technology/analytics transformation leader	<p>Facilitate technological implementation of career planning and prior learning assessment system, as well as course and data analytics initiatives</p> <ul style="list-style-type: none"> <li>• [REDACTED]</li> </ul>
<b>Title:</b>	<b>Role:</b>
Sector p'ship/ workforce transformation leader (to be determined):	<p>Develop and implement statewide and coordinate regional workforce plan and activities; primary liaison with workforce system, employers, industry, and labor groups; oversee learn-and-earn coordinator</p> <ul style="list-style-type: none"> <li>• <i>Education:</i> Master's degree in adult education or curriculum development; relevant years of experience may substitute for the educational requirement.</li> <li>• <i>Experience:</i> 5 years experience working with employers in an educational setting; experience aligning workplace skills with academic instructional content; effective communicator</li> </ul>

To ensure effective programmatic implementation at the institution level, each institution will employ a transformation leader, as well as coordinators for various career pathways, academic

instruction, and student support strategies. Table 16 identifies institutions that have pre-designated a project leader:

**TABLE 16: Pre-designated Institution Transformation Project Leaders**

Institution	Name/Qualifications (if Available to Start on October 1)
Bridgemont CTC/ Kanawha Valley CTC	[REDACTED]
Blue Ridge CTC	[REDACTED]
Eastern WV CTC	[REDACTED]
WV Northern CC	[REDACTED]
WVU at Parkersburg	[REDACTED]

For unfilled positions, job postings will be issued within 10 days of the grant award with initial interviews held no later than 30 days thereafter and positions filled no later than 30 days later.

**Management Structures.** Bridgemont was chosen to lead this project for several reasons. First, it is the only institution that historically has been a strong technical education provider. Second, it has been recognized as an Aspen Institute College of Excellence, in large part because of its success at getting students to complete programs of study. Third, it has successfully managed several ETA-funded projects and is familiar with program requirements.

Bridgemont will ensure programmatic, fiscal, and administrative progress by using a transparent project management and reporting system. Bridgemont will implement an agile/lean management structure to manage the project within and across consortium institutions. The first structural component is the sprint. With assistance from the agile/lean project leader, product managers (transformation leaders in this context) will break down large projects into elements, commonly called “stories,” that can be completed by teams of 4 to 8 people during the sprint period. During sprints, team members will meet, online in many cases, daily for 5 to 10 minutes to report on what they have done and are planning to do, as well as any

impediments to their progress that a designated team facilitator will focus on removing promptly. Daily contact will be especially important for cross-functional teams. Team members often will work in pairs, particularly on program and curriculum design. For cross-institutional teams where face-to-face pairings are not feasible, team members will use [REDACTED] [REDACTED], and similar collaboration tools, as needed. Importantly, a story will not be considered complete unless it has undergone some form of testing agreed upon by the transformation leader and sprint team. During sprint reviews, the product manager and sprint team members will present their work to “customers,” who will provide feedback.

For tracking progress, Bridgemont will use a real-time, online [REDACTED] tracking system. [REDACTED] will be created for the overall project, each institution, and each strategy with [REDACTED] cards in turn created for deliverables and then broken down further into “stories” to be accomplished during sprints. [REDACTED] staff will monitor progress in real time and through various stages (e.g., backlog, ready, doing, done). Additionally, they will serve as “customers” during sprint reviews, sometimes in person and sometimes online, to ensure that teams are meeting project and sprint goals and meeting employer needs. Third, one deliverable produced during end-of-quarter mini-sprints will be a report on work done, work to be done, and barriers to completion, which will be used to satisfy ETA quarterly reporting requirements. Finally, WVCCTCE will lead efforts to ensure that student outcome data are available for formative assessment and reporting, both at the institution level and consortium-wide.

[REDACTED], will ensure that administrative and fiscal systems work effectively by: (1) assisting with reporting guide development; (2) providing training to programmatic, administrative, and fiscal staff on USDOL requirements during the first quarter and at least every six months thereafter; and (3) ensuring

that institutions use similar coding systems to track grant encumbrances and expenditures so that financial data can be extracted easily at any time, not just quarterly.

Employers and industry groups will participate in management as follows: (1) a core group will serve on a project steering committee. Steering committee members individually will be expected to serve as “customers” during sprint reviews where team member summarize their work. Employers also will be encouraged to allow key employees to participate fully on sprint teams and as mid-sprint testers of products (e.g., a capstone course module). (2) Steering committee members will meet each quarter for mini-sprint reviews. TAA, workforce, and veterans representatives also will be encouraged to participate actively on teams, but, where not feasible, will serve as product testers and customers during sprint reviews (e.g., to review new career planning system improvements). Consortium presidents will participate in management by forming a cross-institutional implementation committee to assess progress and address solutions to significant project barriers. Chancellor [REDACTED] will lead the implementation committee. The attached organizational chart summarizes the project management structure.

**Effective systems and processes.** All consortium members are state agencies, and as such, are governed by state administrative, financial, and procurement rules. They also participate in the State single audit, as well as concomitant federal grant audit. These audits have produced no material weaknesses or other findings and no questioned costs for any consortium institution. To ensure timely student outcome reporting, the consortium will rely on data collected and stored in WVCCTCE's data warehouse. For performance reporting, the consortium will use quarterly mini-sprints. And for financial reporting, the consortium will rely on [REDACTED] [REDACTED] which all institutions use.

Consortium members manage large U.S. Departments of Labor, Education and Energy and National Science Foundation grants, among others. In all cases, reports have been submitted accurately and in a timely matter. The most recent ETA grant, which WVCCTCE managed for WorkForceWV, was very successful programmatically in expanding green energy programs and fell just short of serving the number of people projected initially; and in most cases, actual outcomes exceeded projected outcomes, with more participants successfully completing training than initially projected. Bridgemont will identify barriers to completion and use initiative-focused sprints for initiatives that begin to fall behind.

BTG partners regularly report on various federal and state grants in a timely manner and have systems in place for gathering and submitting various data files to WVCCTCE. In particular, the grant manager is familiar with USDOL participant and financial reporting systems. To ensure timely and accurate performance reporting, institutions will be required to submit project updates within 15 business days of the end of each quarter; BTG partners will use the current WVCTCS student-level data collection process (designating BTG participants using a new coding system) to meet annual performance reporting requirements. With the performance reports, institutions also will be required to submit financial reports showing actual expenditures and accrued obligations, which will be reconciled against actual draw-downs each quarter consistent with previously established protocols.

Bridgemont and its partners must comply with strict state and higher education purchasing laws and regulations that comply with all OMB and USDOL requirements. State law generally requires that all contracts exceeding \$25,000 be bid through a formal competitive bidding process and that at least three bids be obtained for all contracts over \$1,000. In rare cases where sole sourcing is appropriate, state law requires that a detailed justification be prepared and approved by each institution's chief procurement officer. To facilitate procurement of

certain frequently purchased large items, the state permits institutions to buy using certain competitively bid federal and state open-end contracts. Compliance with financial and procurement laws and rules is audited regularly by the WV State Auditor and WV's Legislative Auditor. To ensure that institutions strictly follow procurement requirements, [REDACTED] [REDACTED] will provide fiscal and procurement officers with a refresher course on those requirements; require that a complete copy of all equipment procurement files be provided to Bridgemont for its review before equipment is purchased; and verify that equipment, once purchased, is being used for its intended purpose.

### **Conclusion**

Bridgemont CTC was named after the New River Gorge Bridge. Starting and ending on mountain plateaus almost 900 feet above a whitewater river bed, the 3,000-foot-wide bridge allows hundreds of thousands of travelers to traverse an otherwise impassible gap annually. Through the Bridging the Gap initiative, Bridgemont CTC and its consortium partners hope to bridge comparable career pathways, academic instruction, and student support gaps for TAA workers, non-traditional students, and others and, in the process, transform their students' lives forever.

# **APPENDIX 2**

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## WV BRIDGING THE GAP CONSORTIUM PROGRAM EVALUATION PLAN

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### Introduction

The evaluation will use a mixed-method evaluation plan and a quasi-experimental design to evaluate the effectiveness of the project. An interim report will be delivered by July 15, 2015. A final evaluation report will be delivered by September 30, 2017. The consortium is able to transmit personally identifiable data to the third-party evaluators using a secure data system. Indeed its proposed evaluators already have access to much consortium data that will be needed for their analysis.

### I. Participant Impact and Outcomes

The program evaluation will address four research questions:

1. What is the difference in persistence, completion, and employment outcomes among students who utilize program services and a rigorously matched sample of students who do not?
2. How well do programs effectively leverage partnerships, including Registered Apprenticeship Program partnerships, to deliver programs with fidelity?
3. To what extent do programs effectively use career pathways, academic instruction, and student support strategies to improve student outcomes?
4. To what extent do programs efficiently use fiscal and human resources to accomplish program goals?

The evaluation will utilize mixed methods.<sup>1</sup> Quantitatively, the project will be measured using indicators such as enrollment, resource use, and retention, graduation, and employment rates. Qualitatively, the project will be evaluated using measures such as student engagement reports, program knowledge, and college navigation confidence and ability.

WV higher education securely collects extensive student data. The evaluation will use that data to examine the impact of project strategies on enrollment, retention, completion, and employment outcomes. Program evaluators will also report on implementation activities and

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<sup>1</sup> Johnson, R.B. & Onwuegbuzie, A.J., "Mixed Methods Research: A Research Paradigm Whose Time Has Come," *Educational Researcher*, Oct. 2004, vol. 33, no. 7 14-26. Tashakkori, A. & Teddlie, C., "*Handbook of Mixed Methods in Social & Behavioral Research*." Thousand Oaks: Sage, 2003.

timeline, partnership collaboration and resource allocation. The evaluators also will work with the Center for Community College Student Engagement to tailor the CCSSE survey to compare students enrolled in targeted programs and the rest of the student body to determine the impact of implemented strategies on academic and social engagement. This precludes the need for evaluators to interact directly with research participants to collect evaluation data. Evaluators will enter into a disclosure agreement with WV higher education and others.

The initial quantitative evaluation will utilize cross tabulation and ANOVA analysis,<sup>2</sup> which will provide immediate feedback on key indicators by treatment and control group. The evaluators will use binary logistic regression (preferred method to model a dichotomous yes/no outcome<sup>3</sup>) and hierarchical linear modeling (HLM) to answer the summative research question, “What is the difference in success rates (e.g., graduation, employment) among program students and a rigorously matched sample of students.” HLM is an analysis technique used when researchers have nested data and are interested in understanding the influence this nesting has on a given outcome.<sup>4</sup> Finally, by adding a propensity score analysis, the cohort comparison for this evaluation will be enhanced.<sup>5</sup>

While random assignment is the experimental design gold standard,<sup>6</sup> it is infeasible because of small program enrollments.<sup>7</sup> Cohort comparisons will be used and treatments will be tested for impact cohort progress. The comparison group will be derived using a propensity score analysis,<sup>8</sup> which allows researchers to construct matched groups that balance observed

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<sup>2</sup> Hartwig, F. & Dearing, B.E., “*Exploratory Data Analysis*.” Beverly Hills, CA: Sage, 1979.

<sup>3</sup> Cohen, J., Cohen, P., West, S.G. & Aiken, L.S., “*Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*” (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates, Inc., 2003.

<sup>4</sup> Raudenbush, S.W. & Bryk, A.S., “*Hierarchical Linear Models: Applications and Data Analysis Methods*” (2nd ed.). Thousand Oaks, CA: Sage, 2002.

<sup>5</sup> Rosenbaum, P.R. & Rubin, D.B., “*Balanced Subclassification in Observational Studies Using the Propensity Score: A Case Study*.” Wisconsin Univ-Madison Mathematics Research Center, 1983.

<sup>6</sup> Rosenbaum, P.R., “*Observational Studies*” (2nd ed.). The Wharton School, Dept. of Statistics, Univ. of Pennsylvania, 2002.

<sup>7</sup> Heckman, J.J. & Smith, J., “*Evaluating the case for randomized social experiments*,” *Journal of Economic Perspectives*, 9 (1995).

<sup>8</sup> Rosenbaum, P.R. & Rubin, D.B., “*Balanced Subclassification in Observational Studies Using the Propensity Score: A Case Study*.” Wisconsin Univ-Madison Mathematics Research Center, 1983.

covariates.<sup>9</sup> Following the Neyman-Rubin counterfactual framework, causal effects will be explored by observing outcomes of students enrolled in different programs.<sup>10</sup> Gu and Rosenbaum (1993) found using propensity scores to match treatment and control groups far superior to other matching methods.<sup>11</sup> In propensity score matching, evaluators consider valid and historically consistent covariates, including demographic indicators, full-time status, degree objective, academic indicators, and programmatic academic requirements. The consortium proposes to serve 1,384 students. WV's higher education database, which included 4,457 first-time, full-time community college freshmen in 2012, will serve as the pool from which the evaluators create a control group using propensity score matching.

## II. Program Implementation Analysis

The mixed model design provides the opportunity to explore both formative and summative evaluation questions. The formative evaluation will assist the consortium in answering questions about progress in achieving project goals, effectiveness of particular strategies, effectiveness at leveraging partnerships, and fiscal efficiencies.

Year One is critical and requires a rigorous and intrusive plan because the consortium must hire staff and implement numerous career pathways, academic instruction, and student support strategies. Consistent with Complete College America's (CCA) formative evaluation plan for its innovation challenge grants, the project manager will complete post-sprint surveys and, with the accountability/testing coordinator and other staff, will participate in frequent conference calls with evaluators reporting on implementation progress, challenges, and opportunities.

During the first quarter, the project manager will provide evaluators with a detailed timeline, developed in consultation with stakeholders, outlining plans and benchmarks for each

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<sup>9</sup> Joffe, M.M. & Rosenbaum, P.R., "Invited commentary: Propensity scores," *American Journal of Epidemiology*, 150(4) (1999).

<sup>10</sup> Guo, S. & Fraser, M.V., "Propensity score analysis: Statistical methods and applications." Los Angeles, CA: Sage, 2010.

<sup>11</sup> Gu, X.S. & Rosenbaum, P.R., "Comparison of multivariate matching methods: Structures, distances and algorithms," *Journal of Computational and Graphical Statistics*, 2 (1993).

3-month reporting period. The evaluators will assess the timeline for feasibility and grant proposal fidelity. The project manager and accountability/testing coordinator will provide evaluators with quarterly reports, and evaluators will conduct check-ins at the end of project sprints (periods of sustained activity on specific projects). Evaluators will assess operational strengths and weaknesses by analyzing reports and check-ins and reviewing statistical data.

The project manager will provide a 6-month report, as well as quarterly updates, on program, curricula, and course implementation, including design, delivery methods, and support services. The evaluators will subcontract to review content before it is finalized. The project manager will provide a 9-month report as well as 6-month updates on partnerships. The project manager will identify the contributions partners have made to program design, curriculum development, recruitment, training, placement, program management, leveraging of resources, and commitment to program sustainability.

The 12-month report, provided near the beginning of the first semester of implementation, will focus on recruitment. The project manager will be asked whether in-depth assessments of participants' abilities, skills, and interests were conducted to select participants into the grant programs. Further items will include: 1) what assessment tools and processes were used; 2) who conducted the assessment; 3) how were the assessment results used; 4) were the assessment results useful in determining the appropriate program and course sequence for participants; 5) was career guidance provided and, if so, through what methods; 6) did recruitment differ across institutions; and 7) if so, how? The project manager will also be asked to provide preliminary enrollment numbers. If issues arise at any one of these stages, Bridgemont's president and the WVCCTCE Chancellor will be notified immediately and appropriate measures will be taken to correct the identified issues.

In Years Two and Three, the consortium's efforts will begin to shift from development to implementation. The project manager will continue to report bi-monthly to evaluators via questionnaires and conference calls. Further subsequent reports, still required at 3-month intervals, will center on implementation and experience. In an effort to close accountability lines, Bridgemont's president and the WVCCTCE Chancellor will be copied on all written reports and invited to participate in all conference calls. If, at any time, the program is not on target, the president and chancellor will be notified immediately in writing.

Statistical progress measures will include enrollment, retention, completion, employment, and CCSSE results.

# APPENDIX 3

<b>EMPLOYMENT AND TRAINING ADMINISTRATION</b> <b>ADVISORY SYSTEM</b> <b>U.S. DEPARTMENT OF LABOR</b> <b>Washington, D.C. 20210</b>	<b>CLASSIFICATION</b> Personally Identifiable Information
	<b>CORRESPONDENCE SYMBOL</b> OFAM
	<b>DATE</b> June 28, 2012

**ADVISORY: TRAINING AND EMPLOYMENT GUIDANCE LETTER NO. 39-11**

**TO:** ALL DIRECT ETA GRANT RECIPIENTS  
 ALL STATE WORKFORCE AGENCIES  
 ALL STATE WORKFORCE LIAISONS  
 STATE WORKFORCE ADMINISTRATORS  
 STATE AND LOCAL WORKFORCE INVESTMENT BOARDS  
 ONE-STOP CAREER CENTER SYSTEM LEADS

**FROM:** JANE OATES /s/  
 Assistant Secretary

**SUBJECT:** Guidance on the Handling and Protection of Personally Identifiable Information (PII)

**1. Purpose.** To provide guidance to grantees on compliance with the requirements of handling and protecting PII in their grants.

**2. Background.** As part of their grant activities, Employment and Training Administration (ETA) grantees may have in their possession large quantities of PII relating to their organization and staff; subgrantee and partner organizations and staff; and individual program participants. This information is generally found in personnel files, participant data sets, performance reports, program evaluations, grant and contract files and other sources.

Federal agencies are required to take aggressive measures to mitigate the risks associated with the collection, storage, and dissemination of sensitive data including PII. The Appendix lists a brief overview of efforts at the Federal level to protect PII. As the grantor agency, ETA is providing this Training and Employment Guidance Letter (TEGL) to grantees to notify them of the specific requirements grantees must follow pertaining to the acquisition, handling, and transmission of PII.

**3. Definitions.**

- PII - OMB defines PII as information that can be used to distinguish or trace an individual's identity, either alone or when combined with other personal or identifying information that is linked or linkable to a specific individual.<sup>1</sup>

<sup>1</sup>OMB Memorandum M-07-16, *Safeguarding Against and Responding to the Breach of Personally Identifiable Information* (May 22, 2007), available at <http://www.whitehouse.gov/OMB/memoranda/fy2007/m07-16.pdf>

<b>RESCISSIONS</b> None	<b>EXPIRATION DATE</b> Continuing
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- Sensitive Information – any unclassified information whose loss, misuse, or unauthorized access to or modification of could adversely affect the interest or the conduct of Federal programs, or the privacy to which individuals are entitled under the Privacy Act.
- Protected PII and non-sensitive PII - the Department of Labor (the Department) has defined two types of PII, protected PII and non-sensitive PII. The differences between protected PII and non-sensitive PII are primarily based on an analysis regarding the “risk of harm” that could result from the release of the PII.
  1. Protected PII is information that if disclosed could result in harm to the individual whose name or identity is linked to that information. Examples of protected PII include, but are not limited to, social security numbers (SSNs), credit card numbers, bank account numbers, home telephone numbers, ages, birthdates, marital status, spouse names, educational history, biometric identifiers (fingerprints, voiceprints, iris scans, etc.), medical history, financial information and computer passwords.
  2. Non-sensitive PII, on the other hand, is information that if disclosed, by itself, could not reasonably be expected to result in personal harm. Essentially, it is stand-alone information that is not linked or closely associated with any protected or unprotected PII. Examples of non-sensitive PII include information such as first and last names, e-mail addresses, business addresses, business telephone numbers, general education credentials, gender, or race. However, depending on the circumstances, a combination of these items could potentially be categorized as protected or sensitive PII.

To illustrate the connection between non-sensitive PII and protected PII, the disclosure of a name, business e-mail address, or business address most likely will not result in a high degree of harm to an individual. However, a name linked to a social security number, a date of birth, and mother’s maiden name could result in identity theft. This demonstrates why protecting the information of our program participants is so important.

**4. Requirements.** Federal law, OMB Guidance, and Departmental and ETA polices require that PII and other sensitive information be protected. ETA has examined the ways its grantees, as stewards of Federal funds, handle PII and sensitive information and has determined that to ensure ETA compliance with Federal law and regulations, grantees must secure transmission of PII and sensitive data developed, obtained, or otherwise associated with ETA funded grants.

In addition to the requirement above, all grantees must also comply with all of the following:

- To ensure that such PII is not transmitted to unauthorized users, all PII and other sensitive data transmitted via e-mail or stored on CDs, DVDs, thumb drives, etc., must be encrypted using a Federal Information Processing Standards (FIPS) 140-2 compliant and National Institute of Standards and Technology (NIST) validated

cryptographic module.<sup>2</sup> Grantees must not e-mail unencrypted sensitive PII to any entity, including ETA or contractors.

- Grantees must take the steps necessary to ensure the privacy of all PII obtained from participants and/or other individuals and to protect such information from unauthorized disclosure. Grantees must maintain such PII in accordance with the ETA standards for information security described in this TEGL and any updates to such standards provided to the grantee by ETA. Grantees who wish to obtain more information on data security should contact their Federal Project Officer.
- Grantees shall ensure that any PII used during the performance of their grant has been obtained in conformity with applicable Federal and state laws governing the confidentiality of information.
- Grantees further acknowledge that all PII data obtained through their ETA grant shall be stored in an area that is physically safe from access by unauthorized persons at all times and the data will be processed using grantee issued equipment, managed information technology (IT) services, and designated locations approved by ETA. Accessing, processing, and storing of ETA grant PII data on personally owned equipment, at off-site locations e.g., employee's home, and non-grantee managed IT services, e.g., Yahoo mail, is strictly prohibited unless approved by ETA.
- Grantee employees and other personnel who will have access to sensitive/confidential/proprietary/private data must be advised of the confidential nature of the information, the safeguards required to protect the information, and that there are civil and criminal sanctions for noncompliance with such safeguards that are contained in Federal and state laws.
- Grantees must have their policies and procedures in place under which grantee employees and other personnel, before being granted access to PII, acknowledge their understanding of the confidential nature of the data and the safeguards with which they must comply in their handling of such data as well as the fact that they may be liable to civil and criminal sanctions for improper disclosure.
- Grantees must not extract information from data supplied by ETA for any purpose not stated in the grant agreement.
- Access to any PII created by the ETA grant must be restricted to only those employees of the grant recipient who need it in their official capacity to perform duties in connection with the scope of work in the grant agreement.

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<sup>2</sup>For more information on FIPS 140-2 standards and cryptographic modules, grantees should refer to FIPS PUB 140-2, located online at: <http://csrc.nist.gov/publications/fips/fips140-2/fips1402.pdf>.

- All PII data must be processed in a manner that will protect the confidentiality of the records/documents and is designed to prevent unauthorized persons from retrieving such records by computer, remote terminal or any other means. Data may be downloaded to, or maintained on, mobile or portable devices only if the data are encrypted using NIST validated software products based on FIPS 140-2 encryption. In addition, wage data may only be accessed from secure locations.
- PII data obtained by the grantee through a request from ETA must not be disclosed to anyone but the individual requestor except as permitted by the Grant Officer.
- Grantees must permit ETA to make onsite inspections during regular business hours for the purpose of conducting audits and/or conducting other investigations to assure that the grantee is complying with the confidentiality requirements described above. In accordance with this responsibility, grantees must make records applicable to this Agreement available to authorized persons for the purpose of inspection, review, and/or audit.
- Grantees must retain data received from ETA only for the period of time required to use it for assessment and other purposes, or to satisfy applicable Federal records retention requirements, if any. Thereafter, the grantee agrees that all data will be destroyed, including the degaussing of magnetic tape files and deletion of electronic data.

A grantee's failure to comply with the requirements identified in this TEG, or any improper use or disclosure of PII for an unauthorized purpose, may result in the termination or suspension of the grant, or the imposition of special conditions or restrictions, or such other actions as the Grant Officer may deem necessary to protect the privacy of participants or the integrity of data.

**5. Recommendations.** Protected PII is the most sensitive information that you may encounter in the course of your grant work, and it is important that it stays protected. Grantees are required to protect PII when transmitting information, but are also required to protect PII and sensitive information when collecting, storing and/or disposing of information as well. Outlined below are some recommendations to help protect PII:

- Before collecting PII or sensitive information from participants, have participants sign releases acknowledging the use of PII for grant purposes only.
- Whenever possible, ETA recommends the use of unique identifiers for participant tracking instead of SSNs. While SSNs may initially be required for performance tracking purposes, a unique identifier could be linked to the each individual record. Once the SSN is entered for performance tracking, the unique identifier would be used in place of the SSN for tracking purposes. If SSNs are to be used for tracking purposes, they must be stored or displayed in a way that is not attributable to a particular individual, such as using a truncated SSN.

- Use appropriate methods for destroying sensitive PII in paper files (i.e., shredding or using a burn bag) and securely deleting sensitive electronic PII.
- Do not leave records containing PII open and unattended.
- Store documents containing PII in locked cabinets when not in use.
- Immediately report any breach or suspected breach of PII to the FPO responsible for the grant, and to ETA Information Security at [ETA.CSIRT@dol.gov](mailto:ETA.CSIRT@dol.gov), (202) 693-3444, and follow any instructions received from officials of the Department of Labor.

**6. Inquiries.** Questions should be addressed to the appropriate Regional Office.

**7. Attachment.** Appendix: *Applicable Federal Laws and Policies Related To Data Privacy, Security and Protecting Personally Identifiable and Sensitive Information*