
Final Report of the Select Subcommittee on Technical Education and Career Readiness



November 30th, 2016

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Executive Summary and Overview of Recommendations

The Commonwealth of Pennsylvania has a strong interest in promoting a competitive workforce equipped with the technical skills desired by employers, and the state's system of career and technical education (CTE) and workforce development programs, offered by secondary and postsecondary entities, is central to achieving this goal of ensuring that prospective employees can meet this demand and pursue meaningful careers.

The Select Subcommittee on Technical Education and Career Readiness was established pursuant to House Resolution 102 of 2015, prime sponsored by Representative Stan Saylor and Representative James Roebuck, in order to investigate and review secondary career and technical education programs and postsecondary institutions that focus on career preparation and training and develop recommendations to enhance these programs so that they can provide training that meets the needs of current and future employers.

The eight-member Select Subcommittee held seven public hearings and conducted tours of eight educational institutions and training facilities across the Commonwealth in 2015 and 2016. During these public hearings the Select Subcommittee received testimony from approximately 70 individuals, including school district administrators and board members, career and technical school administrators, administrators of colleges, universities and other postsecondary training programs, teachers, representatives from local and regional workforce development organizations, business owners, officials from Commonwealth state agencies, and experts from other states. These individuals consistently attested to the benefits of a robust system of career and technical education both for students and for the state.

At the secondary level, in 2014 approximately 65,000 students were enrolled in CTE programs. These CTE offerings are concentrated in programs available at local public high schools and at 86 regional career and technical centers (CTCs) that serve a wider attendance area. At the postsecondary level, students can pursue technical training programs offered at community colleges, state-owned and state-related universities, private two-year or four-year universities, and other vocational training facilities. Local workforce development entities, which connect local businesses and employers with education and training providers, are also

key components in this system in order to ensure that relevant meaningful information is shared and communicated among stakeholders.

From the outset of its work, the Select Subcommittee recognized that currently throughout the state many career and technical programs are offering students at both the secondary and postsecondary levels innovative opportunities to pursue training that is aligned with industry demands. However, it is also clear that additional steps can be taken at state, regional, and local levels to further improve the alignment between these programs and the needs of the business community and enhance the partnerships with these stakeholders. Furthermore, the Select Subcommittee identified several examples of existing requirements placed upon CTE programs that may unintentionally limit the ability of these programs to innovate with their business and industry partners and to expand CTE opportunities for all students. Finally, the Select Subcommittee found that misperceptions regarding the nature of CTE continue to persist and limit the benefits of these programs to all students.

After thoroughly reviewing the testimony and accompanying information received in the course of its work, the Select Subcommittee has developed a series of recommendations to meet five main objectives: 1) continue legislative oversight of career and technical education initiatives; 2) address business and industry demands; 3) strengthen education partnerships with business and industry; 3) increase access to CTE programs; and 4) confront misperceptions regarding CTE.

The Select Subcommittee would like to extend its sincerest thanks to all of the testifiers, who provided the Select Subcommittee with vital information and suggestions, and to the welcoming hosts of the public hearings and tours that were conducted throughout the Commonwealth. These individuals and organizations offered the members of the Select Subcommittee an invaluable opportunity to see firsthand the educational and training environments available to students in the state. The Chairmen of the Select Subcommittee are also deeply grateful to their fellow members of the Select Subcommittee, who dedicated their time and serious consideration to the travels and work of the Select Subcommittee and who contributed both to the hearings and to the recommendations compiled in this report.

The Select Subcommittee respectfully submits the following broad recommendations for review by the House of Representatives and for consideration by the General Assembly. A complete list of recommendations can be found in Section V.

1. *Continue Legislative Oversight of CTE Initiatives.*
2. *Address Business and Industry Demands:*

- Use data to link workforce supply with industry demands;
- Improve the transition between secondary CTE and postsecondary training through articulation agreements;
- Encourage attainment of meaningful industry credentials and occupational competency testing;
- Review existing statutory and regulatory requirements related to secondary CTE programs; and
- Develop a statewide vision for agricultural education.

3. *Strengthen Education Partnerships with Business and Industry:*

- Account for existing partnership opportunities and promote best practices;
- Improve communication between local workforce development boards and education entities; and
- Encourage engagement through local and occupational advisory committees.

4. *Increase Access to CTE Programs:*

- Address state Graduation requirements and Keystone Exam remediation mandates;
- Explore resources for CTE opportunities; and
- Utilize CTE opportunities for non-traditional students and struggling schools.

5. *Confront Misperceptions Regarding CTE:*

- Improve statewide information and message related to career awareness;
- Enhance local career awareness efforts; and
- Promote an integrated K-12 STEM education.

I. Formation of Select Subcommittee

a. Select Subcommittee Committee Purpose

The Select Subcommittee on Technical Education and Career Readiness (Select Subcommittee) was authorized and established by the Education Committee of the House of Representatives pursuant to House Resolution 102 of 2015 to review technical and career preparation programs and business partnerships in Commonwealth and develop recommendations to promote career pathways that meet the state's employment needs.

Investigation into the career and technical programs and opportunities available to Pennsylvania was initiated by the adoption of House Resolution 102 in order to help further the goal of ensuring that Pennsylvania graduates are trained and prepared to connect with prospective employers so that they can enter into meaningful careers and so that Pennsylvania can remain competitive in an every-changing global environment.

House Resolution 102 and the establishment of the Select Subcommittee recognizes that the Commonwealth has a responsibility to assist students in obtaining the skills necessary to secure jobs and careers and that additional efforts are necessary in order to ensure that unfounded perceptions of technical education do not unnecessarily discourage students from pursuing training and careers in fields that are otherwise in high demand.

The Select Subcommittee was specifically directed to do the following:

- Investigate, review, and make findings and recommendations regarding:
 - Existing secondary level career and technical centers and programs and postsecondary institutions that focus on career preparation and training, including partnerships that exist within and among these groups;
 - How to better foster connections among the secondary technical education, postsecondary technical education, and business communities in order to promote thriving career pathways; and
 - How to eliminate negative biases held by students and parents regarding technical education and educate all Pennsylvania residents regarding the benefits of

technical education and the opportunities available in careers that require technical knowledge and skills.

- Review other states' best practices and programs in the area of technical education and career readiness.
- Develop proposals which:
 - Encourage Pennsylvania's secondary and postsecondary educational institutions to expand career training programs that will help meet the needs of current and future employers;
 - Supplement and enhance existing programs; and
 - Provide support to the secondary and postsecondary technical education communities.
- Ensure that every student in Pennsylvania has the opportunity to pursue a meaningful career.

b. Select Subcommittee Structure and Membership

Pursuant to House Resolution 102 of 2015, the Majority Chairman of the House Education Committee appointed four members from the House Education Committee to serve on the select subcommittee, and the Minority Chairman of the House Education Committee appointed two members from the House Education Committee. The Majority and Minority Chairmen of the House Education Committee served as ex-officio members of the Select Subcommittee.

Furthermore, in accordance with the resolution, the Majority Chairman appointed a Chairman of the Select Subcommittee from the members of the Select Subcommittee.

The following members were appointed to the Select Subcommittee:

Representative Seth Grove (R)
Majority Chairman

Representative Patrick Harkins (D)
Minority Chairman

Representative Harry Lewis (R)
Representative Kathy Rapp (R)
Representative Stan Saylor (R), ex-officio
Representative Mike Tobash (R)

Representative Gerald Mullery (D)
Representative James Roebuck (D),
ex-officio

c. Select Subcommittee Hearings and Tours

HR 102 of 2015 directed the Select Subcommittee to hold hearings, call witnesses, take testimony, and make its investigations at such places as it deems necessary.

Members were appointed to the Select Subcommittee in March 2015. Subsequently, the Select Subcommittee held the following public hearings:

April 28 th , 2015	Irvis Office Building, State Capitol, Harrisburg PA
May 28 th , 2015	Reading Area Community College, Reading, PA
February 8 th , 2016	Irvis Office Building, State Capitol, Harrisburg, PA
March 18 th , 2016	Greater Pittsburgh Chamber of Commerce, Pittsburgh, PA
May 19 th , 2016	State College Area School District, State College, PA
June 15 th , 2016	Harrisburg University, Harrisburg, PA
September 16 th , 2016	Steam Fitters 420, Philadelphia PA

The Select Subcommittee further conducted the following informational tours:

March 17 th , 2016	Pittsburgh Institute of Aeronautics, West Mifflin, PA
March 17 th , 2016	Rosedale Technical College, Pittsburgh, PA
March 17 th , 2016	Pennsylvania Gunsmith School, Avalon, PA
May 19 th , 2016	State College Area School District Agricultural Science Program, State College, PA
May 19 th , 2016	Penn State University Food Science Department Program, State College, PA
September 16 th , 2016	Orleans Technical Institute, Philadelphia, PA
September 16 th , 2016	Steam Fitters 420, Philadelphia, PA
September 16 th , 2016	Benjamin Franklin High School, Philadelphia, PA

d. Testifiers before the Select Subcommittee

The following witnesses testified before the Select Subcommittee at its public hearings:

Carol Adukatis, Director of Workforce Initiative, PA State System of Higher Education (PASSHE) (May 28th, 2015)

Thomas Allen, President, PA Association of Technical Administrators (PACTA) and Administrative Director, Eastern Center for Arts and Technology (April 28th, 2015)

David Bittner, Agricultural Science Educator, Midd-West School District and President, PA Association of Agricultural Educators (May 19th, 2016)

Elizabeth Bolden, President & CEO, PA Commission for Community Colleges (May 28th, 2015)

Diane Bosak, Acting Deputy Secretary of Workforce Development, PA Department of Labor and Industry (April 28th, 2015)

James Buckheit, Executive Director, PA Association of School Administrators (PASA) (April 28th, 2015)

Lee Burket, Director, Bureau of Career and Technical Education, PA Department of Education (April 28th, 2015)

John Callahan, Senior Director of Government Affairs, PA School Boards Association (PSBA) (April 28th, 2015)

Dr. Pamela Carter, Dean of Business and Technology, Community College of Philadelphia (September 16th, 2016)

Uva Coles, Vice President of Institutional Advancement and Strategic Partnerships, Peirce College

Jacqueline Cullen, Executive Director, PACTA (April 28th, 2015)

Don Cunningham, President and CEO, Lehigh Valley Economic Development Corporation (September 16th, 2016)

Dr. James Denova, Vice President, Claude Worthington Benedum Foundation (March 18th, 2016)

Sara Deyarmin, Manager of Program Development, The Challenge Program, Inc. (March 18th, 2016)

Nancy Dischinat, Executive Director, Lehigh Valley Workforce Development Board, Inc. (June 15th, 2016)

Molly Jo Dubble, Dairy and Livestock Marketing Specialist, New Holland, PA and former President, PA Future Farmers of American Foundation (May 19th, 2016)

Debbie Dunn, Former President, PA Association of Private School Administrators (PAPSA) and Owner and Director, Lancaster School of Cosmetology and Therapeutic Bodywork (May 28th, 2015)

Dr. Mark Erickson, President, Northampton Community College (September 16th, 2016)

Laura Fisher, Senior Vice President, Workforce and Special Projects, Allegheny Conference on Community Development (March 18th, 2016 and June 15th, 2016)

Dan Fogarty, Director of Workforce Development and Chief Operating Officer, Berks County Workforce Development Board (June 15th, 2016)

Carol de Fries, Vice President of Workforce and Economic Innovation, Community College of Philadelphia (September 16th, 2016)

Barbara A. Grandinetti, Executive Director, The Challenge Program, Inc. (March 18th, 2016)

Dr. William Griscom, President, Thaddeus Stevens College of Technology (May 28th, 2015)

Eric Heasley, Executive Director, A. W. Beattie Career Center (March 18th, 2016)

Dr. Kathleen M. Howley, Deputy Vice Chancellor of Academic & Student Affairs, PASSHE (May 28th, 2015)

Doug Jensen, Vice President, Economic Development and CEO for the Advanced Technology Center, Westmoreland County Community College (May 28th, 2015)

Dr. William Kerr, Superintendent, Norwin School District and Chairman, Westmoreland County Forum for Workforce Development (March 18th, 2016)

Pete Klein, Training Director, Steamfitters 420 (September 16th, 2016)

Karen Kozachyn, Dean for Workforce Development and Community Education, Delaware County Community College (May 28th, 2015)

David Leftkowitz, Assistant Superintendent, Louisiana Department of Education (February 8th, 2016)

Ed Legge, Center for Workforce Information and Analysis (April 28th, 2015)

Kelly Powell Logan, Vice President, Strategic Workforce Development and University Centers, Harrisburg University (June 15th, 2016)

Jean Lonie, Director of Student Recruitment and Activities, College of Agricultural Science, Pennsylvania State University (May 19th, 2016)

Carl A. Marrara, Vice President of Government Affairs, Pennsylvania Manufacturers' Association (March 18th, 2016)

Dr. Kenneth M. Mash, President, Association of PA State College and University Faculties (APSCUF) (May 28th, 2015)

Briana Mihok, Senior Policy Strategist, University of Pittsburgh Institute of Politics (March 18th, 2016)

Robert Mikesell, Ph.D., Senior Instructor and Undergraduate Programs Coordinator, Pennsylvania State University (May 19th, 2016)

Alex Munro, Executive Director, Thaddeus Stevens College of Technology (May 28th, 2015)

David C. Namey, President, Department of Career and Technical Studies, PA State Education Association (PSEA) (April 28th, 2015)

Beth Olanoff, Policy Director, PA Department of Education (June 15th, 2016)

Krista Pontius, Agricultural Science Educator, Greenwood School District and Regional Vice-President, National Association of Agricultural Educators (May 19th, 2016)

Joe Reichard, Campus President, Berks Technical Institute (May 28th, 2015)

Katy Rittle, Director of Education and Workforce Development, Association of Builders and Contractors (ABC) Western PA (March 18th, 2016)

Mike Schurr, Director of Education, Finishing Trade Institute (September 16th, 2016)

Dr. Scott Sheely, Special Assistant for Workforce Development, PA Department of Agriculture (September 16th, 2016)

Aaron Shenck, Executive Director, PAPSA (May 28th, 2015)

Walter Slauch, Vice President, PACTA and Administrative Director, Central Montco Technical High School (April 28th, 2015)

James Smith, President and CEO, Economic Growth Council of Westmoreland (March 18th, 2016)

Vicki Smith, Board President, Homer Central School District (April 28th, 2015)

Hannah Smith-Brubaker, Deputy Secretary for Market Development, PA Department of Agriculture (April 28th, 2015)

Russell Spicuzza, ModSpace Territory Sales Manager, School Director and Vice President, Bethel Park School District, and Chairman Elect, ABC Western PA Board of Directors (March 18th, 2016)

Dr. Carolyn Strickland, Vice President for Enrollment Management, PA College of Technology (May 28th, 2015)

David Thomas, Administrative Director, York County School of Technology (April 28th, 2015)

William J. Thompson, Executive Director, Westmoreland-Fayette Workforce Investment Board (June 15th, 2016)

Mark Volk, President, Lackawanna College (May 28th, 2015)

Stephen Waller, Interim Senior Vice President of Academic Affairs and Provost, Reading Area Community College (May 28th, 2015)

Tyler Watkins, College Student and Member, Future Farmers of America (May 19th, 2016)

Dr. Brian White, Superintendent, Chartiers Valley School District (March 18th, 2016)

Chester P. Wichowski, D.Ed., Associate Director, Occupational Competency Assessment Program, Temple University (February 8th, 2016)

John Williams, Principal, Kensington Health Sciences Academy, School District of Philadelphia (September 16th, 2016)

Leann Wilson, Executive Director/Secretary and Treasurer, Association for Career and Technical Education (February 8th, 2016)

Eric Wolfgang, Board President, Central York School District (April 28th, 2015)

Jennifer Dunay Zinth, Director, High School and STEM, Education Commission of the States (February 8th, 2016)

II. Introduction

a. Benefits and Importance of CTE

While perhaps the emphasis on providing a quality workforce has endured, Pennsylvania's approach to CTE has dramatically shifted over the past few decades to reflect changing economies, evolving technologies, and the growing need for the workforce to remain globally competitive. Over that time, the mission of CTE has evolved from providing students with vocational training sufficient to prepare them for entry-level employment to helping students develop higher-level skills needed for successful careers.¹

Research has demonstrated that significant benefits are experienced by students who participate in CTE programs. CTE students not only have the opportunity to learn both technical and soft skills to enhance their employability upon graduation, but CTE programs can also help increase student engagement and improve student outcomes. Students identified as CTE concentrators are less likely to drop out of high school than the national average, which has been estimated to save the economy \$168 million each year.² According to a study conducted by the National Research Center for CTE, which examines the association between the CTE-to-academic-course-taking ratio and the likelihood of dropping out, for students entering high school a CTE:academic course ratio of 1:2 was beneficial and correlated to a decreased risk of dropping out.³

Furthermore, there is compelling evidence that participation in CTE can help boost graduation rates, as CTE concentrators are more likely to graduate from high school than their peers. For example, in 2012 the nationwide average high school graduation rate for CTE concentrators was 93%, compared to the national adjusted cohort graduation rate of 80%.⁴ In Pennsylvania in 2013 99% of CTE high school students graduated⁵; in comparison the four-year

¹ Testimony of PACTA (April 28th, 2015).

² *What is CTE?* National Association of State Directors of Career and Technical Education Consortium (NASDCTEc). Retrieved from <https://careertech.org/sites/default/files/WhatIsCTE2014.pdf>

³ *Dropping Out of High School and the Place of Career and Technical Education: A Survival Analysis of Surviving High School* (2005). National Research Center for CTE. Retrieved from <http://files.eric.ed.gov/fulltext/ED497348.pdf>

⁴ *CTE Works!* (2016). Association for Career and Technical Education. Retrieved from https://www.acteonline.org/uploadedFiles/What_is_CTE/Fact_Sheets/CTE_Works_Research_2016.pdf

⁵ Testimony of PSBA (April 28th, 2015).

cohort graduation for the 2012-2013 school year was 85.54%, according to PA Department of Education (PDE) data. Students who attend CTE high school have also demonstrated higher rates of on-time graduation and were more likely to complete the college-preparatory mathematics sequence of Algebra I, Algebra II, and Geometry. Other studies have shown that students participating in CTE programs or career pathways outperform their peers in the number of credits earned in Science, Technology, Engineering, and Mathematics (STEM) fields and earned higher GPAs in their CTE classes.⁶

Data also suggests that CTE students leave high school ready for postsecondary success. A study from the U.S. Department of Education found that 75% of CTE students pursued additional postsecondary education after high school graduation, compared to 84% of non-CTE students.⁷ Many CTE students often leave their secondary programs with significant college credit, allowing them to complete an associate's or bachelor's degree more quickly.⁸ According to a study conducted by Columbia University in 2012, students who participate in dual enrollment opportunities "are more likely to persist in post-secondary education" and less likely to require remediation of basic skills upon entry into postsecondary education than their peers.⁹ Other studies have suggested that the number of CTE courses a student enrolls in increases the probability of a student being employed the year after graduation and increases expected wages, while dual enrollment magnifies the impact of additional CTE courses, significantly increasing the probability a student will enroll in a two-year college after graduation.¹⁰

b. The Skills Gap in Pennsylvania

According to the PA Department of Labor and Industry, by 2022 employment in Pennsylvania is expected to exceed 6.5 million people, equating to a projected growth rate of 7.7% between 2012 and 2022.¹¹ At the same time, occupations requiring additional training beyond the secondary level are continuing to increase, with a 15.8% growth rate for jobs requiring an associate's degree, an 11.7% growth rate for occupations requiring some postsecondary training, and a 9.2% growth rate for positions requiring long-term training or

⁶ Testimony of Leann Wilson (February 8th, 2016).

⁷ National Assessment of Career and Technical Education: Interim Report (2013). U.S. Department of Education, Office of Planning, Evaluation and Policy Development Policy and Program Studies Service. Retrieved from <http://www2.ed.gov/rschstat/eval/sectech/nacte/career-technical-education/interim-report.pdf>

⁸ Testimony of PACTA (April 28th, 2015).

⁹ Testimony of Briana Mihok (March 18th, 2016).

¹⁰ Career and Technical Education in High School: Does It Improve Student Outcomes? (April 2016). Thomas B. Fordham Institute. Retrieved from <https://edexcellence.net/publications/career-and-technical-education-in-high-school-does-it-improve-student-outcomes>

¹¹ Testimony of Diane Bosak (April 28th, 2015).

apprenticeship. With 200,000 job openings projected each year in the state, more than 26,000, or 13%, are expected in occupations in traditionally CTE-related fields.

In Pennsylvania employers are continuing to struggle to find qualified employees to fill vacancies, and yet, these positions go unfilled because prospective workers do not have the educational background or professional background demanded by today's economy. This disconnect between the needs of employers and the skill set of prospective employees, often referred to as a "skills gap," threatens to hinder the growth of the state's economy, impacting industry and regions across the state and discouraging employers from hiring. Numerous testifiers before the Select Subcommittee shared data that emphasized a pressing need to better align workforce needs and educational investments. Among the most compelling facts contributing to this urgency:

- 2015 marked the sixth consecutive year that skilled trade positions were the hardest to fill in the United States.¹²
- According to a 2013 study conducted by the PA Chamber of Business and Industry, a majority (72%) of the 464 Pennsylvania companies surveyed reported difficulty hiring employees with adequate skills, training, or education, and more than half found it increasingly difficult to find qualified employees during the last five years and expect the problem to worsen over the next five years.¹³
- 80% of manufacturers report difficulty in finding skilled workers.¹⁴ In Pennsylvania in 2011 alone 12,100 new jobs were created, but as of 2012 there were over 7,600 vacant manufacturing jobs in Pennsylvania according to a report from the Governor's Manufacturing Advisory Council.
- According to the PA Department of Agriculture, there will be a critical shortage of workers and skills in agriculture.¹⁵ In the top 20 agriculture and food occupations statewide, a total of 191,350 openings were projected between 2015 and 2024, according to a report generated by Economic Modeling Specialists International.

The skills gap also has significant ramifications for Pennsylvania's students. According to the Institute for College Access and Success, 71% of students at public four-year institutions and private non-profit four-year institutions carry student loan debt, with the average debt totaling

¹² Testimony of Katy Rittle (March 18th, 2016).

¹³ Retrieved from

https://www.pachamber.org/advocacy/studies_reports/pdf/13_Workforce_Development_White_Paper.pdf?1479222020

¹⁴ Testimony of Carl Marrara (March 18th, 2016).

¹⁵ Testimony of Hannah Smith Brubaker (April 28th, 2015).

\$34,798.¹⁶ Studies show, however, the ongoing struggle students are experiencing in securing employment that enables them to meet these debt obligations. For example, according to the Accenture Strategy 2016 U.S. College Graduate Employment Study, 51% of 2014 and 2015 graduates considered themselves to be underemployed or working in jobs not requiring a college degree.¹⁷ 39% reported annual salary earnings of \$25,000 or less.

¹⁶ Retrieved from <http://ticas.org/posd/map-state-data#>

¹⁷ Retrieved from <https://www.accenture.com/us-en/insight-2016-accenture-college-graduate-employment-research>

III. Existing Career Preparation and Training Programs

a. State Agency Efforts

PA Department of Labor and Industry

The PA Department of Labor and Industry (L&I) currently operates several initiatives designed to transform and modernize Pennsylvania educational and workforce development systems.¹⁸

- The *Industry Partnerships Program*, first created in 2005 and enacted into statute by Act 67 of 2011, is designed to connect Pennsylvania's educational and training systems with the needs of employers by connecting companies within the same industry on a regional basis to identify common skills needs and developing training programs to meet those needs.¹⁹ Act 67 authorizes L&I to work with state and regional workforce and economic development agencies to identify industry clusters to be targeted for workforce and economic development investments. Grants may be used for a variety of purposes including information sharing, identifying training gaps, assisting educational and training institutions in aligning curriculum to industry demands, and developing career ladders.
- *Business-Education Partnership Grants* connect local businesses and school districts to promote job opportunities and career pathways. Partnerships must include local workforce investment boards (WIBs), business entities, school districts, career and technical schools, and institutions of higher education.
- *Apprenticeship Program Grants* provide funding to enhance existing apprenticeship programs in Pennsylvania to assist apprentices in acquiring technical, soft, and safety awareness skills.

In addition to these funding opportunities, L&I provides assistance to job seekers through 65 PA CareerLink Centers, while the Center for Workforce Information and Analysis (CWIA)

¹⁸ Testimony of Diane Bosak (April 28th, 2015).

¹⁹ Ibid.

offers reports and materials to school district guidance counselors and CTCs, including a Career Guide for high school students that outlines labor market information and job opportunities across various occupations.²⁰

PA Department of Education

The Bureau of Career and Technical Education within the PA Department of Education (PDE) helps oversee and provides technical assistance to secondary local education agencies (LEAs), 34 postsecondary institutions which received federal Carl D. Perkins funds, and 74 entities that receive state reimbursement for adult technical training programs.

Through the Student Occupationally and Academically Ready (SOAR) Program, PDE has designed an educational plan that articulates secondary career and technical programs to postsecondary degrees and certificate programs. Lee Burket, Director of the Bureau of Career and Technical Education, testified that PDE has developed this program of study and corresponding statewide articulation agreement to ensure that students have the opportunity to earn a minimum of nine college credits for secondary technical coursework.²¹ The number of equivalencies adopted under this agreement varies according to institution.

Table 1²²
Institutions Accepting SOAR Programs

Institution	Location	Institution	Location
Allegheny College of Maryland	Cumberland, MD	Lehigh Carbon Community College	Schnecksville, PA
Bucks County Community College	Newtown, PA	Lenape Technical School Practical Nursing Program	Kittanning, PA
Butler County Community College	Butler, PA	Luzerne County Community College	Nanticoke, PA
Career Technology Center of Lackawanna College	Scranton, PA	Manor College	Jenkintown, PA
Central PA Institute of Science and Technology	Pleasant Gap, PA	Mercyhurst University	Erie, PA
Clarion University of PA	Clarion, PA	Montgomery County Community College – Central Campus	Blue Bell, PA
Commonwealth Technical Institute	Johnstown, PA	Mount Aloysius College	Cresson, PA

²⁰ Testimony of Ed Legge (April 28th, 2015).

²¹ Testimony of Lee Burket (April 28th, 2015).

²² Retrieved from <http://www.collegetransfer.net/Default.aspx?tabid=943&from=4067>

Table 1 (Continued)
Institutions Accepting SOAR Programs

Institution	Location	Institution	Location
Community College of Allegheny College	Pittsburgh, PA	Northampton County Area Community College	Bethlehem, PA
Community College of Beaver County	Monaca, PA	Northern Tier Career Center	Towanda, PA
Community College of Philadelphia	Philadelphia, PA	Orleans Technical Institute	Philadelphia, Pa
Crawford County Career and Technical Center Practical Nursing Program	Meadville, PA	Peirce College	Philadelphia, PA
Delaware County Community College	Media, PA	Pennsylvania College of Technology	Williamsport, PA
Fayette County Career and Technical Institute Practical Nursing Program	Uniontown, PA	Pennsylvania Highlands Community College	Johnstown, PA
Greater Altoona Career and Technical Center	Altoona, PA	Pennsylvania Institute of Technology	Media, PA
Greater Johnstown Career and Technical Center	Johnstown, PA	Reading Area Community College	Reading, PA
Greene County Career and Technical Center	Waynesburg, PA	Rosedale Technical Center	Pittsburgh, PA
Harcum College	Bryn Mawr, PA	SUNY College of Agriculture and Technology at Cobleskill	Cobleskill, NY
Harrisburg Area Community College-Harrisburg	Harrisburg, PA	Thaddeus Stevens College of Technology	Lancaster, PA
Huntingdon County Career and Technology Center	Mill Creek, PA	Western Area Career and Technology Center	Canonsburg, PA
Johnson College	Scranton, PA	Westmoreland County Community College	Youngwood, PA
Lackawanna College	Scranton, PA	Wilkes-Barre Area Career and Technical Center Practical Nursing	Wilkes Barre, PA
Lancaster County Career and Technology Center	Willow Street, PA		

Additionally, PDE offers career information to school districts and CTCs in the form of a career guide and provides technical assistance to help LEAs develop their career counseling

programs.²³ PDE also provides LEAs with resources to assist in engaging the business community.

PA Department of Agriculture

The PA Department of Agriculture (AG) has undertaken several steps to address the skills gap challenging the agriculture and food industry through various collaborations with other state agencies. These collaborations include working with PDE to organize an Agricultural Education Advisory Committee, which will be submitting a forthcoming report to the General Assembly and the Governor; assisting L&I in the identification of high priority occupations in agriculture; and connecting with the PA Department of Military and Veterans Affairs, the Office of Vocational Rehabilitation, the PA Department of Human Services, and the PA Department of Drug and Alcohol Programs to explore the use of agricultural placements as transitional jobs for non-traditional agricultural workers.²⁴

AG has further supplemented the resources available regarding career opportunities within agriculture and the food industry by creating a Desk Guide to Careers in the Agriculture and Food Industry for distribution to counselors and workforce development programs, by adding career information on AG's website and social media outlets, and by publishing a list of Agriculture and Food Careers of the Future.

b. Elementary and Secondary CTE Programs

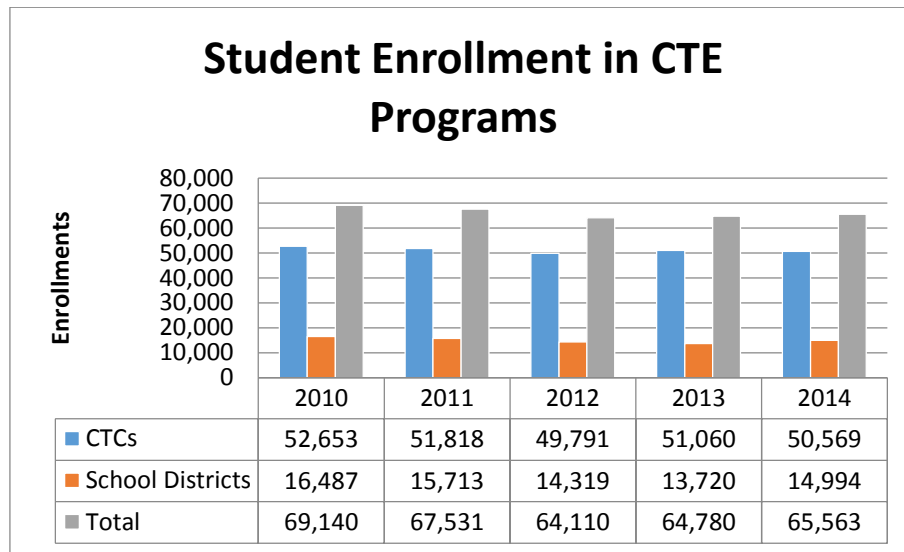
In Pennsylvania secondary students may participate in CTE either through participation in programs offered in Career and Technical Centers (CTCs) or through programs approved by PDE that are offered in public high schools. 135 high schools hold PDE approval for CTE, 15 of which operate eight or more approved programs. Pennsylvania currently has 86 CTCs, including 13 comprehensive CTCs that offer both academic and technical programs and 60 occupational CTCs that provide only technical coursework.

Approximately 65,000 students in grades 9 through 12 are currently enrolled in CTE programs, representing only 12% of the student population in those grades.²⁵

²³ Testimony of Lee Burket (April 28th, 2015).

²⁴ Testimony of Dr. Scott Sheely (September 16th, 2016).

²⁵ Testimony of Lee Burket (April 28th, 2015).

Table 2²⁶

Establishment and Operational Structure

Article XVIII of the Public School Code of 1949 (relating to Vocation Education) authorizes the creation and operation of vocational education programs in school districts and in area vocational-technical schools (AVTSs), also known as CTCs. Regulations at 22 Pa. Code § 4.31 provide that vocational-technical education courses must be accessible to all high school students attending those grades in which vocational-technical education courses are offered. Students and parents must be informed of the students' rights to participate in vocational-technical education programs and courses.

AVTSs, or CTCs, are joint entities that consist of school districts within an approved attendance area that offer their students vocational education programming at a shared location. This model allows school districts to combine resources and more efficiently administer technical programs, which, if school districts were required to fund separately, would likely be unsustainable.²⁷ School district members of a CTC are each represented on the joint operating committee of the CTC, which functions similarly to a local school board in overseeing the operation of the CTC, including the approval of the CTC budget. School district contributions to CTCs are determined through articles of agreement designed to outline the terms, rights, and obligations of the participating districts in the organization and establishment of the CTC.

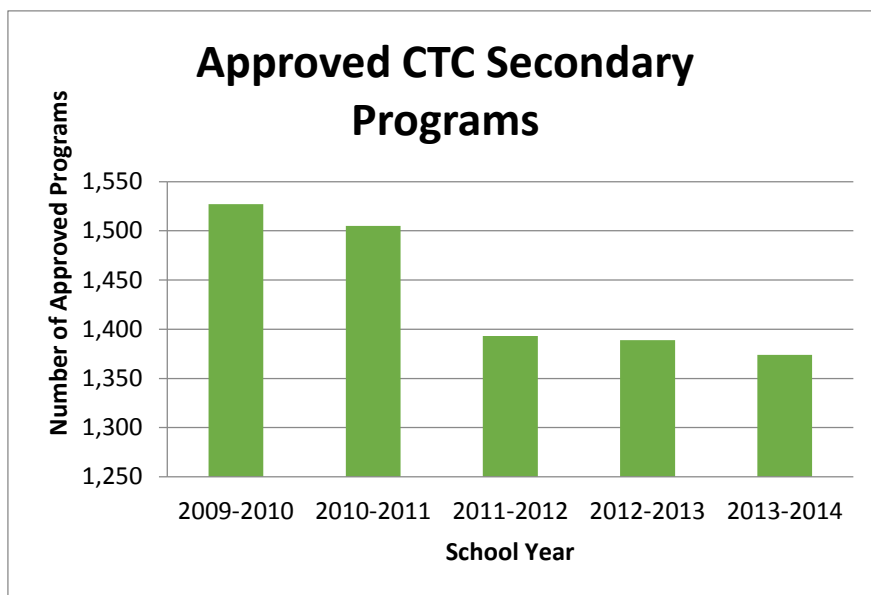
²⁶ Testimony of Lee Burket (April 28th, 2015).

²⁷ Testimony of PSBA (April 28th, 2015).

CTE Program Approval

New, expanded, or revised vocational education programs must be approved by the Secretary of Education, and previously approved programs must be reviewed for re-approval by the Secretary at least every five years.

Table 3²⁸



Applications for program approval must include the following:

- A description of the program evidencing how a standards-based philosophy has been incorporated.
- Evidence that the program prepares students for employment in high priority occupations and is supported by local employers.
- Evidence that the instructional equipment is comparable to industry needs as recommended by the Occupational Advisory Committee.
- Evidence that the length of time students will be scheduled into a program meets regulatory requirements.
- Evidence that each secondary vocational education teacher will hold a valid certificate for the teacher's assigned position.

²⁸ *Pennsylvania Career and Technical Centers* (September 2014). PDE. Retrieved from <http://www.education.pa.gov>

- Evidence that adequate resource material will be available to support the instructional program plan as required by program accrediting authorities, if applicable, or recommended by the occupational advisory committee.
- Evidence that supports that services and accommodations will be available to disadvantaged, disabled or limited English-speaking students enrolled in vocational and technical programs.
- Evidence that school entities will provide students adequate supports to meet academic standards as determined by Chapter 4 and, when applicable, consistent with the student's IEP, and that instruction in these academic areas at all school entities where the student is enrolled is appropriate to the chosen area of occupational training.
- Evidence that articulation exists between secondary and postsecondary institutions within a service area and that a system exists promoting seamless transition to ensure the maximum opportunity for student placement including opportunities for concurrent enrollment under Article XVI-B of the School Code (24 P. S. § § 16-1601—16-1613) or dual enrollment or other strategies that promote acquisition of postsecondary credit while still in high school.
- Evidence of program sponsorship or involvement, or both, in Career and Technical Student Organizations (CTSOs).
- Evidence that, if a program has been reduced in hours, the reduction in hours will not result in a less effective education program being offered.
- Evidence that joint planning occurs between the AVTS and district of residence around the academic and other needs of attending students.
- Evidence that students are following an educational plan and have an occupational objective.

Advisory Committees

School districts and CTCs providing CTE programs are required to appoint a local advisory committee, whose membership must consist of business and industry representatives, public sector employers, agriculture, labor organizations, community organizations, postsecondary education institutions, and the general public.²⁹ Current regulations require the local advisory committee to meet at least once each year and give advice regarding the CTE.

Additionally, each vocational-technical education program or cluster of related programs offered by a CTC must have a corresponding occupational advisory committee.³⁰ A majority of

²⁹ 22 Pa. Code § 4.33 (a).

³⁰ 22 Pa. Code § 4.33 (c).

members of the occupational advisory committee must be employees and employers in the occupation related to the training program, and the committee must meet at least twice annually.

Each advisory committee and occupational advisory committee must include representatives authorized by local workforce investment boards, civic organizations, and higher education institutions.³¹

Guidance Plans

School boards are required to have a written plan on file for the development and implementation of a comprehensive, sequential program of guidance services for kindergarten through 12th grade, which must include procedures to provide guidance services to CTCs.³²

Upon request, this plan must be submitted to the Secretary of Education.

Each guidance plan must be designed to include the following guidance service areas:³³

- Assistance to students in selecting vocational curricula that meet their needs and address their interests.
- Assistance for all vocational students in making educational career plans including high school academic and technical preparation and postsecondary education and training, and adjustments through the use of individual and group counseling and appropriate student assessment procedures.
- Provision of occupational and educational information needed for realistic career planning in an organized, systematic fashion for students, parents and teachers.
- Maintenance of cumulative records and the use, exchange and release of student information.
- Adequate orientation procedures for vocationally oriented pupils.
- Support of a placement service that is developmental and makes provisions for the transition from school to the world of work.
- Formal and informal consultation with teachers, administrators and other school staff.
- A school-initiated system of parental involvement.
- Liaison activities with community agencies.
- Assistance in the conduct of follow-up studies to determine the effectiveness of the curriculum.

³¹ 22 Pa. Code §§ 339.13 and 339.14.

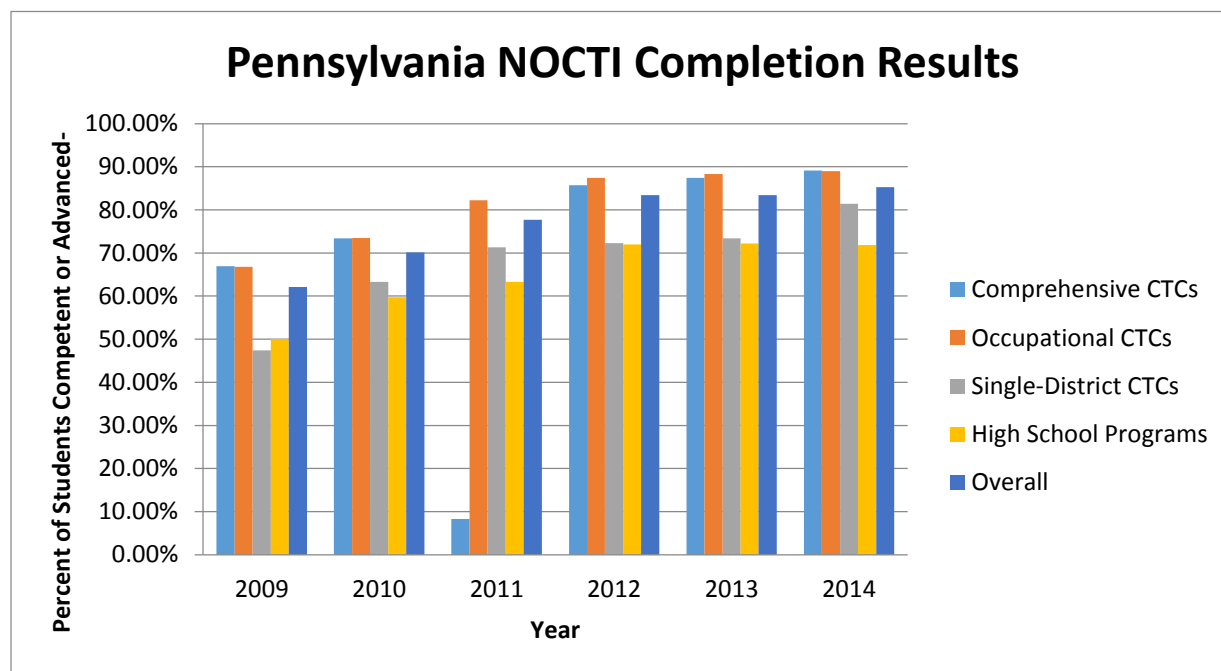
³² 22 Pa. Code § 339.31.

³³ 22 Pa. Code § 339.32.

Competency Assessments and Industry Certifications

22 Pa. Code § 4.31 requires that students who complete approved vocational-technical education programs must also have their occupational competency assessed by completion of the appropriate assessment under the Pennsylvania Skills Certificate Program or by completion of another occupational competency assessment approved by PDE. Currently, Pennsylvania utilizes two methods of measuring the occupational competency of these students: assessments from the National Occupation Competency Testing Institute (NOCTI) and the National Institute of Metalworking Skills (NIMS).

Table 4³⁴



1,542 secondary programs offer industry certifications. According to the most recently available data provided by PDE, during the 2013-2014 school year, the total number of industry certifications earned by CTE students in Pennsylvania was 23,621, up from 18,381 over four years.³⁵ Of these certifications, 14,617 were awarded to 7,612 high school seniors, or approximately 36.7% of grade 12 CTE enrollments. Across all secondary CTE enrollments, 13,202 students earned certifications, or approximately 20.1% of this student population.

³⁴ Testimony of Lee Burket (April 28th, 2015).

³⁵ Ibid.

Career Education Standards and Curriculum

Regulations at 22 Pa. Code § 4.12 provide for statewide academic standards in Career Education and Work, which are designed to help students develop an understanding of career options in relation to individual interests, develop knowledge and skill in job-seeking, and for students completing vocational-technical programs, develop the skills to succeed in the occupation for which they are prepared.

The academic standards in Career Education and Work enumerate what students should know and be able to do at four grade levels (3, 5, 8 and 11) in four areas: 1) Career Awareness and Preparation; 2) Career Acquisition (Getting a Job); 3) Career Retention and Advancement; and 4) Entrepreneurship. These academic standards took effect on July 8, 2008 and are reviewed by the State Board of Education every three years.

Furthermore, planned instruction in career education, including exposure to various career options and the educational preparation necessary to achieve those options, must be provided to students in the middle level education program serving students ages 11-14.³⁶ Planned instruction may be provided as a separate course or as an instructional unit within a course or other interdisciplinary instructional activity. Planned instruction must be made available to every student in the high school program in vocational-technical education.³⁷

Agricultural Education

According to the PA Department of Agriculture, agriculture is the leading economic enterprise for the Commonwealth, contributing nearly \$75 billion to the state's economy.³⁸ Currently, 12,000 students in grades 8 through 12 are enrolled in agricultural education programs in Pennsylvania, with 70% of students attending comprehensive high schools and 25% attending CTCs.³⁹

Agricultural education in Pennsylvania consists of three core components: classroom and laboratory instruction, experiential learning, and leadership development.⁴⁰ Through classroom and laboratory instruction students are exposed to the foundational knowledge and skills in agriculture, food, and natural resources. Through experiential learning, which takes the form of a Supervised Agricultural Experience, a student operates an agricultural business, completes an

³⁶ 22 Pa. Code § 4.22 (c)(9).

³⁷ 22 Pa. Code § 4.23 (d)(1).

³⁸ Testimony of Hannah Smith-Brubaker (April 28th, 2015).

³⁹ Testimony of David Bittner (May 19th, 2016).

⁴⁰ Testimony of David Bittner and Krista Pontius (May 19th, 2016).

internship, conducts a scientific study or experiment, or participates in other forms of career exploration. Finally, students participate in the third component through Future Farmers of America (FFA), a CTSO that offers agricultural education students opportunities for leadership and personal and professional growth. Content for agricultural education in Pennsylvania varies across programs, as no minimum academic standards have been approved for this industry statewide.⁴¹

c. Postsecondary Career Training Programs and Opportunities

Community Colleges

Pennsylvania's 14 community colleges enroll more than 344,000 students annually in academic, workforce, and noncredit programs.⁴² 62% of the colleges' 1,384 credit programs are in Science, Technology, Engineering, and Mathematics (STEM) programs, and 48% are in high-priority occupations, as identified by L&I.

In order to align program offerings with workforce needs, the colleges regularly evaluate their programs and develop new programs through a process which considers local labor market data, demand in high-priority occupations, local employer need, and the input of industry advisory councils.⁴³ The colleges individually have undertaken a variety of approaches to enhancing workforce and educational partnerships, including developing programs aligned with local industry growth, conducting outreach with local elementary and secondary schools, and offering dual enrollment opportunities to local high school students.

PA State System of Higher Education

The PA State System of Higher Education (PASSHE) includes 14 universities that enroll over 112,000 students. According to the testimony of Dr. Kathleen Howley, Deputy Vice Chancellor for Academic Student Affairs, PASSHE's strategic plan requires the system to align academic offerings with workforce needs and continually review program offerings, resulting in the development of 50 new degree programs, certificates, and minors over the past five years.⁴⁴

⁴¹ Testimony of Hannah Smith-Brubaker (April 28th, 2015).

⁴² Testimony of Elizabeth Bolden (May 28th, 2015).

⁴³ Ibid.

⁴⁴ Testimony of Dr. Kathleen Howley (May 28th, 2015).

Since 2003, PASSHE has participated in a “two-plus-two” program funded by the Department of Community and Economic Development.⁴⁵ This program has supported 28 projects in field, including information technology, computer security, life sciences, biotechnology, and advanced manufacturing and materials, which allowed for agreements between secondary and postsecondary institutions to enable students to advance to the postsecondary level with advanced credits obtained at the secondary level. With over 70 articulation agreements signed, the program has exposed over 533,781 students to two-plus-two technology clusters, and nearly 7,200 students graduated from a two or four-year program into the workforce.⁴⁶

Pennsylvania State University – College of Agricultural Sciences

The Pennsylvania State University (PSU) is a state-related institution of higher education that in 2015 enrolled over 97,000 students. In connection with the Select Subcommittee’s charge with respect to career and technical training, the Select Subcommittee specifically learned about the College of Agricultural Sciences at Penn State, which serves approximately 3,000 students, 27% of whom are FFA members. Between 65-75% of graduates go directly into full-time employment after graduation.⁴⁷

According to Dr. Robert Mikesell, Senior Instructor and Undergraduate Coordinator, PSU Department of Animal Science, secondary agricultural education programs serve as a natural conduit for PSU’s Animal Science Department, and students matriculating from these programs are more likely to succeed in Animal Science because the Supervised Agricultural Experiences offered in secondary programs provide skills that are difficult to teach in a four-year postsecondary program.⁴⁸

Penn College of Technology

The Pennsylvania College of Technology (Penn College) offers associate and baccalaureate degrees in over 100 careers with a focus on applied technology, and every student entering an associate program at the college can choose to transition into a four-year program to complete a baccalaureate degree. Dr. Carolyn Strickland, Vice President for Enrollment Management and Associate Provost, testified that the college’s motto, “degrees that work,” is reflected in the types of programs offered, including automotive technology, nursing, diesel technology, heavy construction equipment technology, construction management, electrical technology, building

⁴⁵ Testimony of Carol Adukatis (May 28th, 2015).

⁴⁶ Ibid.

⁴⁷ Testimony of Jean Lonie (May 19th, 2016).

⁴⁸ Testimony of Robert Mikesell (May 19th, 2016).

and sustainable design, and aviation maintenance technology, and many of these programs are aligned with Pennsylvania's high-priority occupation list.⁴⁹ The three-year average overall placement rate for Penn College graduates is 94%.

In order to offer students pathways to high wage occupations, Penn College maintains strong partnerships with business and industry by establishing for each academic program a program advisory board comprised of business and industry experts in the related area. The college also supports multiple pathways for collaboration with secondary partners to help students enter their programs steps ahead and keep costs low. These opportunities include the PC NOW Program, which allows high school students to earn Penn College credits by completing courses taught by approved secondary educators in the students' high schools or CTCs. Beginning in 2014-2015, PC NOW courses were offered to students at no charge, and since that time interest in the program has increased, with enrollments reaching 802 students in 2014-2015, an increase of 450 students over the prior year.⁵⁰ Penn College has sought to sign onto SOAR for as many credits as possible and has also developed an Advanced Credit process for students to earn credit for prior learning experiences.

Thaddeus Stevens College of Technology

Thaddeus Stevens College of Technology (Thaddeus Stevens) is the only two-year technical college owned by Pennsylvania, and 100% of the students attending are Pennsylvania residents. The mission of the college is to help under-resourced Pennsylvania residents escape the cycle of poverty through a high-skill, high-wage education at little or no cost.⁵¹ There is a considerable demand for the programs offered at the college, with over 3,000 students applying for admission annually at an acceptance rate of approximately 20%.

Thaddeus Stevens works to align its programs with the needs of potential employers through industrial advisory committees established for each program, which advise the college on curriculum and equipment purchases, as well as provide an avenue for potential internships for students.

Independent Institutions of Higher Education

94 independent colleges and universities currently operate in Pennsylvania and offer a wide range of programs and degrees. Mark Volk, President of Lackawanna County College, testified

⁴⁹ Testimony of Dr. Carolyn Strickland (May 28th, 2015).

⁵⁰ Ibid.

⁵¹ Testimony of Dr. William Griscom (May 28th, 2015).

that this sector of higher education confers 49% of all degrees awarded in Pennsylvania, including 51% of degrees in industrial, civil, and mechanical engineering, 52% of degrees in accounting and auditing, and 71% of degrees in registered nursing.⁵² In addition to the four-year programs offered at these universities, Pennsylvania is also served by several two-year private colleges that often serve communities that do not have access to community colleges and can offer students associate's degrees with a career focus.

Privately-Licensed Career Colleges and Technical Schools

Approximately 200 private career colleges and schools enroll students in Pennsylvania in career-focused technical programs that include construction, welding, heating, ventilation, and air conditioning (HVAC), culinary arts, aviation maintenance, cosmetology, massage, allied health, nursing, and auto mechanics. The programs offered by these schools range from two-year associate and four-year bachelor degree programs to shorter certificate programs, and many also offer accelerated learning options for students to help keep costs low and transition students over to the workforce more quickly. Aaron Shenck, Executive Director, PA Association of Private School Administrators (PAPSA), further testified that career schools have notable outcomes for students, with these schools having a 63% graduation rate in two-year associate programs and 73% placement rate of graduates into employment related to their field of study.⁵³

Apprenticeships and Workforce Training

In addition to postsecondary education at college, universities, and trade schools, many industries offer robust apprenticeships or other training programs for employers and their employees. For example, the Associated Builders and Contractors (ABC) provides training for participating companies that allows them to enroll employees in federally-registered apprenticeship classes that meet or exceed U.S. Department of Labor Standards.⁵⁴ Similarly, the Steamfitters Local Union 420 Training Center enrolls approximately 300 individuals in a five-year apprenticeship program which includes 880 class and laboratory hours and 10,000 hours of “on the job” training.⁵⁵ The program has standards of apprenticeship on file with the U.S. Department of Labor, has been accredited by the Council on Occupational Education, and holds state licensure as a privately licensed school. The program also maintains articulation agreements with several local colleges and universities to allow individuals to apply up to 33 apprenticeship credits towards an associate's or bachelor's degree. The Finishing Trades Institute

⁵² Testimony of Mark Volk (May 28th, 2015).

⁵³ Testimony of Aaron Shenck (May 28th, 2015).

⁵⁴ Testimony of Katy Rittle (March 18th, 2016).

⁵⁵ Testimony of Pete Klein (September 16th, 2016).

has five apprenticeship programs registered in Pennsylvania accredited by the Council on Occupational Education and in 2014 sought licensure as a private school in order to be able to confer degrees.⁵⁶

Pennsylvania Higher Education Assistance Agency

The Pennsylvania Higher Education Assistance Agency (PHEAA) oversees administration of financial aid programs, including the State Grant program, which provides grants to Pennsylvania residents who are enrolled at least half-time at approved postsecondary institutions in programs of study of at least two academic years in length. Debbie Dunn, Owner and Director, Lancaster School of Cosmetology and Therapeutic Bodywork, testified the program can successfully be applied across all sectors of higher education because students qualifying for grants can use those funds at institutions of their choice that offer programs that best suit their needs.⁵⁷

Additionally, PHEAA funds and administers the PA-Targeted-Industry Partnership (PA-TIP) program to help align education to workforce demands. This program provides awards to students enrolled in programs of study in targeted industries, such as Energy, Advanced Materials and Diversified Manufacturing, and Agriculture and Food Production.

d. Relevant Federal Law

Federal Carl D. Perkins Act

Pennsylvania receives \$40 million related to the Federal Carl D. Perkins Career and Technical Education Improvement Act of 2006⁵⁸, and Pennsylvania's annual appropriation for vocational education is a major component of Pennsylvania's maintenance effort in order for the state to continue receiving federal vocational education funding. This federal funding is distributed through a formula to support 97 secondary schools and 34 postsecondary institutions, which include the state's 14 community colleges, two privately licensed schools, one state university, one specialized associate's degree granting institution, four private 2-year colleges, one private state-aided university, three private colleges, one state-related university, and one college of technology. In addition to being level-funded at the federal level for several years,

⁵⁶ Testimony of Michael Schurr (September 16th, 2016).

⁵⁷ Testimony of Debbie Dunn (May 28th, 2015).

⁵⁸ Testimony of Lee Burket (April 28th, 2015).

the amount of funding received by Pennsylvania has been decreasing as a result of population and demographic changes among the states.⁵⁹

Section 135 of the act contains nine required uses and 20 permissible uses for these funds for recipients of funding.⁶⁰ Required uses include strengthening the academic and career and technical skills of students participating in CTE programs, linking CTE at the secondary level and at the postsecondary level, providing students with strong experience in and understanding of all aspects of an industry, providing professional development programs, and developing evaluations of CTE programs. Recipients may use funds to involve parents, businesses, and labor organizations in program development and administration, to provide career guidance and academic counseling, to provide programs for special populations, to provide mentoring and support services, to provide support for family and consumer sciences programs, to support training and activities in non-traditional fields, and to provide support for training programs in automotive technologies. PACTA testified that in practice many of the state's CTCs use the majority of their Perkins allocation to support the high enrollment of special education students in CTE subjects.⁶¹

Federal Workforce Innovation and Opportunity Act (WIOA)

WIOA supersedes the requirements of WIA, amending the Adult Education and Family Literacy Act of 1998, the Wagner-Peyser Act of 1933, and the Rehabilitation Act of 1973, with the goals of improving the workforce, reducing dependency welfare programs, increasing self-sufficiency, meeting the skills requirements of employers, and enhancing productivity and competitiveness.⁶² Implementation of WIOA begins with Pennsylvania's Combined State Plan, beginning July 1, 2016 through June 30, 2020.

Pennsylvania submitted a WIOA combined state plan, which was substantially approved on June 16, 2016. The plan concentrates on five broad workforce development goals:

1. Establish Career Pathways that lead to employment in high-priority occupations in targeted industries and promote the creation of apprenticeship programs.
2. Invest in talent and skills for targeted industries in strategic partnership with employers and educational institutions.
3. Increase work-based learning opportunities for youth.

⁵⁹ Testimony of PACTA (April 28th, 2015).

⁶⁰ 20 U.S.C.A. § 2355.

⁶¹ Testimony of PACTA (April 28th, 2015).

⁶² Testimony of Nancy Dischinat (June 15th, 2016).

4. Engage employers to strengthen the connection of education and training and the economy by encouraging employers to participate in Business-Education Partnerships and by validating credentials.
5. Strengthen data sharing and more effectively use data by expanding the Workforce Data Quality Initiative to add additional state agencies and data sets to the database.

Workforce Development Boards

The Workforce Investment Act of 1998 established Workforce Investment Boards (WIBs) led by representatives of business and industry to develop strategies for workforce development for their local communities. The Workforce Innovation and Opportunity Act (WIOA) of 2014 modifies the structure for local workforce development boards (WDBs).

According to Section 107 of WIOA state criteria for the composition of local WDBs must include at a minimum:⁶³

- A majority of members who are representatives of business in the local area, including owners of businesses, chief executives or operating officers of businesses, or other business executives or employers with policymaking or hiring authority, representatives of businesses, including small businesses, or organizations representing businesses, or individuals nominated by local business organizations or trade organizations.
- At least 20% of members who represent the workforce, which shall include representatives of labor organizations and may include representatives of community-based organizations with experience in addressing employment needs of individuals with barriers to employment and the employment needs of eligible youth.
- Representatives of entities administering education and training activities in the local area, including:
 - A representative of providers administering adult education and literacy activities.
 - A representative of institutions of higher education providing workforce investment activities (including community colleges).
 - Representatives of local education agencies may be included.
- Representatives of governmental and economic and community development entities, including:
 - A representative of economic and community development entities.
 - An appropriate representative from the State employment service office.
 - An appropriate representative of programs under Title I of the Rehabilitation Act of 1973.

⁶³ 29 U.S.C.A. § 3122.

- Representatives of agencies administering programs relating to transportation, housing, and public assistance and representatives of philanthropic organizations serving the local area may be included.
- Representatives of entities as the chief elected official in the local area may determine to be appropriate.

In Pennsylvania, currently 22 WIBs are responsible for making connections between local employers and training providers, such as community colleges and CTCs. Diane Bosak testified to the importance of WIBs in spearheading these connections, sharing that L&I relies upon its local partners to make these connections and does not necessarily have relationships with local CTCs.⁶⁴ As a result, WIBs are the primary applicants for the Industry Partnership and Business-Education Partnerships grants available from L&I. Lee Burket also testified that the state is not involved in making connections between individual employers and educational programs, but rather current regulations require secondary entities to work with WIBs.⁶⁵ William Thompson, Executive Director, Westmoreland-Fayette Workforce Development Board, testified that local workforce boards can be important members of a larger partnership of industry, education, economic development, and business-affiliated organizations that view CTE as a key component of economic growth in local communities.⁶⁶

Functions of WDBs under WIOA include:

- Developing a comprehensive local/regional plan.
- Conducting workforce research and regional labor market analysis.
- Convening workforce system stakeholders.
- Engaging with employers in the workforce system.
- Overseeing programs, including developing MOUs with partners.
- Identifying eligible training providers.
- Overseeing local youth workforce investment activities.
- Leading career pathways development efforts with secondary and postsecondary education providers.
- Coordinating education providers including workforce, adult education, and literacy, career, and technical education, and vocational rehabilitation activities.
- Assessing one-stop accessibility for individuals with disabilities.⁶⁷

⁶⁴ Testimony of Diane Bosak (April 28th, 2015).

⁶⁵ Testimony of Lee Burket (April 28th, 2015). 22 Pa. Code Ch. 339 requires local advisory committees and occupational advisory committees of approved CTE programs to include representatives authorized by the local workforce investment boards.

⁶⁶ Testimony of William Thompson (June 15th, 2016).

⁶⁷ Testimony of Nancy Dischinat (June 15th, 2016).

IV. *Recent Initiatives and Policies Impacting CTE in Other States*

As the country continues to recover from the Great Recession, states have begun to renew interest in developing new policies related to CTE. According to Jennifer Zinth, Director of High School and STEM, Education Commission of the States, prior to 2013, CTE policy changes were incremental in nature and often were aimed at bringing programs into alignment with federal Carl D. Perkins requirements; since 2013, however, state policy changes to CTE have become more widespread and of a substantive nature.⁶⁸ More recently, in 2015 more than 125 CTE-related laws, executive policies, and budget actions were enacted across 15 states.⁶⁹

Business and Industry Involvement

In order to better align CTE programs with workforce demands, several states have established formal statewide, regional, and local structures to foster collaboration between industry representatives and K-12 and higher education partners.

In 2013 Indiana, for example, established a Career Council to coordinate statewide CTE efforts across K-12 and higher education. Duties of the Council include 1) conducting an annual inventory of job and career training activities conducted by state and local agencies and private groups, as available, 2) developing a strategic plan to improve the state's education and career training system, and 3) conducting a return on investment study of the state's CTE programs.⁷⁰

Career Readiness Indicators in State Accountability Systems

By 2014 a number of states were already using career readiness indicators in order for evaluation of secondary schools and in state report cards, including CTE participation and completion, industry credentials, dual enrollment participation and credits earned, work-based

⁶⁸ Testimony of Jennifer Zinth (February 8th, 2016).

⁶⁹ *State Policies Impacting CTE: 2015 Year in Review*. Association for Career and Technical Education. Retrieved from [https://www.acteonline.org/uploadedFiles/Who_We_Are/Press/2015_State-Policy-Review_FINAL%20\(1\).pdf](https://www.acteonline.org/uploadedFiles/Who_We_Are/Press/2015_State-Policy-Review_FINAL%20(1).pdf)

⁷⁰ Testimony of Jennifer Zinth (February 8th, 2016).

learning, CTSO participation, and postsecondary enrollment rates.⁷¹ 14 states use one or more of these indicators in their accountability formulas, while nine states incorporate these indicators into their accountability systems through bonus points:⁷²

- Nine states use an achievement indicator.
- Four states use a completion of course pathways indicator.
- 11 states use a dual enrollment indicator.
- Nine states use an attainment indicator (such as industry certification).
- Three states use an experimental learning indicator (such as co-ops and apprenticeships).

High School Graduation Requirements

To encourage students to complete CTE coursework and programming, some states now permit students to substitute a CTE course for a traditional academic mathematics or science course in order to fulfill high school graduation requirements. Some states include requirements that the CTE course used as a substitute for a traditional academic course must integrate state academic standards in the subject area in order to meet high school graduation requirements.⁷³ At the other end of the spectrum, Virginia remains the only state to require students to earn a CTE credential for a standard diploma, beginning with the class of 2017.

Work-Based Learning Opportunities

Several states have recently created statewide guides to assist schools and prospective employers in the implementation of work-based learning opportunities, which can include job shadowing, externships, mentorships, internships, pre-apprenticeships, and apprenticeships. Tennessee's March 2015 *Work-Based Learning Guide* identifies critical supports for educators and employers in delivering such programs. Indiana's Career Council similarly released *A Guide to Talent Attraction and Development for Indiana Employers* which highlights the benefits of work-based learning and outlines legal issues employers must consider when pursuing such programs.

⁷¹ *Making Career Readiness Count*. Achieve & NASDCTEc. Retrieved from http://www.achieve.org/files/Achieve-NASDCTEc_Career_Readiness_0.PDF

⁷² Ibid.

⁷³ Testimony of Jennifer Zinth (February 8th, 2016).

Industry Credentials and Certification

States have undertaken several approaches to increasing the number of students who graduate from high school with industry-recognized credentials. These approaches include incorporating attainment of an industry credential in high school graduation requirements or requiring students to obtain industry credentials. In Kansas, for example, under the Excel in CTE program established in 2012, school districts receive a financial bonus for each student achieving an industry-recognized credential before high school graduation. Since the establishment of the program, participation in the program and the number of credentials earned by students have more than tripled. In Florida since 2006 the state has dramatically increased the number of industry-recognized certificates earned by students at the secondary and postsecondary levels through the Florida Career and Professional Education Act (CAPE) Program, which aims to encourage statewide partnership between business and education communities to expand and retain high-value industries.⁷⁴ Since the outset of this program, the number of industry certifications has grown from 954 in 2007-2008 to 75,102 in 2013-2014 and 69,699 in 2014-2015 respectively.

Career Exploration and Counseling

To provide students with information about potential career opportunities, states are adopting policies to ensure that students have access to career exploration and counseling, including efforts to provide counselors with information about state and regional workforce needs. In 2015 Texas passed legislation establishing Postsecondary Education and Career Counseling Academies for middle, junior high, and high school counselors and others involved in postsecondary advising. These academies will be developed in consultation with stakeholders, such as the Texas Workforce Commission and business and community leaders, to offer counselors the skills and knowledge to counsel students on productive career planning and postsecondary success.

Dual Enrollment Opportunities

According to the National Alliance of Concurrent Enrollment Partnerships (NACEP), approximately 30% of dual enrollments are in CTE courses.⁷⁵ 47 states and the District of Columbia have adopted statutes, regulations, and policies governing dual enrollment programs, while fourteen state legislatures and state boards updated or expanded dual or concurrent

⁷⁴ Testimony of Chester Wichowski (February 8th, 2016).

⁷⁵ *Fast Facts about Dual and Concurrent Enrollment*. NACEP. Retrieved from <http://www.nacep.org/research-policy/fast-facts>

enrollment or articulated credit policies in 2015.⁷⁶ Jennifer Zinth testified that dual enrollment programs in other states with smaller K-12 populations are serving a larger number of students than Pennsylvania programs. For example, in 2013-2014 11,000 students in Pennsylvania were enrolled in dual enrollment programs offered at community colleges; in comparison 31,000 students were dually enrolled in Colorado during the same time period (approximately 25% of all 11th or 12th grade students). In Iowa 43,000 students were dually enrolled in 2014, representing approximately 30% of all community college students in the state.⁷⁷

State Career Pathway Systems

Many states have coordinated interagency activity to develop state career pathways systems.⁷⁸ In Virginia the Board of Workforce Development, the Employment Commission, and the Community College System are charged with developing a plan to combine public and private resources in support of career pathways. In Colorado the Workforce Development Council is collaborating with the state's community colleges to develop career pathways for in-demand industries within the state. The state has been working to implement the first career pathway for the 2016-2017 school year, with at least two additional career pathways developed in each subsequent year. Once career pathways have been implemented, the Colorado Department of Education and the Department of Labor and Employment is tasked with creating an online microsite with information about career awareness, wage and salary information, employment forecast, and financial aid opportunities.

⁷⁶ Testimony of Jennifer Zinth and Leann Wilson (February 8th, 2016).

⁷⁷ Testimony of Jennifer Zinth (February 8th, 2016).

⁷⁸ Testimony of Leann Wilson (February 8th, 2016).

V. Findings and Recommendations

a. Continue Legislative Oversight of CTE Initiatives

The work of the Select Subcommittee lasted approximately 21 months, during which time the Select Subcommittee held seven public hearings, conducted several tours of educational facilities, and received testimony from dozens of stakeholders from K-12 education, postsecondary and higher education, and business and industry. The time spent by the Select Subcommittee investigating the charges of House Resolution 102 produced meaningful dialogue regarding the place of CTE in the Commonwealth's system of education. It is clear, however, that in order to ensure that improvements to CTE are made as industry and education continue to evolve, additional legislative oversight may be necessary even after the Select Subcommittee completes its official duties pursuant to House Resolution 102.

- **Recommendation: The House of Representatives should establish a Subcommittee on Career and Technical Education for the House Education Committee to maintain continued oversight and conduct further hearings on CTE.**
- **Recommendation: The proposed Subcommittee on Career and Technical Education should engage the House Labor and Industry Committee and House Agriculture and Rural Affairs Committee as it conducts its oversight.**

b. Address Business and Industry Demands

A common theme that echoed throughout the course of the Select Subcommittee's hearings was the ongoing disconnect between the skills that employers need and the skills that prospective employees in fact have. While the severity of such a skills gap varies from industry to industry, it became apparent that a principal concern informing the work of the Select Subcommittee was whether or not existing CTE programs are properly aligned with employer need and that the Select Subcommittee should pursue strategies that advance this goal so that students can be employable once they complete their chosen program or training.

Use Data to Link Workforce Supply with Industry Demands

One challenge identified by the Select Subcommittee in connecting skilled prospective employees with employers is the availability of meaningful, timely data that can relay information related to workforce supply and demand. Furthermore, it is important that students and parents have access to meaningful, real-time data so that they can make informed decisions about pursuing further education and job training. Laura S. Fisher, Senior Vice President for Workforce and Special Projects for the Allegheny Conference on Community Development, noted that because existing workforce reports utilize only publicly available data which lags behind by at least one or two years, their usefulness in providing a clear picture of the opportunities available or the skills that are necessary for certain occupations is limited.⁷⁹ Don Cunningham, President and CEO of the Lehigh Valley Economic Development Corporation (LVEDC), similarly noted the challenge created by this two-year lag in federally reported data.⁸⁰

A promising initiative to collect and utilize meaningful, real-time workforce data has been undertaken by LVEDC to establish a labor supply data clearinghouse to engage higher education institutional research departments and help develop tools for K-12 and vocational education to supply data on their graduates.⁸¹ This effort has required LVEDC to initiate a business outreach program to survey businesses, as well as utilize public information, such as demographic information and public job postings, to detect labor market changes. By leveraging local partnerships to improve data collection and sharing, this clearinghouse can potentially help the region better link the supply and demand of talent across industry as well as serve as a model for the regions across the state to build a cooperative effort across K-12 education, postsecondary education, business, and economic development organizations.

- **Recommendation: The General Assembly should work with the Department of Labor and Industry to assist WDBs and other local workforce development entities in developing labor supply data clearinghouses, such as that utilized by LVEDC, to more accurately link industry demands with workforce supply.**
- **Recommendation: The General Assembly should encourage the Department of Labor and Industry to incorporate a similar labor supply data clearinghouse in its statewide data system.**

⁷⁹ Testimony of Laura Fisher (June 15th, 2016).

⁸⁰ Testimony of Don Cunningham (September 16th, 2016).

⁸¹ Ibid.

- **Recommendation: The General Assembly should encourage the Department of Labor and Industry to update its procedures for identifying high-priority occupations to ensure that this process accurately captures occupations in demand by employers.**

Improve Transition between Secondary CTE and Postsecondary Training through Articulation Agreements

By establishing standards for the transfer of relevant coursework, articulation agreements between secondary and postsecondary programs allow for students to move through the educational system more quickly without duplicating coursework or training, and the availability of articulation agreements can help reduce the cost to the student for postsecondary training. Presently, the PA Department of Education oversees the statewide articulation agreement, known as SOAR, for CTE students to transfer secondary coursework. Over 40 institutions currently accept credits for transfer. Current regulations also require CTE programs to include evidence that articulation exists between secondary and postsecondary institutions within a service area when they submit an application for approval of a new CTE program to the PA Department of Education.

Articulation agreements between secondary and postsecondary entities help further align secondary to postsecondary programs and increasing the number of articulation agreements among entities to allow for the transferring of credits may help increase collaboration between entities.⁸² Presently, articulation agreements between secondary and postsecondary entities are voluntary. Article XX-C of the Public School Code currently provides for articulation and transfer of college credits among state-owned institutions, community colleges, and participating state-related and independent institutions of higher education and requires public institutions of higher education to accept for transfer foundation courses determined to meet equivalency standards established by the Transfer Articulation and Oversight Committee.

- **Recommendation: The General Assembly should consider requiring community colleges and state-owned universities to enter into articulation agreements with school districts and CTCs and should encourage state-related and independent institutions of higher education to enter into such agreements.**
- **Recommendation: The General Assembly should work with the PA Department of Education to encourage more institutions of higher education to sign on to the SOAR program.**

⁸² Testimony of PAPSA (May 28th, 2015).

Furthermore, in order for students to take advantage of the opportunities created by such articulation agreements between entities, these agreements must be reviewed and kept up to date. Agreements should also be readily accessible to students.

- **Recommendation: The General Assembly should consider requiring the PA Department of Education to ensure that school administrators routinely update and revise articulation agreements to reflect current programs, courses, and credits.**
- **Recommendation: The General Assembly should encourage the PA Department of Education to make all state and local articulation agreements accessible to students through publication on the CollegeTransfer.net portal.**

Encourage Attainment of Meaningful Industry Credentials and Occupational Competency Testing

In Pennsylvania, many CTE programs provide students the opportunity to leave their postsecondary careers with industry standards-based credentials that are often required for entry-level employment, and secondary CTE students are also eligible to receive a Pennsylvania Skills Certificate upon completion of an occupational skills assessment, such as the NOCTI or NIMS. Industry credentials are important tools for demonstrating to prospective employers that the students have college and career-ready skills and are ready to continue in their programs of study. Despite the advantage that industry credentials can offer to CTE students, only about 20% of students enrolled in CTE programs receive an industry certification.

- **Recommendation: The General Assembly should work with the PA Department of Education to encourage all secondary CTE programs to provide opportunities for students to earn industry certifications or credentials related to their programs of study.**

Regarding occupational competency testing, although the NOCTI can be used to assess students in a number of technical areas, not all technical areas can be evaluated with this assessment. As a result, it is important that alternatives be available to CTE students and instructors so that students in all programs have the opportunities to demonstrate proficiency and earn some form of recognition. With this in mind, the PA Department of Education has already compiled a resource guide to assist schools in identifying industry-recognized certifications and the organizations that provide these certifications.

- **Recommendation: The General Assembly should encourage the PA Department of Education to provide additional professional development opportunities for instructors to become certified with credentialing agencies in order to award certifications to students.**

While the NOCTI and other industry competency assessments can offer employers a baseline for knowing what skills students have acquired, the Select Subcommittee heard from several testifiers that many employers are not necessarily familiar with such assessments and their significance. Chester Wichowski, Associate Director for the Center for Career and Technical Education at Temple University, testified that satisfactory completion of a NOCTI test is not always considered to be an industry-recognized certificate by many in the business and industry community.⁸³ Dr. William Kerr noted that because not all employers and industry partners are familiar with the NOCTI and the Pennsylvania Skills Certificate, key stakeholders are striving to educate local employers of its significance.⁸⁴ If Pennsylvania continues to rely on the NOCTI as a measure of CTE students' proficiency in their respective programs of study, it is imperative that the prospective employers know the value of and meaning behind this assessment and any other similar measures that may be offered.

- **Recommendation: The General Assembly should encourage the PA Department of Education and the Department of Labor of Industry to improve employer awareness of the value of the Pennsylvania Skills Certificate and NOCTI exam completion.**

Review Existing Statutory and Regulatory Requirements Related to Secondary CTE Programs

Today, as new industries emerge and others continue to evolve from rapid innovations in technology, there is a greater sense of urgency for education and workforce training to be able to likewise evolve and be responsive to these changes, and it remains of utmost importance that CTE be agile enough to reflect the changing demands of the industries looking to employ students.

Among the concerns presented to the Select Subcommittee by testifiers regarding the ability of secondary CTE programs to respond to the shifting needs of the economy was the current timeline for the creation and approval process for new CTE programs. In many instances, the process for creating a new program can last up to two years. Laura Fisher testified that because of the constant innovation in many industries, by the time those programs are in place, often they

⁸³ Testimony of Chester Wichowski (February 8th, 2016).

⁸⁴ Testimony of William Kerr (March 18th, 2016).

no longer represent a competitive training pathway for students or are simply obsolete.⁸⁵ Dr. Brian White testified that there is a need for more responsive processes and programs, as well as flexibility, when industry and higher education seeks to change how students are being trained and prepared.⁸⁶ Additionally, to encourage local school entities to explore the creation of a broader offering of CTE programs, it may be necessary to review and update existing regulatory requirements for CTE programs, such as minimum time requirements, which may unintentionally limit a local school entity's ability to establish new programming and support existing offerings.

- **Recommendation: The General Assembly should encourage the State Board of Education and the Department of Education to review and expedite the current process for approving new secondary CTE programs.**
- **Recommendation: The General Assembly should encourage the Department of Education to provide flexibility to innovative secondary CTE programs.**
- **Recommendation: The General Assembly should work with the Department of Education to explore opportunities for providing local school entities additional flexibility to meet minimum time requirements for CTE programs outside of CTE course time, which may include allowing academic courses in certain disciplines, such as science, count toward these requirements.**

Current regulations⁸⁷ that specifically enumerate recognized Career and Technical Student Organizations (CTSOs) in Pennsylvania may also need to be updated to reflect new opportunities for students to explore STEM activities. CTSOs are integral components of CTE programs in which students can participate and receive credit for membership.

- **Recommendation: The General Assembly should work with the Department of Education to establish a pilot program to allow students to receive credit for participation in STEM activities, such as the Robotics First Competition and First LEGO League Competition, in the same manner as other recognized CTOS.**

Additionally, the Select Subcommittee learned in the course of its investigation that some school entities have difficulty recruiting qualified CTE instructors because of existing regulatory requirements imposed upon these individuals. For example, the number of credits that a

⁸⁵ Testimony of Laura Fisher (March 18th, 2016 and June 15th, 2016).

⁸⁶ Testimony of Brian White (March 18th, 2016).

⁸⁷ Pa. Code § 339.30

candidate for permanent certification must obtain in this discipline may be a financial barrier for some, while also limiting the ability of local school entities from hiring the most qualified candidates with industry experience.

- **Recommendation: The General Assembly should encourage the Department of Education to study the requirements for certification of CTE instructors to ensure that there are not unintended impediments to certification and hiring of these individuals.**

Develop a Statewide Vision for Agricultural Education

Given the importance of the agriculture and food industries to the Commonwealth's economy, the Select Subcommittee heard about the considerable efforts to align agricultural education to the needs of these industries. The Select Subcommittee applauds the work of the Department of Agriculture to address workforce needs in the agriculture and food industry and improve information-sharing regarding occupations in these fields. The Select Subcommittee remains particularly impressed with the efforts of the Department of Agriculture to advance interagency initiatives, including working with the Department of Labor and Industry to establish high-priority occupations in agriculture, organizing an Agriculture Advisory Committee with the Department of Education to advise the Secretaries of Agriculture and Education, and connecting with the Departments of Military and Veterans Affairs, the Department of Labor and Industry, and the Department of Drug and Alcohol Programs to explore the use of agriculture placements as transitional jobs for non-traditional agriculture workers.

- **Recommendation: The General Assembly should encourage the work of the Departments of Agriculture and Labor and Industry to identify high priority occupations in agriculture.**
- **Recommendation: The General Assembly should encourage the work of the Agriculture Advisory Committee by recommending that the Advisory Committee engage the Department of Labor and Industry to further promote interagency efforts.**
- **Recommendation: The House Education Committee should review the report and recommendations of the Agriculture Advisory Committee upon its submission to the Governor and General Assembly.**

- **Recommendation: The General Assembly should encourage the Department of Education to work with the Department of Agriculture to coordinate the development of a model curriculum for agriculture education that meets the needs of industry.**

c. Strengthen Education Partnerships with Business and Industry

Account for Existing Partnership Opportunities and Promote Best Practices

As the Select Subcommittee conducted its investigation, it became apparent that in many local communities across the state, stakeholders from secondary CTE programs, postsecondary programs, and business and industry are engaging in meaningful partnerships to encourage career and workforce development opportunities for Pennsylvania’s students.

Many of the business and industry partnerships the Select Subcommittee learned about leverage resources and expertise across geographical regions and educational sectors. For example, the Challenge Program includes participants from 113 schools, including traditional public high schools, private schools, and CTCs, across three states, including Pennsylvania, and aims to build sustainable business and education partnerships and introduce students to career opportunities in their local communities. In western Pennsylvania, the Westmoreland County Forum for Workforce Development coordinates workforce opportunities across the region by working collaboratively with the Westmoreland Intermediate Unit, 17 school districts in the county, local CTCs, the local WIB, the local Chamber of Commerce, and five higher education institutions. Similarly, in the Lehigh Valley, the Lehigh Valley Economic Development Corporation has joined the forces of local businesses and corporations, institutions of higher education, and local government officials, among others, to market the economic assets of the region and encourage local businesses to grow and stay in the area.

These, along with many other efforts the Select Subcommittee heard from during its investigation, can serve as useful models for other regions in the Commonwealth as to how to build and foster local cooperation between K-12 education, higher and postsecondary education, and business and economic development agencies.

Several testifiers noted that with the many initiatives currently operating throughout the state, efforts should not simply focus on the creation of new programs and opportunities that may be duplicative. Rather, instead of “reinventing the wheel,” the Select Subcommittee and any subsequent efforts should endeavor to encourage programs already being delivered in some parts

of the state to expand into other locations and even statewide. The first step in accomplishing this goal is gathering a complete account of existing programs.

- **Recommendation: The General Assembly should encourage the Department of Education and the Department of Labor and Industry to conduct a complete inventory of existing workforce development programs at both the secondary and postsecondary levels with particular emphasis on opportunities for business-education partnerships and share best practices with entities.**

One example of an existing initiative that would benefit from additional emphasis and participation is the Apprenticeship program overseen by the Department of Labor and Industry. Since 1961, Pennsylvania has been promoting standards for apprenticeship programs and incorporation of these programs directly into the workforce to strengthen regional and local economies with an infusion of trained and skilled residents.⁸⁸ While apprenticeship programs can provide Pennsylvania citizens with opportunities to become highly skilled in particular trades, unfortunately, the number of employers and apprentices participating has remained stagnant at approximately 700 employers and 11,000 apprentices, respectively.⁸⁹

- **Recommendation: The General Assembly should work with the Department of Labor and Industry to better promote awareness of apprenticeship opportunities and encourage additional employer participation and involvement.**

Improve Communication between Local WDBs and Education Entities

Since the WIBs/WDBs are the natural channel through which employment information and data flows from the state to local school districts and CTCs, the Select Subcommittee became increasingly interested in determining whether or not this information is effectively reaching these entities and whether partnerships between the two are flourishing.

According to the testimony received by the Select Subcommittee, how each WIB engages with CTE varies from board to board. Ms. Burket testified that she could not attest to how every WIB works with local second entities. She did, however, note that the Lehigh Valley WIB has maintained a strong connection with educational entities, in part due to the WIB's career coaches who routinely work with the local school districts.⁹⁰ Walter Slauch, Vice President of PACTA and Administrative Director, Central Montco Technical High School, shared that the high school

⁸⁸ Testimony of Diane Bosak (April 28th, 2015).

⁸⁹ Ibid.

⁹⁰ Testimony of Lee Burket (April 28th, 2015).

works closely with the local WIB, as administrators from the school sit on various WIB committees.⁹¹ Jaqueline Cullen, Executive Director of PACTA, suggested that while in some areas local communication with WIBs is excellent, it could always be better and hopefully it will improve under the new requirements of WIOA.⁹²

- ***The House Education Committee and the House Labor and Industry Committee should conduct further joint hearings on ways to improve the effectiveness and efficiency of WDBs in promoting CTE and workforce development opportunities.***

The Select Subcommittee further heard from postsecondary entities about the role of WIBs in promoting workforce development in their constituencies. Mark Volk, President, Lackawanna College, testified that the college works closely with the WIBs to look at high priority jobs.⁹³ Kenneth Mash, President, APSCUF, shared that within the state system, the administration largely works with WIBs directly and that information is then filtered down to the faculty. He recommended that there should be more regional meetings that bring together faculty and members of the business community.⁹⁴ Ms. Fisher testified that it can be challenging for WIBs to balance the needs of many different populations from different companies that have footprints in local areas.⁹⁵

Under WIOA, WDBs are required to include a representative from higher education in their membership. While the new federal law permits members of local education agencies to be included, it does not require their inclusion. In order to ensure that lines of communication remain open between local secondary CTE programs and WDBs, it would be beneficial for WDBs to consistently engage with these stakeholders through their participation on their boards.

- ***Recommendation: The General Assembly should consider requiring each local WDB to include in its membership at least one administrator of a career and technical center whose attendance is covered by the service area of the WDB or at least one representative appointed from a local school district.***

Additionally, while current State Board of Education regulations require that local advisory committees and occupational advisory committees for approved CTE programs include representatives authorized by local WIBs, to strengthen the business and industry engagement

⁹¹ Testimony of Walter Slauch (April 28th, 2015).

⁹² Testimony of Jacqueline Cullen (April 28th, 2015).

⁹³ Testimony of Mark Volk (May 28th, 2015).

⁹⁴ Testimony of Kenneth Mash (May 28th, 2015).

⁹⁵ Testimony of Laura Fisher (March 18th, 2016).

with CTE, the expertise and knowledge of WDBs and their ongoing efforts should be available to secondary education entities as they develop and oversee their technical programs.

- **Recommendation: The General Assembly should consider requiring every local advisory committee to include one representative who also directly serves on the local WDB.**

Encourage Engagement through Local and Occupational Advisory Committees

Current State Board of Education regulations aim to encourage engagement between CTE programs and business and industry through the local advisory committees, which advise CTE programs at CTCs and school districts, and occupational advisory committees, which advise individual or clusters of programs with representatives of employers and employees of the industry related to the training program. This structure is critical to guiding CTE instructors and ensuring that industry standards are properly integrated into instructional programming.

Many testifiers noted how important occupational advisory committees are to fostering relationships with business and industry partners. Mr. Heasley testified that industry representatives to A.W. Beattie's occupational advisory committees support CTE students and link classroom programs to the community through a variety of externship opportunities and donations of materials to support the hands-on component of daily instruction.⁹⁶ Dr. White shared that the success of Chartiers Valley School District's Engineering Academy is due in part to its Engineering Advisory Board which is comprised of representatives from universities and governmental agencies, such as PennDOT.⁹⁷

Again, the Select Subcommittee found that the extent to which effective relationships are being formed through these advisory councils varies across the state. Briana Mihok, Senior Policy Advisor at the Institute of Politics at the University of Pittsburgh, testified that the variation of the level of involvement of industry across the state in terms of industry advisory councils is significant.⁹⁸ Ms. Fisher testified that in the focus groups assembled by the Allegheny Conference a number of employers engaged with CTE felt that existing advisory groups did not have close enough relationships to have a real impact and were anxious to have a better opportunity to engage.⁹⁹ Statewide, Ms. Burket testified that approved CTE program evaluations often cite the lack of meaningful engagement of business to guide program direction

⁹⁶ Testimony of Eric Heasley (March 18th, 2016).

⁹⁷ Testimony of Brian White (March 18th, 2016).

⁹⁸ Testimony of Briana Mihok (March 18th, 2016).

⁹⁹ Testimony of Laura Fisher (June 15th, 2016).

and to guide the school's decisions regarding programs that contribute to the workforce needs of the community.¹⁰⁰

- **Recommendation: The General Assembly should foster the business-education relationships created through local advisory and occupational advisory committees by requiring these entities to meet a minimum of at least four times a year.**

At the same time, because each CTE program or cluster of programs must assemble an occupational advisory program to provide guidance, this requirement can be burdensome to representatives of local industry and detract from the effectiveness of individual committees. Dr. White testified that requiring each district to establish a viable occupational advisory board can be overwhelming to school districts and ultimately a barrier to establishing programs at the local level.¹⁰¹

- **Recommendation: The General Assembly should consider permitting occupational advisory committees for programs or clusters of programs to be established at the Intermediate Unit level to serve multiple school districts or CTCs in order to reduce the burden on local industry and school entities.**

d. Increase Access to CTE Programs

According to data provided by PDE, enrollments in secondary CTE programs has experienced a gradual decrease over the past five years. Testifiers before the Select Subcommittee identified several barriers that may contribute to this decline and be prohibitive to school districts dramatically increasing enrollments in CTE programs, either in a student's home high school or in a CTC.

Address State Graduation Requirements and Keystone Exam Remediation Mandates

Under current State Board of Education regulations at 22 Pa. Code § 4.24, beginning with the 2016-2017 school year, public school entities are required to adopt graduation requirements for all high school students that include a demonstration of proficiency on the Keystone Exams in Algebra I, Biology, and Literature or on a related project-based assessment. Since the adoption of these recommendations, the General Assembly has passed Act 1 of 2016 to delay the implementation of these requirements until the 2018-2019 school year. Students in CTE

¹⁰⁰ Testimony of Lee Burket (April 28th, 2015).

¹⁰¹ Testimony of Brian White (March 18th, 2016).

programs must also demonstrate competency on a Pennsylvania Skills Assessment, such as the NOCTI or NIMS.

As school entities begin to prepare for the prospect of these graduation requirements, many testifiers noted the adverse impact of these requirements on student participation in CTE. Lee Burket noted that students already are being withheld from CTE programs due to the need for remedial education if they fail to pass a Keystone Exam and are being required to drop electives such as CTE in order to schedule the required remediation.¹⁰² PACTA likewise testified that early evidence suggests the Keystone Exam graduation requirements will result in significant decreases in student participation and that many school districts have already eliminated the opportunity for 9th grade students to attend CTC programs in anticipation of scheduling requirements necessary to prepare students for these exams.¹⁰³ PASA also testified that because the Pennsylvania state school report card, or School Performance Profile, holds schools accountable for both student scores on the Keystone Exams and high school graduation rates, it is not in the interest of the home school to permit a student who did not pass one or more Keystone Exams to enroll in a CTC program.¹⁰⁴ Testifiers recommended that alternative measures of student proficiency, such as attainment of an industry credential through the NOCTI or NIMS, be considered for substitution for performance on the Keystone Exams.

- **Recommendation: The State Board of Education and the General Assembly should examine current graduation requirements that may create an additional barrier for meaningful engagement in CTE.**
- **Recommendation: The State Board of Education and the General Assembly should consider adopting state graduation requirements for CTE students that demonstrate that the student is ready to engage in a career aligned to the student's program of study.**

Explore Resources for CTE Opportunities

Another barrier identified by stakeholders for school entities to offer CTE opportunities to students is a lack of resources to fund programs that meet employer needs. Access to training with industry-grade materials and equipment is a necessary component of many technical education programs. Elizabeth Bolden, President and CEO, PA Commission for Community Colleges, testified that the lack of resources to purchase or update equipment to keep pace with

¹⁰² Testimony of Lee Burket (April 28th, 2015).

¹⁰³ Testimony of PACTA (April 28th, 2015).

¹⁰⁴ Testimony of PASA (April 28th, 2015).

employer needs or to hire expert instructional staff continues to be a challenge.¹⁰⁵ Eric Wolfgang, President, Central York School District, also testified that the cost of equipment and materials is one of the key components of making programs successful but also one of the largest items for CTC budgets.¹⁰⁶

- **Recommendation: The General Assembly should consider continuing its support of the Career and Technical Education Equipment Grant line item in the budget and the use of the formula codified into law for the distribution of these funds under Act 86 of 2016.**

Several testifiers also noted the impact of budgetary constraints on CTE programs and the funding of CTC programs by member school districts, especially as it relates to enrollments in CTCs. Mr. Wolfgang testified that the budgetary constraints of the different sending school districts intensifies the challenge to meet the budgetary needs of the local CTC.¹⁰⁷ PASA testified that the budgetary pressures are driving school districts to review whether the district should continue its sponsorship of a local CTC or establish a lower cost CTE program within the district.¹⁰⁸ David Namey, President, Department of Career and Technical Studies, PSEA, testified that some school districts have attempted to reduce CTE costs by controlling enrollments in CTCs and by cutting CTE programs or reducing them to half-time.¹⁰⁹ PACTA testified that this is in part inherent to the system of funding CTCs by member school districts and that, in fact, reducing enrollments increases the costs per student and seldom results in savings for school districts because school districts contribute to CTCs for their percentage of use, not tuition.¹¹⁰

- **Recommendation: The General Assembly should consider making a separate dedicated category of tax credits available for businesses which purchase or donate equipment for approved K-12 CTE programs or for career and technical training programs at postsecondary institutions.**
- **Recommendation: The General Assembly should consider developing a tax credit program that encourages school districts to enroll students in programs offered at CTCs.**

¹⁰⁵ Testimony of Elizabeth Bolden (May 28th, 2015).

¹⁰⁶ Testimony of PSBA (April 28th, 2015).

¹⁰⁷ Ibid.

¹⁰⁸ Testimony of PASA (April 28th, 2015).

¹⁰⁹ Testimony of David Namey (April 28th, 2015).

¹¹⁰ Testimony of PACTA (April 28th, 2015).

Utilize CTE Opportunities for Non-traditional Students and Struggling Schools

Many testifiers before the Select Subcommittee touted the immense benefits of access to CTE programs, including reduced drop-out rates and increased student engagement and academic achievement.¹¹¹ Dr. Wichowski testified that the career academies, which facilitates the integration of CTE and academic coursework by organizing students into cohorts, are an effective model of CTE for which there has been correlation with increased credits earned by students and increase grade point averages.¹¹² The career academy concept, which originated in Philadelphia in the 1960s, has only been utilized in Pennsylvania schools located in Philadelphia and Pittsburgh. This model is one of many CTE models that should be further explored by local school entities in order to enhance the performance of struggling schools.

- ***Recommendation: The General Assembly should further explore the use of career academies and other CTE partnerships to assist academically struggling schools.***

Furthermore, the Select Subcommittee heard about other workforce and career development opportunities being provided outside of a traditional school setting that target individuals who may have dropped out of high school or have recently lost employment. For example, JEVS Human Services, an organization located in Philadelphia, provides career and skills training to individuals facing a variety of challenges, including dropouts, nonviolent offenders, mature job-seekers, and other underemployed citizens. It is important that the Commonwealth encourage these efforts to ensure that all citizens have opportunities to pursue meaningful employment.

- ***Recommendation: The General Assembly should encourage school entities to partner with organizations to provide CTE-related opportunities to high school dropouts and other nontraditional learners.***
- ***Recommendation: The General Assembly should explore providing tax credits to businesses that make donations to organizations that provide employment and career services to nontraditional learners, such as dropouts and other “second chance” citizens.***

¹¹¹ See Section II.

¹¹² Testimony of Chester Wichowski (February 8th, 2016).

e. Confront Misperceptions Regarding CTE

Throughout the course of its work, the Select Subcommittee received testimony and countless examples touting the ability of this training to help students transition into meaningful and lucrative careers. Nevertheless, as often as the Select Subcommittee heard evidence of this success, stakeholders representing multiple sectors testified to the pervasive misconceptions regarding CTE that may be continuing to hinder students and parents from exploring career opportunities through these types of programs and prevent growth of a larger skilled worker pipeline.

Testifiers before the Select Subcommittee indicated that there remains a persistent belief regarding the obsolete nature of CTE. Laura Fisher, Senior Vice President for Workforce and Special Projects, Allegheny Conference on Community Development, testified that to outsiders CTE continues to be an antiquated system that teaches outdated concepts.¹¹³ Eric Heasley, Executive Director, A.W. Beattie Career Center, noted that many parents still believe the “old style” of CTE is the norm and that only students that cannot be successful in traditional academic studies attend a career center.¹¹⁴ Mr. Heasley further emphasized that CTE should instead be universally viewed as part of the college and career preparation track. Ms. Fisher testified that a recent Allegheny Conference on Community Development study found that often cited negative views included a belief that CTE is not for the college bound and may in fact preclude college and an expectation that courses taught at CTCs are usually for dirty and dangerous occupations.¹¹⁵

Compounding these attitudes is a perceived cultural emphasis on the notion that attainment of a four –year degree is the only pathway to career success. Ms. Fisher noted that “pervasive encouragement” for all students to pursue a four-year degree is misguided because it fails to recognize that almost two-thirds of occupations do not require such a degree.¹¹⁶ Ms. Bolden testified that despite the widely held belief that a four-year degree is the only path to secure a professional future, although associate’s degrees, certificates, and apprenticeship programs all offer good opportunities for individuals who are uninterested in or not ready to pursue a traditional four-year baccalaureate degree.¹¹⁷ Debbie Dunn, Owner and Director, Lancaster School of Cosmetology and Therapeutic Bodywork, similarly concurred that the general public, including parents and K-12 personnel, need a better understanding that many other well-paying

¹¹³ Testimony of Laura Fisher (March 18th, 2016).

¹¹⁴ Testimony of Eric Heasley (March 18th, 2016).

¹¹⁵ Testimony of Laura Fisher (June 16th, 2016).

¹¹⁶ Testimony of Laura Fisher (March 18th, 2016).

¹¹⁷ Testimony of Elizabeth Bolden (May 28th, 2015).

and rewarding careers can be achieved with only a two-year associate's degree or shorter-term certificate or diploma and that challenging these perceptions should be a top priority.¹¹⁸

It also became clear through the course of the Select Subcommittee's hearings that state-level efforts may unintentionally reinforce this messaging. Brian White, Superintendent, Chartiers Valley School District, shared with the Select Subcommittee that within the last year, data was circulated by the Commonwealth tying the effectiveness of public schools to the percentage of students going to college.¹¹⁹ Katy Rittle, Director of Education and Workforce Development, ABC – Western PA Chapter, likewise noted that routinely evaluating high schools on college enrollment rates creates a stigma for school professionals as well as students regarding available alternatives and continues to incentivize the “college track.”¹²⁰

Improve Statewide Information and Message Related to Career Awareness

When it comes to making informed decisions about education and careers, students and parents should be equipped with relevant and meaningful knowledge and tools that can help thoughtfully guide this decision-making process and do not reinforce stereotypes about CTE. Mr. Namey emphasized that students and parents are in need of help to explore postsecondary opportunities. Mr. Heasley, nevertheless, noted that students and parents often struggle to locate information related to employment.

The Department of Education, the Department of Labor and Industry, and the Department of Agriculture each testified before the Select Subcommittee about their respective efforts to advance CTE and workforce opportunities for students. While there appear to be many useful resources already available from individual agencies, this information is scattered across entities, and as a result students and parents may continue to have difficulty obtaining information about CTE or may even remain unaware of what resources are available. In order to facilitate students' exploration into various postsecondary pathways, it is imperative that this information be easily accessible to students, parents, educators, and other school officials.

- ***Recommendation: The General Assembly should consider requiring the Department of Education, in consultation with the Department of Labor and Industry and the Department of Agriculture, to develop and maintain a comprehensive online career resource center for students, parents, educators, and school officials to provide information about the value and impact of CTE, career***

¹¹⁸ Testimony of Debbie Dunn (May 28th, 2015).

¹¹⁹ Testimony of Brian White (March 18th, 2016).

¹²⁰ Testimony of Katy Rittle (March 18th, 2016).

pathways, data and statistics on employment opportunities and compensation, and postsecondary options and statewide and regional articulation agreements.

- *Recommendation: The General Assembly should encourage the Department of Education to coordinate with other state agencies, business and industry representatives, K-12 education, and postsecondary institutions to implement a statewide public awareness campaign to educate students, parents, and the general public about the value and impact of CTE and the related job opportunities available.*

Additionally, the statewide accountability system that evaluates elementary and secondary public school entities should thoroughly evaluate these entities on the performance of CTE programs in order to promote, rather than discourage, participation in such programs. The Pennsylvania School Performance Profile, the system used to measure and evaluate public schools for federal accountability purposes, presently includes factors such as performance on industry standards-based competency assessments and enrollment in Advanced Placement (AP), International Baccalaureate (IB), and college level coursework, in addition to other traditional measures of college readiness, such as graduation rate, SAT/ACT performance, and PSAT/PLAN participation. School entities can also be awarded extra credit for advanced achievement on industry standards-based competency assessments, AP exams, and IB exams.

Several testifiers indicated a need for Pennsylvania's statewide accountability system to adequately account for CTE programs. Dr. White testified that compared to the emphasis on AP enrollment in the School Performance Profile, the current system does not recognize or encourage the growth of CTE programs in a meaningful manner.¹²¹ Ms. Bolden similarly cautioned against accountability systems that do not encourage and/or support CTE and collaboration among education providers, noting for example that the School Performance Profile offers extra credit to schools for AP and IB performance but not to schools who collaborate with colleges to offer postsecondary study and whose students perform well in college level coursework.¹²² PACTA likewise shared concerns about the impact on CTE of a school accountability system that maintains a heavy emphasis on student testing.¹²³

The federal Every Student Succeeds Act (ESSA) enacted in 2015 signifies a shift in measuring school accountability from strictly using academic measures to including additional measures of school quality and student success, such as student or educator engagement, student

¹²¹ Testimony of Brian White (March 18th, 2016).

¹²² Testimony of Elizabeth Bolden (May 28th, 2015).

¹²³ Testimony of PACTA (April 28th, 2015).

access to or completion of advanced coursework, postsecondary readiness, and school climate and safety. The Department of Education is in the process of engaging with stakeholders as it develops Pennsylvania ESSA State Plan to be submitted to the U.S. Department of Education in spring 2017, which may include changes to the factors used to calculate the School Performance Profile.

- **Recommendation: The General Assembly should consider requiring the Department of Education to include additional factors in the School Performance Profile to support and encourage CTE participation, which may include:**
 - **Student performance in dual and concurrent enrollment courses;**
 - **Number of programs for high priority occupations and student enrollment in these programs;**
 - **Percentage of students who have developed an individual career and work plan by the 8th grade; or**
 - **Number of students who have obtained an industry-based competency credential.**

Enhance Local Career Awareness Efforts

Locally, school entities are tasked with assisting all students in identifying career goals through the development of a career plan and portfolio, as required by the Pennsylvania Academic Standards in Career Education and Work. Additionally, Chapter 339 regulations require school boards to develop plans for the provision of guidance services to K-12 students.

Throughout the course of the hearings, the Select Subcommittee repeatedly heard about the importance of guidance counselors and other school professionals, acting in the capacity of advisors, as gatekeepers of career information for students. Dr. Pamela Carter, Dean of Business and Technology, Community College of Philadelphia, testified that the faculty of the college has collectively discussed what can be done to better educate guidance counselors in local area schools about the opportunities in the different fields offered in the college's programs.¹²⁴ Nancy Dischinat, Executive Director of the Lehigh Valley Workforce Development Board, noted that there is a need to help guidance counselors understand where the jobs are, what the required skills are, and what the educational requirements are.¹²⁵ Uva Coles, Vice President of Institutional Advancement and Strategic Partnerships, Peirce College, testified that it is important that guidance counselors have an opportunity to be exposed to what colleges

¹²⁴ Testimony of Dr. Pamela Carter (September 16th, 2016).

¹²⁵ Testimony of Nancy Dischinat (June 15th, 2016).

and employers need.¹²⁶ Mr. Klein testified in speaking about apprenticeship opportunities that he wished guidance counselors and teachers would be more informative to all students.¹²⁷ In terms of specific program awareness, Dr. Mikesell noted that many guidance counselors have not been coached or taught about the opportunities in agriculture.¹²⁸

While there is a demonstrable need for guidance counselors to be informed about career opportunities for students, guidance counselors are responsible for assisting students with issues that may otherwise take priority. PACTA testified that guidance counselors often spend a great deal of time assisting students with drug problems, abuse, poverty and homelessness, criminal behavior, and other family-related issues.¹²⁹ Beth Olanoff, Policy Director, PDE, similarly noted that career guidance should need to be considered additional work for guidance counselors, who may already be dealing with a broad range of duties, such as dealing with mental health issues, scheduling, or the postsecondary application process.¹³⁰ PACTA concluded that the combination of reduced counseling staff and their lack of knowledge of career and postsecondary education opportunities has had an unfavorable impact on career bound students.¹³¹

In 2014 the General Assembly passed legislation, now Act 168, to allow school entities to include in their professional development plans visits by educators to a manufacturing workplace for orientation and demonstrations to learn about modern manufacturing processes and careers so that they can better assist students in considering manufacturing careers. Additional professional development opportunities should be made available to guidance counselors and educators to help them maintain a better working knowledge of career opportunities.

- **Recommendation: The General Assembly should consider requiring the Department of Education to create professional development opportunities such as the Postsecondary Education and Career Counseling Academies created in Texas for school counselors and other postsecondary advisors and allow guidance counselors and educators to receive continuing education credit for their participation.**

Under current Chapter 339 regulations, school boards are required to have on file a guidance plans for the provision of guidance services to students in kindergarten through grade 12, which must also include procedures for providing guidance services to CTCs. This plan is critical for

¹²⁶ Testimony of Uva Coles (September 16th, 2016).

¹²⁷ Testimony of Pete Klein (September 16th, 2016).

¹²⁸ Testimony of Robert Mikesell (May 19th, 2016).

¹²⁹ Testimony of PACTA (April 28th, 2015).

¹³⁰ Testimony of Beth Olanoff (June 15th, 2016).

¹³¹ Testimony of PACTA (April 28th, 2015).

establishing a framework for providing career guidance and counseling in public schools, and the extent to which it is implemented is determined by school boards. This plan must be submitted to the Secretary of Education upon request, and there is no current requirement for its periodic review and revision. Several testifiers noted the importance of these plans in ensuring that information about career opportunities and pathways reaches students at key moments in their K-12 careers. Dr. Kerr, Chairman, Westmoreland County Forum for Workforce Development and Superintendent, Norwin School District, suggested that an improved flow of information in the primary grades and greater school district accountability is needed to ensure that Chapter 339 Guidance Plans and Career Education and Work Standards are effectively communicated and implemented.¹³² Mr. Heasley testified that one way for school districts to strengthen their partnership with CTE to provide student career awareness around fifth grade and that this should be a statewide initiative.¹³³ Mr. Namey also testified that career guidance and counseling needs to be available not only in high school but more importantly in the early grades.¹³⁴ Dr. William Kerr further recommended that mandatory revision of Chapter 339 Plans every two years will help demonstrate that the plans are “living, breathing” documents to be consistent with ever-changing workforce demands.¹³⁵

- **Recommendation: The General Assembly should consider making the following changes to the Guidance Plans required under Chapter 339:**
 - **Requiring plans to be reviewed and updated by school boards every 3-5 years.**
 - **Requiring school boards to submit plans to the Secretary of Education and resubmit such plans when any subsequent changes are made.**
 - **Requiring career planning information to be provided to students beginning in grade 5.**
- **Recommendation: The General Assembly should consider requiring the State Board of Education to conduct a study regarding:**
 - **The extent to which school entities are implementing Chapter 339 Guidance Plans.**
 - **The extent to which school entities are meeting the academic standards for Career Education and Work.**
 - **The manner in which school entities are providing instruction in the academic standards for Career Education and Work.**

¹³² Testimony of William Kerr (March 18th, 2016).

¹³³ Testimony of Eric Heasley (March 18th, 2016).

¹³⁴ Testimony of David Namey (April 28th, 2015).

¹³⁵ Testimony of William Kerr (March 18th, 2016).

Promote an Integrated K-12 STEM Education

The extent to which STEM education has been incorporated into local school entities' curricula varies across the Commonwealth. Many local entities are actively pursuing opportunities to incorporate STEM activities and opportunities into their CTE programs, such as the Indiana County Technology Center (ICTC), which has recently established STEM ICTC as an on-campus facility to promote shared STEM education, or the Homer-Center School District, which is exploring a partnership with Project Lead the Way to deliver a standards-based STEM curriculum to its students.¹³⁶

While these efforts, individually, are promising, it is clear that further efforts may be necessary to encourage STEM opportunities for all students across more local school entities to encourage student interests in these fields and ensure that students develop skills relevant to today's economy. To this point, Ms. Fisher testified that technology-enabled positions created by today's economy require strong math and computer skills, and as a result, all students need rigorous STEM skills.¹³⁷ Similarly, Russell Spicuzza, Vice President, Bethel Park School District, and Chairman Elect, ABC Western PA Board of Directors, proposed that starting STEM education at the earliest stages as part of an integrated elementary and secondary curriculum would ensure that STEM offerings seamlessly widen student interests in these fields. These opportunities can be delivered to students through various means, although Dr. William Griscom, President of Thaddeus Stevens College of Technology, testified that efforts to deliver STEM education should focus on providing "hands-on" activities that integrate math, reading, science, engineering, and industrial technology in order for students to retain this information.¹³⁸

- ***Recommendation: The General Assembly should work with the Department of Education to encourage local school entities to integrate rigorous STEM-related opportunities and experiences into their K-12 curricula.***

¹³⁶ Testimony of Vicki Smith (April 28th, 2015).

¹³⁷ Testimony of Laura Fisher (March 18th, 2016).

¹³⁸ Testimony of Dr. William Griscom (May 28th, 2015).

Appendix:
House Resolution 102 of 2015

THE GENERAL ASSEMBLY OF PENNSYLVANIA

HOUSE RESOLUTION

No. 102 Session of
2015

INTRODUCED BY SAYLOR AND ROEBUCK, FEBRUARY 18, 2015

REFERRED TO COMMITTEE ON EDUCATION, FEBRUARY 18, 2015

A RESOLUTION

1 Establishing the select subcommittee on Technical Education and
2 Career Readiness to investigate, review and make
3 recommendations concerning career training programs to ensure
4 that every student has the opportunity to pursue a meaningful
5 career.

6 WHEREAS, One of a society's most important responsibilities
7 is the education of its citizens; and

8 WHEREAS, The citizens of this Commonwealth are educated
9 through a system of public and nonpublic schools and
10 institutions of higher education, which includes a wide variety
11 of secondary level career and technical centers and programs and
12 postsecondary institutions that focus on career preparation and
13 training; and

14 WHEREAS, The goal of this Commonwealth's system of education
15 is to provide each student with sufficient preparation to pursue
16 meaningful, family-sustaining employment; and

17 WHEREAS, It is important that this Commonwealth remain
18 competitive in an ever-changing global economy; and

19 WHEREAS, Employers are more likely to locate in regions with
20 an abundant supply of potential employees; and

1 WHEREAS, Many employers report a strong need for more
2 technically skilled employees to fill available positions; and

3 WHEREAS, It is important to ensure that the education
4 available to young people and adults provides the training
5 necessary for the pursuit of a fulfilling and financially secure
6 career; therefore be it

7 RESOLVED, That the Committee on Education be authorized and
8 directed to establish a select subcommittee on technical
9 education and career readiness to do all of the following:

10 (1) investigate, review and make findings and
11 recommendations regarding:

12 (i) existing secondary level career and technical
13 centers and programs and postsecondary institutions that
14 focus on career preparation and training, including the
15 partnerships that exist within and among these groups;

16 (ii) how to better foster connections among the
17 secondary technical education, postsecondary technical
18 education and business communities in order to promote
19 thriving career pathways;

20 (iii) how to eliminate negative biases held by
21 students and parents regarding technical education, and
22 educate all Pennsylvanians regarding the benefits of
23 technical education and the many opportunities available
24 in careers that require technical knowledge and skills;

25 and

26 (2) review other states' best practices and programs in
27 the area of technical education and career readiness; and

28 (3) develop proposals which:

29 (i) encourage Pennsylvania's secondary and
30 postsecondary educational institutions to expand career

1 training programs that will help meet the needs of
2 current and future employers;

3 (ii) supplement and enhance existing career
4 programs;

5 (iii) provide support to the secondary and
6 postsecondary technical education communities; and

7 (4) ensure that every student in Pennsylvania has the
8 opportunity to pursue a meaningful career;

9 and be it further

10 RESOLVED, That the select subcommittee consist of six members
11 of the Committee on Education, with four members appointed by
12 the chairman of the committee and two members appointed by the
13 minority chairman of the committee; and be it further

14 RESOLVED, That the chairman and the minority chairman of the
15 Committee on Education shall be ex-officio members of the select
16 subcommittee; and be it further

17 RESOLVED, That the chairman of the Committee on Education
18 appoint the chairman of the select subcommittee from among the
19 members of the select subcommittee; and be it further

20 RESOLVED, That the select subcommittee hold hearings, call
21 witnesses, take testimony and make its investigations at such
22 places as it deems necessary in this Commonwealth, and may
23 instruct any person to appear before it to answer questions
24 touching matters properly being inquired into by the select
25 subcommittee and to produce books, papers, records, accounts,
26 reports and documents as the select subcommittee deems
27 necessary; and be it further

28 RESOLVED, That the Committee on Education assist the select
29 subcommittee to the fullest extent possible; and be it further

30 RESOLVED, That the select subcommittee submit a report of its

1 findings together with its recommendations for any appropriate
2 legislation or other action to the Committee on Education and to
3 the House of Representatives no later than November 30, 2016.