Appendix D

Employment Gaps by Economic Regions and Proposed New Career Pathway Programs of Study or the Redesign, Repurposing and Expansion of Existing Programs

Appendix D: Employment Gaps by Economic Regions and Proposed New Programs and Redesign, Repurposing, and Expansion of Existing Programs

Region/ Economic Sector	Annual Projected Job Opportunities/ No. of Graduates in 2013	Alignment of CT Program with Job Requirements and Opportunities	Recommended Actions
Barren River			
Energy	Projected:84 job openings annually in the energy sector/ 0 graduates in 2013/ 0 from community colleges	No current programs.	• Convene an industry panel to determine whether an energy career pathway is needed in this region. • Consider adopting the *Advanced Career: Clean Energy Technology*[1] curriculum developed by SREB and the state of South Carolina. See http://publications.sreb.org/2013/AC_clean_energy_4pager_11_14_13.pdf
Banking, Finance and Insurance	Projected: 84 annual job openings/ 5 graduates in 2013	Three programs.	• Investigate whether to adopt the National Academy Foundation's Academy of Finance in strategic locations. http://naf. org/files/page/2009/06/AOF_OneSheet. pdf
Manufacturing	Projected: 350 annual openings/190 graduates from state and local technical centers/32 from community colleges	Currently do not have enough offerings to address 21st-century manufacturing requirements.	• Establish a regional industry panel to review the appropriateness of current program offerings in the manufacturing sector. Determine if programs need to be redesigned or repurposed, and map out a more comprehensive set of pathways aligned to the needs of industry. • Increase the number of students pursuing manufacturing by adopting the Advanced Career Manufacturing pathway developed by SREB and Kentucky entitled, *Creating the Future: Design and Production of Tomorrow's Products*, blending the curriculum with work-based learning and further education and training at the local community college. http://www.sreb.org/page/1608/Advanced_Career.html
Bluegrass			
Manufacturing	Annual projected job openings: 1,022 / 2013 graduates: 261 from high school technical centers; 60 from community colleges	Current offerings at the technical centers and community colleges are completely inadequate to meet current and growing needs in the manufacturing industry; there are only 4 programs at the technical centers in the region and these focus on single skills of welding and computerized manufacturing; 1 program focuses on the broad area of industrial maintenance. Three programs are available at	• Establish a regional industry panel to review the appropriateness of current program offerings in the manufacturing sector. Determine if programs need to be redesigned or repurposed, and map out a more comprehensive set of pathways aligned to the needs of industry. • Increase the number of students pursuing manufacturing in this region by adopting the Advanced Career Manufacturing pathway developed by SREB and Kentucky entitled, *Creating the Future: Design and Production of Tomorrow's Products*, blending the curriculum with work-based learning and further education and training at the local community college. http://www.sreb.org/page/1608/Advanced_Career.html

[1] Advanced Career (AC) is SREB's new approach to career and technical education (CTE) designed to prepare students for more college and career options after high school. It is being developed by High Schools That Work (HSTW) in partnership with states and industry partners. AC represents a new way to strengthen the caliber of education in comprehensive high schools or technical centers. AC programs are open to all high school students, not just one segment of students. Each AC pathway consists of four courses that emphasize state standards for college preparation.

Appendix D: Employment Gaps by Economic Regions and Proposed New Programs and Redesign, Repurposing, and Expansion of Existing Programs

Region/ Economic Sector	Annual Projected Job Opportunities/ No. of Graduates in 2013	Alignment of CT Program with Job Requirements and Opportunities	Recommended Actions
		community college – 2 CAD; 1 Advanced Manufacturing	
Health Care	542 annual openings / 398 graduates from area technical centers; 860 graduates from community colleges	High school technical centers offer 3 different programs with the largest enrollment being in pre-nursing science; number of graduates in health science is 136; pre-nursing is 170. Community colleges offer a full range of offerings in the health care sector with 860 graduates; 523 in practical nursing; 104 in registered nursing programs. No program offerings at the technical centers prepare students to work in offices in a range of medical facilities; one program is offered at the community college with 64 completers. Annual projection is for 351 persons needed to fill annual vacancies.	• Expand the PLTW Biomedical Sciences curriculum in the technical centers. This program prepares students for a range of health science programs at both the community college level and beyond. • Conduct an audit to determine if health and pre-nursing students are taking the right sequence of science and math courses, including AP science courses, to ensure that they are not only ready to pass the industry certification but have the academic credentials needed to pursue advanced training in the health care field. • Convene an industry panel to develop the framework for a career pathway spanning secondary and postsecondary education for office support positions in the broad health care industry. • Consider adopting the *Advanced Career: Health Informatics* curriculum, developed by SREB and the state of Ohio. http://publications.sreb.org/2013/AC_health_Informatics_8_5_13.pdf
Energy and Natural Resource Extraction	Projected: 38 jobs annually; 15 graduates from technical centers; 0 from community colleges. No jobs are projected to work in the Clean or Renewable Energy sector.	At present, only the local technical centers provide graduates (15 from electronics technology).	• Consider adopting the *Advanced Career: Energy and Power* curriculum developed by SREB and the state of West Virginia. http://publications.sreb.org/2013/AC_energy_power_4Pager_11_14_13.pdf • Consider adopting the *Advanced Career: Clean Energy Technology* curriculum developed by SREB and the state of South Carolina. See http://publications.sreb.org/2013/AC_clean_energy_4pager_11_14_13.pdf
Transportation, Distribution and Logistics	Projected: 60 annual job openings /152 graduates from technical centers; 27 graduates from community colleges.	All of the current offerings deal with the repair of automotive, diesel, auto-body. No program exists dealing with the broader set of skills needed for the transportation industry, including logistics and other specialized work.	• Determine the number of graduates from both the technical centers and the community colleges who acquire industry certifications in this area, including the number who acquire only a single skill certificate, not a complete set of certificates, compared to the number who acquire a complete set of certificates. • Formalize career pathways linking the technical centers, the community colleges and work-based training in industry settings to increase the number of graduates who earn a comprehensive set of credentials in this area. • Convene an industry panel to study other broad training needs in the

Appendix D: Employment Gaps by Economic Regions and Proposed New Programs and Redesign, Repurposing, and Expansion of Existing Programs

Region/ Economic Sector	Annual Projected Job Opportunities/ No. of Graduates in 2013	Alignment of CT Program with Job Requirements and Opportunities	Recommended Actions
			area of transportation, distribution and logistics and determine whether career pathway programs spanning secondary and postsecondary education are needed. • Consider adopting the *Advanced Career: Global Logistics and Entrepreneurship* curriculum being developed by SREB and the state of New Jersey. http://www.sreb.org/page/1608/Advanced_Career.html
Banking, Finance and Insurance	Projected annual opening of 326 jobs / 10 graduates	One program in accounting; no other programs at technical centers and none at the community college to prepare persons for the banking, finance, insurance and real estate industries.	• Convene a banking, finance and insurance panel to study the need for establishing career pathway programs spanning secondary and postsecondary education. • Investigate whether to adopt the National Academy Foundation's Academy of Finance in strategic locations in the region, including comprehensive high schools or technical centers, and develop a companion two-year program at the community college. http://naf. org/files/page/2009/06/AOF_OneSheet. pdf
Business Support Services	Projected: 173 openings / 367 graduates from technical centers; 103 graduates from community colleges	Offerings are adequate to provide administrative support, computer-related services for administrative management, business technology and information support and services; programs to develop computer programmers and computer system design services appear to be weak or non-existent.	• Consider developing a career pathway to prepare individuals in computer programming and computer systems design. This may include AP Computer Science in high school and an associate's degree and options for further training and study in partnership with industry. • Consider adopting the *Advanced Career: Informatics* curriculum currently being developed by SREB and the state of Kentucky. http://www.sreb.org/page/1608/Advanced_Career.html
STEM	Annual projected job openings: 233/ 24 technical center graduates; 51 from community colleges.	Existing programs in technical centers include Principles of Technology and PLTW Pre-Engineering; two programs at the community colleges: Engineering Technology and Environmental Engineering Technology/Environmental Technology.	• The Bluegrass region features four-year universities and high-tech industries. At least 20% of the jobs in this region require STEM-like skills(e.g., four-year degrees, associate's degrees or other special training). • Consider adopting the *Advanced Career: Innovations in Science and Technology* curriculum being developed by SREB and the state of Arkansas. http://publications.sreb.org/2013/AC_science_technology_4pager_11_14_13.pdf. • Convene a special industry/higher education panel to examine the need to create a STEM pathway spanning secondary and postsecondary education.
Cumberlands			
Energy and Natural Resource Extraction	Projected: 46 annual job openings with 34 of these in crude petroleum and natural gas extraction/ 3	At present, only the local technical centers provide graduates (3 from environmental science/natural resources).	• Convene a panel from the petroleum and natural resource extraction industry to determine whether there is a need to develop an energy pathway curriculum spanning secondary and postsecondary education. • Consider adopting the *Advanced Career: Clean Energy Technology*

Appendix D: Employment Gaps by Economic Regions and Proposed New Programs and Redesign, Repurposing, and Expansion of Existing Programs

Region/ Economic Sector	Annual Projected Job Opportunities/ No. of Graduates in 2013	Alignment of CT Program with Job Requirements and Opportunities	Recommended Actions
	graduates from technical centers and no graduates from community college		curriculum developed by SREB and the state of South Carolina. See http://publications.sreb.org/2013/AC_clean_energy_4pager_11_14_13.pdf
Manufacturing	Annual projected job opportunities: 57/ 278 graduates from technical centers and 15 graduates from community college	128 of graduates were in welding manufacturing; 21 were in computerized manufacturing and machining; 10 were in industrial maintenance technician. There are no programs that prepare students broadly for work in the manufacturing industry.	• Convene an industry panel to determine whether the region offers the right mix of programs to attract and grow new manufacturing industries. • Increase the number of students pursuing manufacturing by adopting the Advanced Career Manufacturing pathway developed by SREB and Kentucky entitled, *Creating the Future: Design and Production of Tomorrow's Products*, blending the curriculum with work-based learning and further education and training at the local community college. http://www.sreb.org/page/1608/Advanced_Career.html
Transportation, Distribution and Logistics	Projected annual openings: 19 / 99 technical center graduates; 69 community college graduates	No additional programs are needed.	
Banking, Finance and Insurance	Annual Projected job opportunities: 65 / 7 graduates from technical centers; no graduates from community colleges	One active program in accounting and finance with 7 graduates.	• Convene a banking, finance and insurance committee to study the need for establishing career pathway programs spanning secondary and postsecondary education. • Investigate whether to adopt the National Academy Foundation's Academy of Finance in strategic locations in the region, including comprehensive high schools or technical centers, and develop a companion two-year program at the community college. http://naf.org/files/page/2009/06/AOF_OneSheet.pdf
Professional Services	Annual projected openings: 211/ 29 from the STEM sector, 161 from the computer IT field, 17 from administrative management support, and 4 from marketing. At the high school level, 14 graduates from the IT area, 0 from STEM; at the community college level, 11 from STEM and 36 from computer and	Information Technology is the only program offered at the technical centers; 0 programs offered in STEM; 0 offered in administrative support. Computer and Information Technology is offered at the community college, as is a general engineering technology program.	• There is a great need to offer programs with a STEM focus in this region and to address growing gaps in IT. • Convene a panel comprised of industry and postsecondary representatives to examine the development of IT pathway(s) spanning secondary and postsecondary education, including Computer System Design Service and Computer Facility Management Service. There may be courses in these pathway(s) that can serve a dual purpose. • Convene a panel to examine the creation of a STEM pathway spanning secondary and postsecondary education that offers multiple exit and re-entry points. • Consider adopting the *Advanced Career: Innovations in Science and Technology* curriculum being developed by SREB and the state of Arkansas, combined with appropriate AP courses in mathematics and science. http://publications.sreb.org/2013/AC_science_technology_4pager_11

Appendix D: Employment Gaps by Economic Regions and Proposed New Programs and Redesign, Repurposing, and Expansion of Existing Programs

Region/ Economic Sector	Annual Projected Job Opportunities/ No. of Graduates in 2013	Alignment of CT Program with Job Requirements and Opportunities	Recommended Actions
	information science		14_13.pdf.
EKCEP			
Energy and Natural Resource Extraction	Projected: 341 jobs annually; 208 in natural gas extraction; 92 in bituminous coal and lignite surface mining	No current programs.	• Convene a panel from the petroleum and natural gas extraction industry to determine current industry workforce needs and establish a career pathway spanning secondary and postsecondary education. • Consider adopting the *Advanced Career: Clean Energy Technology* curriculum developed by SREB and the state of South Carolina. See http://publications.sreb.org/2013/AC_clean_energy_4pager_11_14_13.pdf
Manufacturing	Projected: 50 annual openings / 321 graduates from area technical centers; 21 graduates from community colleges	Current offerings: Industrial Maintenance and Welding with 127 graduates from technical centers and 2 programs at the community college with a total of 21 graduates	• Convene an industry panel to determine whether current program offerings are adequate and whether what students are being taught suits the needs of the industry.
Transportation, Distribution and Logistics	Projected: 36 jobs annually /19 of these in courier and express delivery service	Three current programs at technology centers: automotive technology with 102 graduates; one auto collision repair with 28 graduates; diesel tech with 32 graduates. There are three programs at community colleges that produced 89 graduates.	• Convene an industry panel to determine whether current offerings are adequate, whether students are being taught the skills they need and whether additional career pathway(s) spanning secondary and postsecondary education are needed in this area. • Determine how many students are receiving only one versus a set of specialized certifications in these fields.
Banking, Finance and Insurance	Projected: 76 annual job openings / 6 graduates from accounting; none from the community college	No formal career pathway programs to prepare people for the banking, finance and insurance industry.	• Convene a banking, finance and insurance committee to study the need for establishing career pathway programs spanning secondary and postsecondary education. • Investigate whether to adopt the National Academy Foundation's Academy of Finance in strategic locations in the region, including comprehensive high schools or technical centers, and develop a companion two-year program at the community college. http://naf. org/files/page/2009/06/AOF_OneSheet. pdf
Professional Services/ Administrative Support/ IT/ STEM	Projected annual openings: 128 / 312 graduates from technical centers; 120 from community colleges	Offerings exceed employment demands; however, it is suspected that many of these graduates are taking jobs outside the region.	• Consider convening a broad industry panel in the area of professional services/IT/STEM to examine whether existing programs address the industry needs, whether students are begin taught the skills needed to adapt to the requirements of the current workplace, and whether students are acquiring the appropriate certifications. • Charge the panel with considering how to strengthen career pathway programs spanning secondary and postsecondary education and create structures and placement services that can help graduates find

Appendix D: Employment Gaps by Economic Regions and Proposed New Programs and Redesign, Repurposing, and Expansion of Existing Programs

Region/ Economic Sector	Annual Projected Job Opportunities/ No. of Graduates in 2013	Alignment of CT Program with Job Requirements and Opportunities	Recommended Actions
			employment within and outside the region.
Greater Louisville/ Lincoln Trail			
Energy	Projected: 38 job opportunities annually/ 2 graduates from the technical centers	No current programs.	• Consider whether there is sufficient need to adopt two Advanced Career curriculum pathways: (1) the *Advanced Career: Clean Energy Technology* curriculum developed by SREB and the state of South Carolina (see http://publications.sreb.org/2013/AC_clean_energy_4pager_11_14_13.pdf) and (2) the *Advanced Career: Energy and Power* curriculum developed by SREB and the state of West Virginia (see http://publications.sreb.org/2013/AC_energy_power_4Pager_11_14_13.pdf).
Manufacturing	Projected: 661 annual openings / 253 graduates from technical centers; 84 from community colleges	Technical center programs consist of two Welding/Manufacturing curricula: Computerized Manufacturing and Machining and Machine Tool Technology. The community colleges offer Advanced Manufacturing: 66 graduates; Drafting Design and Technology General: 16 graduates. *Note*: There appears to be a huge gap between the number of jobs available and known formal career pathways in the technology centers and community colleges leading to employment in this field. SREB questions whether this is the true extent of manufacturing offerings in this region. There must have been a gap in the data SREB received. There was not sufficient time or resources to investigate this issue.	• Convene an industry panel to determine current industry needs for single-skill specialized training versus more broad-based training in manufacturing (e.g., learning more specialized skills through advanced training opportunities on the job, apprenticeships or customized short-term programs at the community college). • If the data SREB received are accurate (see *Note* at left), immediate attention must be paid to the creation of pathways spanning secondary and postsecondary education that are designed to prepare students to go into the workforce in the Advanced Manufacturing sector emerging in the greater Louisville area and throughout Kentucky. • Due to the diversity of manufacturing industries in the Greater Louisville/Lincoln Trail area, it is recommended that consideration be given to the adoption of the Advanced Career Manufacturing pathway developed by SREB and Kentucky entitled, *Creating the Future: Design and Production of Tomorrow's Products.* http://www.sreb.org/page/1608/Advanced_Career.html
Transportation, Distribution, and Logistics	Projected: 311 jobs annually / 137 from the technology centers and 191 from the community colleges	Current programs are designed to prepare students for maintenance of vehicles (e.g., air, automotive, trucks or diesel). No programs exist that prepare students to go into the	• Convene a transportation, distribution and logistics panel to determine the percentage of graduates who acquire a comprehensive set of certifications for the repair of transportation equipment and vehicles compared to the percentage who require only specialized certification in one or more aspects of service repair to vehicles. • Charge the panel with examining the need to prepare graduates with a

Region/ Economic Sector	Annual Projected Job Opportunities/ No. of Graduates in 2013	Alignment of CT Program with Job Requirements and Opportunities	Recommended Actions
		warehousing, storage and distribution area or address the administration and logistics services needed in the transportation industry. There are no programs to prepare truck drivers for long and short-distance hauling.	broad set of skills in the field of transportation, distribution and logistics, including warehouse management, and determine whether there is a need to develop an optional career pathway in this area. • Consider adopting the *Advanced Career: Global Logistics and Entrepreneurship* curriculum being developed by SREB and the state of New Jersey. http://www.sreb.org/page/1608/Advanced_Career.html
Banking, Finance and Insurance	Projected: 762 annual openings/ 33 graduates from technical centers; 0 from community colleges *Note*: SREB does not believe that these are accurate data; there must be more programs being offered in comprehensive high schools, full-time technical high schools and community colleges than reflected in the data SREB received. Time did not allow for follow-up research on this issue.	Only one current program in finance exists that produces 33 graduates from the technical center.	• Convene an advisory committee composed of persons from the banking, finance and insurance industries to examine and assess programs currently available in high schools, technical centers and community colleges. Identify whether gaps exist between what these programs teach and the skills needed in available jobs. • Consider adopting the National Academy Foundation's Academy of Finance in one or more technical centers or one or more comprehensive high schools: http://naf.org/files/page/2009/06/AOF_OneSheet.pdf • Consider adopting Course One from the *Advanced Career: Project Management* curriculum currently being developed by SREB and the state of North Carolina. http://www.sreb.org/page/1608/Advanced_Career.html • Consider implementing the *Advanced Career: Informatics* curriculum currently being developed by SREB and the state of Kentucky, modifying the curriculum to apply informatics skills as needed in the banking, finance, and insurance industry. http://www.sreb.org/page/1608/Advanced_Career.html
Green River			
Energy Sector	235 jobs annually: 180 in the Crude Petroleum and Natural Gas Extraction sector; 22 in Natural Gas distribution / 0 graduates from area technical centers; 0 graduates from community colleges	No current programs at either the technical centers or at community colleges.	• Convene a regional industry panel to determine whether there is a need to develop a special career pathway to prepare students for the crude petroleum and natural gas extraction industry. • Consider adopting the *Advanced Career: Clean Energy Technology* curriculum developed by SREB and the state of South Carolina. See http://publications.sreb.org/2013/AC_clean_energy_4pager_11_14_13.pdf
Manufacturing	Projected: 241 annual job openings / 129 graduates from technical schools and 15 from community	Program offerings at technical centers are limited to welding, machine tool technology, industrial maintenance and	• Increase the number of students pursuing manufacturing by adopting the Advanced Career Manufacturing pathway developed by SREB and Kentucky entitled, *Creating the Future: Design and Production of Tomorrow's Products*, blending the curriculum with work-based

Appendix D: Employment Gaps by Economic Regions and Proposed New Programs and Redesign, Repurposing, and Expansion of Existing Programs

Region/ Economic Sector	Annual Projected Job Opportunities/ No. of Graduates in 2013	Alignment of CT Program with Job Requirements and Opportunities	Recommended Actions
	college	computerized manufacturing and machining and welding. There is one program each in these five areas. There are no broad-based manufacturing programs that prepare students to handle a range of automated technologies or receive the multi-skilled training needed to prepare for a career in modern advanced manufacturing.	learning and further education and training at the local community college. http://www.sreb.org/page/1608/Advanced_Career.html • Convene an industry panel to examine whether existing specialized programs should remain as essentially single-skill programs, or if some need to be redesigned to prepare graduates with a broader range of technologies and skills for jobs in the industry. Charge the panel with examining the quality of current instruction and the mix of academic, technical, technological, 21st-century and cognitive skills that students learn and demonstrate through these programs.
Transportation, Distribution and Logistics	Projected: 54 annual openings / 21 graduates from the technical centers and 7 from the community colleges	All current programs deal with the repair of transportation vehicles both at the high school and community college level. No curriculum exists to prepare students with the broader range of skills needed in the area of transportation of goods and services, warehousing, storing, retrieving, preserving, etc.	• Convene an industry panel to assess the need to develop career pathway program(s) that will prepare graduates with a broad understanding of the many roles, functions and skills needed to work in the area of transportation, distribution and logistics. • Consider adopting the *Advanced Career: Global Logistics and Entrepreneurship* curriculum being developed by SREB and the state of New Jersey. http://www.sreb.org/page/1608/Advanced_Career.html
Banking, Finance and Insurance	Projected: 104 annual job openings / 24 graduates from technical centers; 0 from community colleges	Current programs are limited to one in financial studies. There appears to be no formalized career pathway in banking, finance and insurance to prepare students broadly for this industry with the range of technology skills and academic, literacy and math skills needed to enter and advance in a career.	• Convene a banking, finance and insurance panel to explore the need to develop a formal career pathway in this area. Determine if local high schools are offering such curricula and if so, whether these program(s) are adequate to meet student and industry needs. • Consider adopting the National Academy Foundation's Academy of Finance in strategic regional locations, and developing a companion two-year program at the local community college. http://naf.org/files/page/2009/06/AOF_OneSheet.pdf
Professional Services/ Information Technology/ Marketing/ STEM	Projected: 225 annual openings / 42 graduates from technical centers and 160 from community colleges	Formal program to prepare students for administrative management and support from the technical schools – two programs at the community colleges in business administration and management and executive assistant and executive secretary –	• Investigate and determine whether there is a need to create a Telemarketing career pathway program of study – 74 annual job openings are projected in this area.

Appendix D: Employment Gaps by Economic Regions and Proposed New Programs and Redesign, Repurposing, and Expansion of Existing Programs

Region/ Economic Sector	Annual Projected Job Opportunities/ No. of Graduates in 2013	Alignment of CT Program with Job Requirements and Opportunities	Recommended Actions
		together produces 95 graduates; which would meet the 73 annual openings in this area. IT offerings consist of four technical center programs that produce 21 graduates; computer and information programs at the community college produce 38 graduates. These numbers seem adequate to address annual job openings. Telemarketing has 85 annual openings with 74 being in telemarketing bureaus and other contact centers; there are 18 graduates in this area. In the STEM area, there are projected to be 33 annual openings, with 27 graduates in engineering technology at the community college.	
Northern Kentucky			
Manufacturing	978 jobs annually, with 175 in the food manufacturing industry / 180 graduates from technical centers; 9 from community colleges	Offerings at the technical centers are limited to an industrial maintenance program. Advanced manufacturing is offered at the community college. Northern Kentucky has an excess of manufacturers and manufacturing job openings but no formalized career pathway system to introduce students to these industries or jobs.	• The gap between projected annual openings in manufacturing and the number of students in pathways being prepared to enter manufacturing should be addressed as this region's top priority. • Convene an industry panel made up of a cross-section of manufacturers that will examine current institutional capacity to address their workforce needs. SREB did not receive data that would allow it to determine the number of regional high schools offering the Project Lead the Way engineering curriculum, which many industry leaders have endorsed. Additional research and study is needed in this area. • Further, the industry panel should consider advocating for the adoption of the Advanced Career Manufacturing pathway developed by SREB and Kentucky entitled, *Creating the Future: Design and Production of Tomorrow's Products*, which blends the curriculum with work-based learning and further education and training at the local community college. Many of the projects designed for this curriculum would also have application in food manufacturing.

Appendix D: Employment Gaps by Economic Regions and Proposed New Programs and Redesign, Repurposing, and Expansion of Existing Programs

Region/ Economic Sector	Annual Projected Job Opportunities/ No. of Graduates in 2013	Alignment of CT Program with Job Requirements and Opportunities	Recommended Actions
			http://www.sreb.org/page/1608/Advanced_Career.html • Consider adopting the *Advanced Career: Automated Joining Materials* curriculum currently being developed by SREB and the state of Ohio. The first two courses of this pathway should be available in the fall of 2015. http://www.sreb.org/page/1608/Advanced_Career.html
Transportation, Distribution and Logistics	Projected: 553 jobs annually / 102 graduates from technical centers; 79 from community colleges	Current offerings in this sector are limited to the repair of transportation vehicles (e.g., personal automobiles and other types of vehicles). There are no existing programs that prepare students broadly for the transportation, distribution and logistics industry, including preparing truck drivers for short- and long-distance runs.	• Convene an industry panel to analyze the effectiveness of existing programs that prepare students who hold comprehensive industry or specialized certifications to work only on parts of a vehicle. Charge the panel with determining the number of such graduates who actually enter the field. • Charge the panel with determining the need for a general transportation pathway that focuses on logistics and other skills. • Consider adopting the *Advanced Career: Global Logistics and Entrepreneurship* curriculum being developed by SREB and the state of New Jersey. http://www.sreb.org/page/1608/Advanced_Career.html
Banking, Finance and Insurance	Projected: 1,219 annual job openings / 0 graduates from technical centers; 0 from the community colleges.	No current programs are offered either by the technical centers or the community colleges on which SREB received data.	• Convene an industry panel to examine industry needs and determine which career pathways related to banking, finance and insurance are most needed in the region. • Consider adopting the National Academy Foundation's Academy of Finance in strategic regional locations, and developing a companion two-year program at the local community college. http://naf.org/files/page/2009/06/AOF_OneSheet.pdf • Consider adopting Course One from the *Advanced Career: Project Management* curriculum currently being developed by SREB and the state of North Carolina. http://www.sreb.org/page/1608/Advanced_Career.html • *Note*: Many of these programs may be covered in current high school offerings as beginning pathways; however, it is too often the case that the old business curriculum does not address some industry needs. Within the scope of this study, it was not possible to look at offerings in comprehensive high schools. However, the large number of openings in this area and comparative scarcity of programs addressing them strongly suggests that there may be gaps in the database that SREB received. This issue must be further researched.
Recreation	Projected: 80 annual job openings / 0 graduates from technical centers	The following programs exist – Hospitality Services and Sports Marketing – but there is no record of graduates from these programs	• Consider adopting the National Academy Foundation's Academy of Hospitality & Tourism in one or more of the comprehensive high schools or technical centers in this region. See http://naf.org/files/page/2009/06/AOHT_OneSheet.pdf

Appendix D: Employment Gaps by Economic Regions and Proposed New Programs and Redesign, Repurposing, and Expansion of Existing Programs

Region/ Economic Sector	Annual Projected Job Opportunities/ No. of Graduates in 2013	Alignment of CT Program with Job Requirements and Opportunities	Recommended Actions
		at technical centers or community colleges.	
TENCO			
Manufacturing	Projected: 105 jobs annually / 168 graduates from technical centers; 46 graduates from community colleges	At the technical centers, current programs are limited to Welding. SREB identified a need for a broader-based curriculum to prepare students for the emerging range of manufacturing jobs available in this region.	• Convene an industry panel to determine whether welding should stand alone as a specialized specific training program or whether a more general manufacturing pathway would provide graduates with greater adaptability to industry needs in this region. • Increase the number of students pursuing manufacturing by adopting the Advanced Career Manufacturing pathway developed by SREB and Kentucky entitled, *Creating the Future: Design and Production of Tomorrow's Products*, blending the curriculum with work-based learning and further education and training at the local community college. http://www.sreb.org/page/1608/Advanced_Career.html
Transportation, Distribution and Logistics	Projected: 12 jobs annually / 54 graduates at the technical centers and 58 at the community colleges	Current offerings in this sector are limited to the repair of transportation vehicles (e.g., personal automobiles and other types of vehicles) at both the technical centers and community colleges. *Note*: This region may have too much capacity in producing graduates to repair transportation vehicles; some of that capacity may need to be shifted to new areas. There are no existing programs that prepare students broadly for the transportation, distribution and logistics industry, including preparing truck drivers for short- and long-distance runs.	• Conduct a study to determine the percentage of graduates who earn comprehensive credentials to work on all parts of vehicles compared to the percentage who earn a more narrow set of specialized credentials. The region should strive to increase the number of students who earn more comprehensive sets of credentials; this will require a more tightly aligned system of career pathways between secondary and postsecondary education.
Banking, Finance and Insurance	Projected: 49 annual job openings/24 graduates from technical centers	Three programs limited to Accounting and Finance.	• No recommendations
Professional Services	Projected: 4 annual job openings/ 124 graduates from technical centers, 159 from the community	Job availabilities should be reviewed, as there are 0 jobs available in IT but 53 graduates from technical centers and 25	• Examine the number of students earning highly-valued certificates from current offerings under professional services; the number of students going into these fields for continued learning or advanced training; the number of graduates who are earning both the academic readiness and

Appendix D: Employment Gaps by Economic Regions and Proposed New Programs and Redesign, Repurposing, and Expansion of Existing Programs

Region/ Economic Sector	Annual Projected Job Opportunities/ No. of Graduates in 2013	Alignment of CT Program with Job Requirements and Opportunities	Recommended Actions
	college	graduates from community colleges.	technical readiness. Take steps to close any gaps.
STEM	Projected: 24 annual openings / 25 graduates from technical centers; 18 from community college	Local technical centers offer Engineering and PLTW Engineering and Technology; the community college offers a general engineering technology program.	• Consider adopting the *Advanced Career: Innovations in Science and Technology* curriculum being developed by SREB and the state of Arkansas, including AP courses in math and science. http://publications.sreb.org/2013/AC_science_technology_4pager_11_14_13.pdf.
Western Kentucky			
Agriculture and Food Production	Projected: 36 jobs annually/ 22 graduates from technical centers; 0 graduates from community college.	Current programs include Agribusiness, Animal Systems, Agri-biotechnology and Ag Power Structure	• No recommendations
Energy	Projected: 111 annual job openings/4 graduates from technical centers; 21 from community colleges	Current programs include Environmental Science/Natural Resources at the technical centers; Mining Technology/Technician and Petroleum Technology/Technician at the community college.	• Convene an energy task force to examine whether additional programs are needed in this sector. • Consider adopting the *Advanced Career: Clean Energy Technology* curriculum developed by SREB and the state of South Carolina. See http://publications.sreb.org/2013/AC_clean_energy_4pager_11_14_13.pdf
Transportation, Distribution and Logistics	Projected: 90 annual job openings/ 83 graduates from technical centers; 42 graduates from community colleges	All current programs at the technical centers deal with the repair of transportation vehicles; all programs at the community colleges deal with the same, with the exception of one offering bus and truck driver training.	• Convene a regional task force to examine the need to create a broad-based career pathway curriculum that would prepare graduates to work in the field of transportation, distribution and logistics. • Charge the task force with examining the number of graduates from existing transportation repair programs at the technical centers and the community colleges in order to determine the number of graduates who earn a complete set of credentials compared to those who earn only certain credential components. • Charge the task force with examining how many graduates actually go to work in the field in order to determine whether the region has an oversupply of persons being prepared to repair vehicles and an undersupply of persons prepared to work in other areas of the transportation, distribution and logistics sector. • Consider adopting the *Advanced Career: Global Logistics and Entrepreneurship* curriculum being developed by SREB and the state of New Jersey. http://www.sreb.org/page/1608/Advanced_Career.html
Manufacturing	Projected: 131 annual job openings / 251 graduates from technical centers; 54 from the community	All current offerings are specialized skills; none prepare students for the mix of academic, technical, 21st-century and	• Convene an industry task force to inventory existing programs and determine whether there is a need to redevelop some existing programs in the technical centers and community colleges to include a broad-based, multi-skilled curriculum designed to prepare students for

Appendix D: Employment Gaps by Economic Regions and Proposed New Programs and Redesign, Repurposing, and Expansion of Existing Programs

Region/ Economic Sector	Annual Projected Job Opportunities/ No. of Graduates in 2013	Alignment of CT Program with Job Requirements and Opportunities	Recommended Actions
	college	cognitive skills needed in advanced manufacturing.	advanced manufacturing jobs. • Increase the number of students pursuing manufacturing by adopting the Advanced Career Manufacturing pathway developed by SREB and Kentucky entitled, *Creating the Future: Design and Production of Tomorrow's Products*, blending the curriculum with work-based learning and further education and training at the local community college. http://www.sreb.org/page/1608/Advanced_Career.html
Health Care	Projected: 35 jobs annually / 218 graduates from technical centers; 1,560 from community colleges	Current high school programs deal with health science and pre-nursing. Community college programs include 16 specialties with 872 persons earning a licensed vocational practical nursing certificate, and 257 earning a registered nursing certificate.	• Convene an industry panel to examine the quality of existing programs, the number of students earning licensures in those programs and the number of graduates entering the field or continuing further study. Based on this study, this panel should formulate recommendations for redesigning or repurposing programs as needed.