The Oregon Career and Technical Education Study

August 2008

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Acknowledgments

This report was produced at the request of the Oregon Legislature and was guided by a Task Force representing community colleges, public and private universities, high schools and area technical centers, government, and business.

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Executive Summary

Oregon educators, policymakers, and business people are working together to increase the number and quality of Career and Technical Education (CTE) programs in secondary and postsecondary institutions. CTE is an integral component of Oregon's education and workforce development system and prepares students for careers in areas ranging from the arts and communication to business and management to industrial and engineering systems, to name a few. CTE contributes heavily to preparing Oregonians for high-skill, high-wage, and high-demand careers—exactly the type of occupations the state hopes to attract and expand over the next several decades.

Oregonians need both theoretical and applied skills to reach their full potential as students, workers, and community members—skills they can acquire only by exposure to both academic and technical curriculum. High-quality CTE programs, accessible throughout the state, are essential if the state hopes to fulfill its workforce, education, and economic development goals.

Knowing this, the state is asking: ***What does Oregon need to do to achieve more and stronger CTE programs that are accessible to all Oregonians?*** The answer is not simple, but it is within reach: Oregon has opportunities to address gaps in its administrative, delivery, and funding systems, and in doing so, strengthen and expand its CTE system.

This report, *The Oregon Career and Technical Education Study*, explores the current state of Oregon's CTE system and draws on promising **administrative**, **delivery**, and **funding** practices in seven states—California, Indiana, Kentucky, Michigan, Nebraska, Utah, and Washington—to provide Oregon with **options** designed to promote the evolution of the state's CTE system. This report is the product of a directive by the Oregon Legislature to the Oregon Department of Education (ODE) and was guided by a Task Force of representatives from secondary and postsecondary education, human services, employment, workforce development, and private-sector business.

Oregon's CTE Administrative Structure

The State Board of Education (SBE) oversees CTE in the pre-kindergarten through 12th-grade system and in community colleges and also supervises the state's private career school authorization and licensure process. The State Board of Higher Education (SBHE) oversees the Oregon University System (OUS), while private colleges

and universities have individual boards that govern their operation. The Bureau of Labor and Industries (BOLI) and apprenticeship committees are responsible for apprenticeship programs in the state.

The SBE's joint oversight of secondary education and community colleges **encourages alignment** between those two education sectors, and the Board's intimate knowledge of the strengths and challenges of both systems allows it to promote a **cohesive approach** to CTE policymaking across K–14 education. And the state's established CTE Network, which brings together representatives from local secondary and postsecondary agencies with ODE and the Oregon Department of Community Colleges and Workforce Development (CCWD) staff, provides a forum for open communication, consistent messaging, and input from state and local education administrators.

However, while K–14 CTE administrative ties may be well established, **greater administrative collaboration is needed** among K–12 and community colleges and all the other CTE providers in the state: universities, private colleges, apprenticeship programs, and private career schools. High school students still have difficulty transferring credits earned in Tech Prep programs through one community college to another across the state; community college students cannot count on being able to transfer credit across colleges and universities; and secondary students are not always fully prepared to meet the demands and requirements of postsecondary education, even when they have earned a high school diploma.

Recommendation: Establish and expand formal and informal administrative partnerships that reach beyond K–12 and community colleges to include private and public colleges and universities, apprenticeship programs, and private career schools.

- Expand all existing statewide CTE articulation agreements to include private and public four-year colleges and universities.

- Encourage regional CTE coordinators and community college deans with CTE responsibility to establish or expand working relationships with private and public colleges, apprenticeship programs, and career schools. That effort may include asking representatives from these institutions and programs in each region to attend meetings to ensure their initiatives and issues are represented as part of their region's approach to CTE.

- Invite representatives from public and private four-year institutions, apprenticeship programs, and private career schools to attend the statewide CTE Network meetings as regular members. Identify roles for the representatives to ensure that meetings provide opportunities for all sectors to be fully engaged.

Oregon CTE Delivery System

CTE is offered throughout the Oregon education continuum. It begins with exploratory coursework in middle schools, continues with more advanced coursework in high schools, and leads to apprenticeship, certificate, and associate's degree programs in community colleges; credentialing through private career schools; and bachelor's and graduate degree programs at private and public colleges and universities.

Oregon has embarked on a comprehensive effort to deliver an integrated, articulated set of CTE programs through Career Pathways, designed to offer multiple entry and exit points throughout programs aligned across the education continuum; through Tech Prep and Dual Credit, providing high school students with an opportunity to earn college credits for completing advanced secondary coursework; and through Expanded Options, allowing 11th- and 12th-graders to earn concurrent high school and college credit through early college entry. The state has also begun to develop an integrated Programs of Study system, which represents a link between secondary and postsecondary programs within Career Pathways. Administrators and educators have successfully built consensus around four key elements of every Program of Study: Alignment and Articulation, integrated CTE and academic Content and Standards, Accountability and Assessment, and Student Support Services.

Oregon's secondary and community college systems are engaged in **cooperative CTE delivery** and have been successful in developing and disseminating a **consistent vision of an aligned education system** that contributes to students' education, career, and life success. Oregon is now challenged with **reinforcing and expanding** its ongoing efforts to align and articulate CTE programs and to increase student access to those programs in secondary schools and postsecondary institutions.

Recommendation 1: Provide targeted technical assistance to support the design and expansion of Programs of Study.

- Identify existing, standards-based curricular resources that might be adapted for state use. Examples of such resources include Project Lead the Way or the Math-in-CTE program, which has been successfully piloted by the Lane Education Service District.

- Create and pilot a statewide model for connecting academic knowledge with technical skills identified in the Oregon Skill Sets.

- Provide targeted professional development to equip academic and CTE instructors, at both the secondary and postsecondary levels, with the skills they need to create and support the development of Programs of Study.

Recommendation 2: Assist students in reaching their goals and preparing for the workplace by expanding advanced skill training opportunities for secondary students.

- Provide incentives for neighboring high schools and school districts to coordinate with one another and with community colleges and other workforce development agencies to reduce duplication of programs and leverage capacity at existing facilities.

- Relocate CTE instructional equipment among high schools and colleges and arrange for coordinated purchasing among regional partners to avoid unnecessary duplication of services across sites.

- Encourage the development and evaluate the outcomes of charter schools, magnet schools, and academy programs that provide integrated academic and CTE instruction that aligns with the Programs of Study model.

- Coordinate with labor organizations and unions to increase opportunities for students to enter apprenticeships in high-wage, high-skill, and high-demand careers.

- Co-locate secondary and postsecondary programs in satellite sites in order to share resources, particularly in rural areas where access to specialized training and instructional equipment is limited.

- Improve career-related learning experiences by developing criteria that define high-quality career-related learning standards for students in different grades and by creating tools and material supports that schools and their business partners can use when developing programs.

Recommendation 3: Use data to measure how Programs of Study contribute to student success.

- Review existing measures and, where necessary, create new data elements to enable researchers to assess program outcomes accurately.

- Communicate results to the field to support local educators in their efforts to improve programs. State administrators should review program performance data on an annual basis and publish their findings regarding promising practices and comparisons of program performance.

- Provide resources to state agencies to support and sustain data collection efforts.

Recommendation 4: Promote the adoption of statewide articulation agreements to provide high school and college students with greater flexibility when making transitions among institutions.

- Develop statewide articulation agreements that ensure students enrolled in a Program of Study in any Oregon high school possess the educational knowledge and technical skills that will prepare them to enter the postsecondary component of an associated Program of Study offered in any Oregon postsecondary institution. Articulation agreements should guarantee that the secondary coursework students take as part of an approved Program of Study will be accepted and awarded postsecondary credit when appropriate.

Oregon CTE Funding

Local and state funds support CTE programs in middle and high schools, community colleges, and public colleges and universities. Federal grant funds—through the *Carl D. Perkins Career and Technical Education Act of 2006*—supplement state and local funds by supporting innovative CTE initiatives in high schools and community colleges.

CTE is more expensive to provide than many other forms of instruction as a result of several factors, the most influential of which is the additional staffing needed to support the smaller class sizes required for safety and instructional capacity (Klein, 2001). Other factors include the number and type of introductory and advanced CTE courses offered, the equipment used for instruction, and the number of students who enroll in CTE coursework.

Oregon is one of a few states that does not earmark state resources for CTE in K–12 school districts. Community colleges and school districts have discretion over how State General Funds are spent and can direct their appropriations to different programs in whatever proportion meets their local priorities and needs. That flexibility has allowed administrators to support and expand CTE programs, but, at the same time, has promoted different levels of access to CTE throughout the state.

In recognition of the higher cost of delivering CTE services, many states have adopted secondary education funding formulas that provide supplemental resources for CTE. Adopting categorical state funding for CTE may eventually be warranted in Oregon; however, the state's current CTE alignment initiatives and the lack of information on current CTE program spending make it difficult to determine if a categorical funding adjustment is needed, and if so, what level of investment is necessary and how it would affect CTE programs and outcomes.

Accordingly, to address state funding needs in the short term, the Oregon Legislature may seek to **promote system development** by making a grant investment in CTE services.

Recommendation 1: Establish a grant program to support regional development of CTE Programs of Study.

- Provide seed funds with a grant of $3,000,000 to $4,000,000 in the 2009–11 budget. This would allow the state to provide a base-funding amount per region, with remaining resources allocated based on criteria that further the development of Programs of Study, as determined by ODE, CCWD, and local education agencies.

- Ensure that funds are targeted on specific needs by establishing a set of grant expectations, including data and financial reporting and evaluation. Applicants would also need to provide assurances that program funds will be used to supplement, not supplant, existing expenditures and to describe steps that would be taken to sustain project work once grant funding lapses.

Recommendation 2: Upgrade and leverage CTE equipment resources.

- Allocate between $1,000,000 and $1,500,000 on a competitive basis to support equipment upgrades at high schools and community colleges. Limit grants to partnerships of secondary and postsecondary agencies that demonstrate how proposed equipment upgrades or purchases reinforce or extend the development of Programs of Study.

- Leverage additional resources by assigning priority to grant requests from regional partnerships that secure matching funds from industry organizations representing high-wage, high-demand occupations.

Recommendation 3: Quantify the added cost of providing CTE services in school districts that have successfully implemented the Programs of Study.

- Identify high school and postsecondary partnerships that have successfully implemented regionwide Programs of Study and collect expenditure data (labor and capital) to quantify the added cost of offering CTE instruction.

Conclusion

Oregon's CTE system—a vital component of the state's Education Enterprise and workforce development systems—is ready to enter the next phase of its evolution. Administrators, educators, and employers are embracing partnerships and programs

that cross the traditional lines between education sectors and are seeking out ways to improve their programs, engage their students, and demonstrate the positive impact that CTE has on people, communities, and the state.

This report provides **options** designed to support the growth and expansion of high-quality CTE programs throughout Oregon. Investing attention and resources into CTE will result in substantial returns in workforce development and educational attainment. Delaying will not result in the complete eradication of CTE, nor will it eliminate the benefits that CTE already provides to some Oregonians. Delaying, however, will restrict the scope and quality of CTE programs throughout the state and limit the contribution that CTE could make to achieving the state's workforce and education goals.

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Introduction

Oregon educators, lawmakers, and business people are seeking to increase the number and quality of Career and Technical Education (CTE) programs in secondary and postsecondary institutions throughout the state. To support this endeavor, the Oregon Legislature included a provision and related funding in the Oregon Department of Education's (ODE's) 2007–09 Legislatively Adopted Budget requiring the Department to create a task force to assess the state's CTE system—specifically, to look at how CTE services are administered, delivered, and funded. The stipulation also directed ODE to identify related good practices in up to seven other states, including California and Washington.

The Legislature's directive was, in part, the result of work performed by the Workforce 2005 Task Force, a group formed to examine CTE in middle school, high school, and college. The goal of the Task Force was to "create a unified CTE system that connects education with workforce and economic development" (Workforce 2005 Task Force, 2006). The 2005 Task Force submitted four priority recommendations to the Legislature, including one that suggested commissioning a study of CTE funding sources in Oregon. That recommendation was discussed and expanded to become the current instruction for studying administrative structures, delivery models, and funding mechanisms in Oregon and other states.

ODE assembled a CTE Study Task Force in early 2008 that included several original members of the Workforce 2005 Task Force. Members of the CTE Task Force represented community colleges, public and private universities, high schools and area technical centers, government, and business. The first step in the study was to research and select seven states to serve as comparison states in the analysis. In addition to the two states already designated for further study—**California** and **Washington**—the Task Force chose to review **Indiana**, **Kansas**, **Michigan**, **Nebraska**, and **Utah**. Each of these states exhibits a unique combination of the factors that are of interest to Oregon policymakers and administrators.[1]

The second stage of the study consisted of interviews with key Perkins staff in each state, as well as an analysis of available documents and reports. Detailed summaries of each state's CTE system are attached as appendixes to this document.

[1] Greater detail on the state selection process can be found in the report, *Assessing Administrative Structures, Delivery Models, and Funding Mechanisms for Offering High-Quality Career and Technical Education in Oregon: Selection of States for Analysis* (Klein, Richards, and Pedroso, 2008).

The following report summarizes the analysis of Oregon's CTE system; identifies long-term goals for Oregon's CTE, education, and workforce systems; notes gaps between the state's current system and its future goals; and presents options for bridging those gaps.

Career and Technical Education in Oregon

Career and Technical Education (CTE) is an important part of Oregon's education and workforce development system and prepares students for careers as diverse as welding, nursing, business, farming, and engineering. Local and state funds support CTE programs in middle and high schools, community colleges, and public colleges and universities. Federal grant funds—through the Carl D. Perkins Career and Technical Education Act of 2006—supplement state and local funds by supporting innovative CTE initiatives in high schools and community colleges. The following section explores how CTE promotes the state's larger education and workforce development goals and provides a brief overview of Oregon's CTE system.

CTE in Context

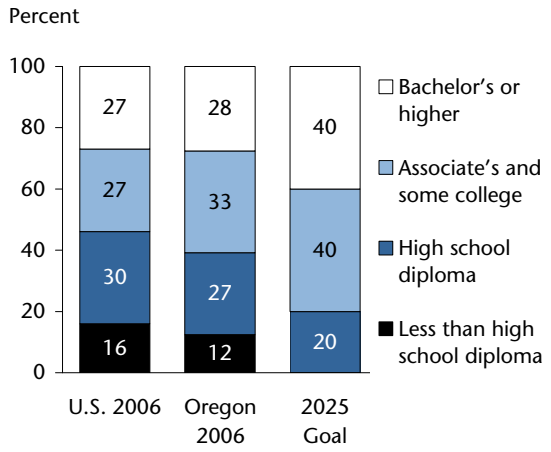
Even though CTE is widespread in the state, it is still sometimes seen as an "add-on" or extra program in the eyes of Oregonians. Fortunately, that thinking is shifting: there is renewed interest in CTE as part of an integrated curriculum and an essential element of a successful strategy for workforce and economic development.

Governor Kulongoski, the Oregon Business Council, the Oregon Workforce Investment Board, and numerous legislators have all expressed support for strong CTE programs, integrated with academic curriculum, that provide students with the skills and knowledge they need to succeed in the global labor market. CTE does not, and cannot, function successfully in a vacuum—Oregonians need both theoretical and applied skills to reach their full potential as students, workers, and citizens. Nor can CTE fulfill all the state's goals for the future: CTE is an equal partner in promoting the state's workforce, education, and economic goals, including the following:

- **Oregon Shines:** The vision of *Oregon Shines II*, the state's strategic plan, is "a vital, prosperous Oregon that excels in all spheres of life," and its three goals are (1) quality jobs for all Oregonians; (2) safe, caring, engaged communities; and (3) healthy, sustainable surroundings (Oregon Progress Board, 1997). Well-prepared and highly skilled workers are not only more competitive in the labor market, but can also attract new business to the state, helping to actively promote the *Oregon Shines* vision and goals.

- **Governor's 40/40/20 Target:** The Governor, legislators, and business have established an aspirational goal for educational attainment: by 2025, 40 percent of Oregonians will have a bachelor's degree or higher; 40 percent will have an associate's degree or postsecondary credential; and the remaining 20 percent will have at least a high school diploma (figure 1). CTE is critical to reaching this goal, particularly at the postsecondary credential level. As of 2006, only 8 percent of the state's population had an associate's degree. While it is difficult to determine the proportion of Oregonians with an associate's degree or postsecondary certificate, license, or other credential such as a journeyman's card, a high estimate for this category is 33 percent, while a low estimate is 8 percent (U.S. Census Bureau, n.d.).[2] CTE plays a central role in making progress toward the 40/40/20 target, and without strong, accessible CTE programs through the education continuum, Oregon is unlikely to achieve its goal.

Figure 1. Educational Attainment and the 2025 Goal: Oregon and the United States



SOURCE: U.S. Census Bureau, 2006 American Community Survey.

- **Workforce Strategic Plan:** The Oregon Workforce Investment Board (OWIB) envisions that by 2010, Oregon business will have a competitive advantage in the global market due to the state's highly skilled, innovative workers. In addition to a number of objectives, the OWIB outlines three major goals in its plan: (1) ensure all Oregon employers have a competitive workforce advantage in the global market; (2) prepare an agile, innovative workforce with the skills needed to succeed in the knowledge-based economy; and (3) build a flexible, unified workforce education and training system that consistently exceeds customer expectations. The importance of CTE is emphasized throughout the plan, and it is clear that the plan's goals and objectives will be impossible to achieve without widely accessible, high-quality education and training for current and future workers (Oregon Workforce Investment Board, 2006).

[2] The high estimate includes all individuals with an associate's degree or "some college." There is too little detail in the Census data to determine how many individuals in the "some college" category have earned a postsecondary certificate, license, or other credential such as a journeyman's card and how many have simply completed courses at a college or university without earning an award or industry credential. The low estimate includes only those individuals who have completed an associate's degree, so Oregonians who have earned a certificate, credential, or journeyman's card are excluded.

Numerous education and workforce initiatives support these aspirations, all of which include or are linked to CTE as an integral partner. Several of the major initiatives include these efforts:

- **Education Enterprise:** In 2006, Governor Kulongoski introduced his "Education Enterprise" plan, an effort to ensure that every Oregonian has the skills and knowledge to achieve his or her potential. The Enterprise has a substantial funding component, which sets aside a minimum of 61 percent of the state's general fund each biennium for public education. This is a significant investment, representing the Governor's commitment to providing high-quality, affordable education to all Oregonians. The concept has been embraced by the education and workforce communities as well as by policymakers, and has broadened to become a commitment to aligning the secondary, postsecondary, workforce training, and student aid systems to ensure Oregonians obtain the education and training they need, when they need it, and in a way that minimizes barriers to transition and success.

- **Career Pathways:** An effort to transform Oregon's education, workforce, employment, and social service systems to focus on helping Oregonians attain degrees, certificates, and credentials that lead to high-demand occupations, increased wages, and lifelong learning.

- **Diploma Requirements:** In June 2008, the State Board of Education adopted new high school graduation requirements designed to better prepare students for higher education or training, work, and citizenship. The new requirements will also serve as a stronger bridge between secondary education and the rigorous requirements of two- and four-year postsecondary education. For the first time, students will have the opportunity to earn credit by demonstrating they possess knowledge and skills that meet or exceed defined performance levels. Students will have the option of demonstrating their proficiency through their work in the classroom, through outside learning experiences, or a combination of both (Get Ready Oregon, n.d.).

CTE Programs and Students

CTE spans the entire education continuum, beginning with introduction to and exploration in CTE programs during middle and high school; apprenticeship, certificate, and associate's degree programs in community colleges; credentialing through private career schools; and bachelor's and graduate degree programs at private and public colleges and universities.

High Schools and Community Colleges

Nearly all of the state's 229 comprehensive high schools provide approved CTE programs to more than 75,000 secondary students each year, and two technical cen-

ters offer high school students the opportunity to focus their studies on one of more than 20 professional areas. The Academy for Architecture, Construction, and Engineering (ACE Academy) is a new Oregon charter school offering academic and technical instruction to juniors and seniors in architecture, construction, and engineering. Forty-three percent of Oregon students enroll in a CTE course while in high school, and the majority of these students enroll in business- or engineering-related CTE courses. The state's 17 community colleges offer numerous CTE programs to more than 29,000 full-time-equivalent students each year (Oregon Department of Education, 2008a).

Federal Perkins funds supplement local and state funds for CTE programs at high schools and community colleges in Oregon. The Office of Vocational and Adult Education (OVAE) in the U.S. Department of Education requires states to report information on CTE students and programs that are supported by Perkins resources and has specific accountability definitions for students and outcomes. OVAE requires states to report on students who enroll in CTE programs, and they are called "participants" for accountability purposes. States must also report outcomes for students who reach a certain threshold of CTE course taking, and these students are called "concentrators."[3] Concentrators are not necessarily students who have completed a program or attained all the academic and technical skills needed to succeed in a particular field. Rather, they are students who have invested substantial time in CTE courses, and the states and federal government track their performance to determine if these students eventually graduate, earn a degree or certificate, pass technical skill assessments, or obtain employment.

Table 1 shows Oregon students defined as Perkins participants who were enrolled in CTE courses and programs in high schools and community colleges during the 2006–07 academic year. Nearly 12,000 high school students met the standard to become a Perkins concentrator during 2006–07 (having completed at least two credits of a CTE program), representing about 53 percent of all CTE participants that year. More than 6,300 community college students achieved Perkins concentrator status in 2006–07 (having completed more than half of a CTE certificate or degree program), making up just over one-quarter of community college CTE participants that year.

Oregon has a large proportion of CTE concentrators who are categorized as economically disadvantaged, particularly at the community college level, where almost 73 percent of students are in this category. The economically disadvantaged category includes high school CTE students who are low income and community college

[3] The precise definition of *concentrator* varies from state to state. Appendix A of this report presents the concentrator definition for Oregon and the seven study states.

Table 1. Oregon CTE Perkins Participants and Concentrators: 2006–07

	High school			
	Participants		Concentrators	
	Number	Percent	Number	Percent
Total	**22,608**	**100**	**11,877**	**100**
Male	12,527	55	6,581	55
Female	10,081	45	5,296	45
Unknown	0	0	0	0

	Community college			
	Participants		Concentrators	
	Number	Percent	Number	Percent
Total	**24,115**	**100**	**6,309**	**100**
Male	11,335	47	2,475	39
Female	12,532	52	3,813	60
Unknown	248	1	21	0

NOTE: Detail may not sum to totals because of rounding.

SOURCE: Oregon 2006–07 Basic Grant Secondary and Postsecondary Student Enrollment Forms—Unpublished; *Vocational Technical Education Accountability Report: 2006–07.*

CTE students who are eligible for Pell Grants or are receiving assistance from the Bureau of Indian Affairs.

Like many states, Oregon struggles with identifying several other special populations such as displaced homemakers, disabled students, and single parents. Students generally report themselves as having these conditions and do not always feel comfortable supplying that information. In addition, some community colleges prefer to ensure that students have completely open access to admission, without real or perceived barriers, and therefore choose not to ask students to provide what could be highly personal information. Table 2 presents demographic information about Oregon's CTE students in high schools and community colleges.

Public and Private Universities and Colleges

Career and technical education is not defined separately from other forms of study in public and private universities, nor do those institutions receive Perkins funds to support CTE programs. Without definitions of CTE students, participants, and concentrators, there are no CTE-specific data from public and private universities that can be compared to high school and community college data. However, 22,106 full-time-equivalent undergraduate and graduate students at Oregon's seven public universities were enrolled in agriculture, health and biological sciences, business, computer science, engineering, or mathematics programs in fall 2006, representing approximately one-third of all university students (Mayfield, North, and Kieran, 2007). In addition, according to data from the Oregon Independent College Association, Oregon's private colleges awarded 25 percent of all mathematics degrees, 31 percent of all biological and physical science degrees, 31 percent of all health profes-

Table 2. Characteristics of Oregon CTE Perkins Concentrators:[1] 2006–07

	High School		Community College	
	Number	Percent	Number	Percent
Race/Ethnicity	**12,248**	**100**	**6,309**	**100**
Asian/Pacific Islander	543	4	243	4
American Indian/Alaska Native	386	3	122	2
Black	243	2	76	1
Hispanic	1,086	9	362	6
White	9,873	81	5,027	80
Other/unknown	117	1	479	8
Special Populations[2]	**27,877**	**100**	**4,101**	**100**
Disabled	1,470	5	188	5
Economically disadvantaged	4,870	17	2,990	73
Single parent	127	0	0	0
Displaced homemaker	0	0	34	1
Limited English proficient	758	3	229	6
Nontraditional	6,582	24	523	13
Tech prep	10,731	38	137	3
Other barrier	3,339	12	0	0

[1] Based on the denominator of the Perkins Technical Attainment measure.

[2] Special populations shows duplicated counts of students because some students have more than one barrier.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: Oregon 2006–07 Basic Grant Secondary and Postsecondary Student Enrollment Forms—Unpublished; *Vocational Technical Education Accountability Report: 2006–07* .

sions degrees, and 39 percent of all computer and information science degrees (Oregon Independent College Association, 2008).

These statistics demonstrate that public and private colleges and universities are educating highly skilled individuals who will participate in industries and occupations that are in high demand in Oregon and internationally. And even though these individuals are not called "CTE students," participants in these programs are actively involved in career and technical education.

Apprenticeship

Apprenticeship is a form of occupational training that joins on-the-job experience with classroom instruction. Industry and individual employers generally design and control the training programs, sometimes in collaboration with community colleges. According to information from the Oregon Bureau of Labor and Industries (n.d.):

- More than 5,260 apprentices were registered in Oregon as of July 2004.
- There are 121 different occupations that train workers as apprentices in Oregon.

- Minority participation in apprenticeship programs is currently more than 12.5 percent.

- Approximately 5 percent of apprentices are female.

Private Career Schools

Private career schools are for-profit institutions that offer career training in a short period of time. Students who complete programs at private career schools typically earn a certificate of completion and may earn a license or certificate in their chosen field. Many of the jobs these students fill do not require a postsecondary degree, but do require formal training that goes beyond high school. Private career schools provide this kind of training, and around 300 are licensed in the state of Oregon. According to recent ODE and Oregon Employment Department statistics, the top 20 programs at private career schools graduated more than 15,000 students during a yearlong period (Turner, 2007).[4]

CTE Performance

Oregon is responsible for reporting data on secondary and postsecondary performance to the Office of Vocational and Adult Education, U.S. Department of Education, each year as a condition of receiving federal funding under the Carl D. Perkins Career and Technical Education Act of 2006. The state collects accountability data from each school district and community college that offers CTE services, aggregates the results, and submits the data to OVAE. After receiving the data, OVAE summarizes state information in an annual report to Congress.[5] Oregon is currently making a transition to using a new set of accountability measures outlined in the 2006 Perkins reauthorization. States will begin reporting on the new Perkins measures in December 2008.

Every state is required to report outcomes data for secondary and postsecondary students, including whether students achieved academic standards; passed technical assessments; earned a diploma, degree or certificate; and/or were placed in employment. State performance on the Perkins measures was one criterion used to initially select the seven analysis states; however, there are limitations to making comparisons between and among states. Even though all states are required to report on the same basic set of measures, there is considerable variation in (1) how states define student populations (i.e., who is included in the measure); (2) the validity and reliability of state measurement tools (i.e., the manner and accuracy with which

[4] Each private career school reports their graduates when the school renews its license. Licenses are renewed throughout the year.

[5] Annual Perkins performance reports can be found on the Peer Collaborative Resource Network (PCRN) at http://www.edcountability.net/reports/report_congress.cfm.

data are collected); and (3) state capacity to track graduates who are making a transition into advanced education or employment.[6,7]

In addition to Perkins measures, Oregon's state and local agencies track workforce and CTE performance through numerous direct and indirect measures. State and local education and workforce providers collect and report information on numerous measures, including postsecondary licensing and certification pass rates; the number of postsecondary CTE degrees and certificates awarded; the number of high school students enrolled in college-level courses for credit; workforce training through the Workforce Investment Act (WIA) Title I dislocated worker, adult, and youth programs; WIA Title II Adult Basic Skills programs; Business and Industry Training System (BITS) employee training programs; and experiential learning and internships.

[6] Refer to Appendix A for a detailed description of population and measure definitions for Oregon and the seven comparison states.

[7] Refer to the 2008 study, titled *Assessing Administrative Structures, Delivery Models, and Funding Mechanisms for Offering High-Quality Career and Technical Education in Oregon: Selection of States for Analysis* (Klein, Richards, and Pedroso, 2008) for detailed information about each state's Perkins performance for 2006–07.

Administrative Structures

The following section describes the administrative structure of Oregon's Career and Technical Education (CTE) system, including the governance and oversight of its programs. It concludes with an analysis of Oregon's strengths and a recommendation for leveraging additional opportunities for improving CTE administration across the state.

Governance and Oversight

The State Board of Education (SBE) oversees the state's pre-kindergarten through 12th-grade system, the community colleges, and the state's private career school authorization and licensure process. The State Board of Higher Education (SBHE) oversees the Oregon University System (OUS), and private colleges and universities have individual boards to oversee their operation. The Bureau of Labor and Industries (BOLI) and apprenticeship committees are responsible for apprenticeship programs in the state. The next section describes the governance of each system in more detail and provides an overview of how each state agency operates.

State Board of Education

The State Board of Education oversees the entire K–14 education system and serves as the career and technical education board for the state. The Board is responsible for ensuring all public school students have access to educational services that prepare them for the next stage in their lives, including postsecondary education, further training, and citizenship. The Board has nine voting members who are appointed by the Governor, and it is supported by the Superintendent of Public Instruction; the Commissioner of Community College Services; and advisors from local school boards, community colleges, and student organizations.

Department of Education

The Oregon Department of Education (ODE) is the eligible agency for Perkins funding in Oregon and is responsible for allocating funds and providing technical assistance to local providers. ODE works in collaboration with the Oregon Department of Community Colleges and Workforce Development (CCWD) to coordinate CTE services throughout the state.

ODE is responsible for supporting local districts and schools and providing leadership for statewide curriculum and instructional programs, school improvement, and assessment. In addition, ODE implements and monitors state and federal programs, such as Perkins and the No Child Left Behind Act (Oregon Department of Educa-

tion, n.d.). The Department has five divisions and the Office of Educational Improvement and Innovation (EII) has primary responsibility for administering Perkins and supporting local education agencies. EII has 12 staff members dedicated to CTE, including 6 who are responsible for one of each 6 Career Learning Areas (CLAs), coordinating all technical assistance related to the CLAs, and maintaining the Oregon Skill Sets for each CLA. Other EII staff members coordinate comprehensive guidance and counseling for the state, oversee private career school authorization, ensure compliance with civil rights requirements, and manage administrative responsibilities for providing CTE services.

Department of Community Colleges and Workforce Development

CCWD collaborates with community colleges and workforce providers to manage federal and state resources to support postsecondary and adult education and training, displaced worker services, and youth education and service opportunities. The Department provides policy guidance, technical assistance, and resources to 17 community colleges, 7 workforce regions, 36 county-based youth programs, and 19 adult basic skills programs. CCWD has 57 employees and is led by a Commissioner hired by the State Board of Education.

Responsibility for CTE falls primarily on four staff members—an education area manager and three education program specialists—who support all aspects of postsecondary education and training at Oregon community colleges. These staff members also receive assistance from the Deputy Commissioner, researchers, and data analysts. The addition of two new program specialists in the last six months resulted in a much-needed expansion of the team supporting community college curriculum and programs. The three-person team of program specialists will be responsible for postsecondary program review, approval, and auditing, and they will be given the task of finding ways to leverage resources and identify opportunities for collaboration and partnering.

Department of Higher Education

The State Board of Higher Education oversees the Oregon University System (OUS). The seven Oregon public universities train students in many technical fields, particularly high-skill areas such as engineering, mathematics, and the sciences. OUS institutions do not receive federal Perkins funds, but they work closely with high schools and community colleges to ensure that Oregon students can make transitions into bachelor's and master's degree programs that lead to high-wage and high-demand employment.

Bureau of Labor and Industries

The Bureau of Labor and Industries has four primary areas—the Civil Rights Division, the Wage and Hour Division, the Apprenticeship Division, and the Technical Assistance for Employers Program—which support the development of a highly-skilled, competitive workforce in Oregon through partnerships with government, labor, business, and education.

BOLI's Apprenticeship and Training Division supports apprenticeship programs throughout Oregon by registering apprentices, working with industry to establish apprenticeship programs, monitoring apprenticeship committee compliance with Equal Employment, and monitoring opportunity laws. The Division, along with industry representatives, provides guidance on industry standards and training guidelines and facilitates cooperation among employers, workers, and schools (Oregon Bureau of Labor and Industries, n.d.).

Apprenticeship Committees

More than 120 occupations provide apprenticeship training in Oregon every year. Local apprenticeship committees design and implement their programs and committees are made up of employers and employees in the industry. Committees develop program guidelines based on current and future training needs. Apprenticeship committees determine what standards must be met to become an apprentice, skill levels required to reach journey status, the number of openings for new apprentices, wage rates, a process for monitoring apprentices, and an employment selection process. The committees also develop curriculum that complements the apprentices' work-based training, totaling approximately 144 hours of classroom education for each year of the apprenticeship (Oregon Bureau of Labor and Industries, n.d.).

Private Colleges and Universities

Oregon is home to 19 accredited nonprofit private colleges and universities that enroll more than 25,000 students each year. The institutions are locally governed, and the Oregon Independent College Association (OICA) provides government relations and public policy development, research and statistical analysis, intra- and intersector communications, and a variety of coordinated group services for member institutions (Oregon Independent College Association, 2007).

Private Career Schools

Private career schools are administered or governed as private businesses. The Private Career Schools team in the Oregon Department of Education licenses approximately 300 private career schools in the state. Staff members on the Private Career Schools team offer information, technical assistance, and training to career school administrators and provide students with information and statistics about private ca-

reer schools across the state (Oregon Department of Education, Private Career Schools, n.d.).

The CTE Network

Over the last three decades, Oregon has built a regional infrastructure, the CTE Network, to support CTE program implementation. The CTE Network is a collaboration of staff who work for state and local high schools and community colleges. The group provides technical assistance, designs implementation strategies, conducts program reviews and approvals, and disburses resources. This longstanding partnership allows Oregon to sustain a comprehensive system that meets state and federal requirements, while remaining responsive to the needs of local communities and programs.

What Is Working for Oregon

The joint oversight of secondary and community colleges greatly promotes alignment between the education sectors. The State Board of Education's intimate knowledge of the strengths and challenges of both systems allows the Board to align its CTE strategies to ensure a cohesive approach to CTE policymaking across K–14 education.

The physical proximity of ODE and CCWD—they reside on the second and third floors of the same building—allows for a high level of day-to-day partnering. The simple ability to speak informally with colleagues on a regular basis promotes a sense of familiarity, comfort, and confidence not present in all state CTE systems. Staffers in one study state, which splits planning across three agencies, reported limited contact with their peers and concerns about a lack of shared knowledge and goals across the different workforce and education agencies. ODE and CCWD have established a culture of collaboration that works extremely well to support CTE and Perkins programs.

The benefits of joint oversight and close proximity are apparent in the ongoing conversation concerning moving the approval process for community college programs from ODE back to CCWD. The approval process has traditionally been split in several pieces, with ODE overseeing part; the Office of Degree Authorization, within the Oregon Student Assistance Commission, managing another piece; and CCWD ultimately responsible for fielding questions and complaints from community colleges and private career schools. ODE has overseen that process for some time, but with the addition of new staff and a clearer understanding of how program approval can be streamlined and made more efficient, CCWD feels now is the appropriate time to take on that responsibility. This effort is further supported by recent collaboration among the State Board, CCWD, community colleges, and private career

schools in order to identify problems with the current process and to refine program approval practices.

Finally, the state's established CTE Network, which brings together representatives from local secondary and postsecondary agencies with ODE and CCWD staff monthly, is the foundation for much of the system's success. Open communication, consistent messaging, and regular opportunities for input from local education agencies ensures that the state is aware of local needs and that local providers are highly engaged in making decisions and implementing strategies. This consensus-driven approach to governance was evidenced most recently in the drafting of the state's 2006 Perkins plan. To ensure state policies reflect the needs of students and institutions, the state convened four task forces—Program Design and Development, Accountability, Professional Development, and Special Populations—made up of more than 100 individuals throughout the state. Working over several months, task force members worked in collaboration with state administrators to craft a plan for CTE that reflects the best interests of the state.

Recommendations for Oregon's Administrative Structure

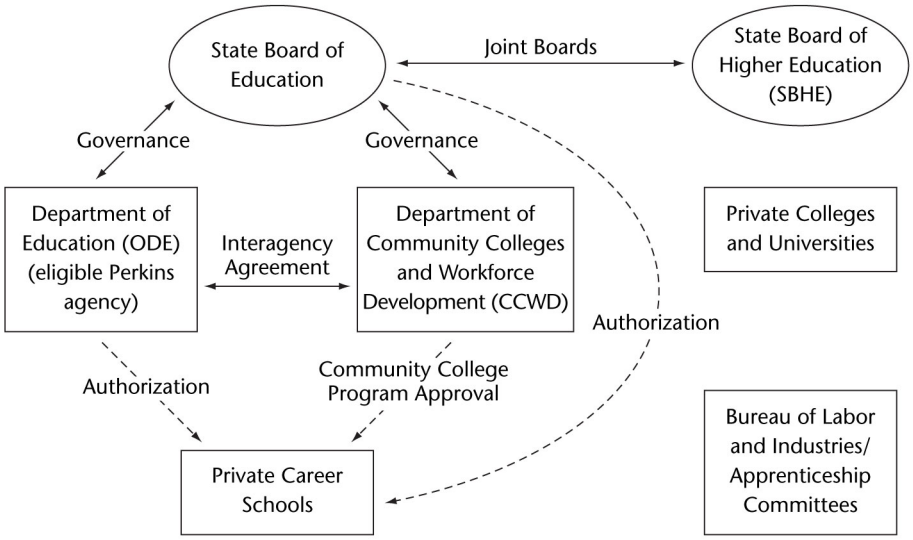
Oregon's strong CTE partnership between K–12 and community colleges, at both the state and local levels, is a model for how education sectors can collaborate to more effectively serve students. The interagency agreement between ODE and CCWD, the agencies' close proximity and resulting high level of communication, and the long-standing CTE Network are the cornerstones of Oregon's success.

However, this relationship is largely limited to agencies and local providers who administer or receive Perkins funds for high schools and community colleges. One element that appears to be missing is greater collaboration among K–12 and community colleges and all the other CTE providers in the state: universities, private colleges, apprenticeship programs, and private career schools. Even with the many initiatives aimed at increasing alignment, such as Career Pathways and the Education Enterprise, more work needs to be done to ensure that academic and CTE programs are linked across the sectors.

Figure 2 illustrates the administrative ties that exist between and among Oregon's CTE providers at the state level. The State Board of Education has strong ties to both ODE and CCWD, providing support and approval of CTE initiatives and programs. ODE and CCWD work together on CTE issues through an Interagency Agreement that allows the agencies to distribute Perkins funds to school districts and community colleges. The State Board of Education and ODE have the authority to license private career schools in Oregon; however, collaboration on CTE initiatives

does not extend beyond that licensing role. Similarly, CCWD works with the private career schools to ensure community college programs do not encroach upon private career school programs, but there is no further partnering on CTE issues at an administrative level.[8] The SBE and SBHE are formally linked through the Joint Boards, which is made up of members of both boards and addresses statewide public education issues that affect students and communities. And there are currently no formal or informal partnerships that include private colleges and universities or apprenticeship committees at an administrative level.[9]

Figure 2. Oregon's CTE Administrative Structure



High school students still find themselves unable to transfer credits earned in Tech Prep programs through one community college to another across the state; community college students cannot count on being able to transfer credit across colleges and universities; and secondary students are not always fully prepared for the demands and requirements of postsecondary education, even when they have earned a high school diploma. The newly reestablished Joint Boards, involving regular meetings of the State Board of Education and the State Board of Higher Education, is one way the state is working to restore and expand connections between the two boards and all the education sectors. A coherent and aligned CTE system will benefit from the

[8] Private career schools and community colleges can and do partner to offer programs locally, but those partnerships are better categorized as mechanisms for delivery, rather than administrative collaborations.

[9] Apprenticeship committees and community colleges regularly partner to offer classroom instruction tied to apprenticeship programs within local community colleges. These are important initiatives, but are delivery in nature, not administrative.

inclusion of all CTE providers, supplying more opportunities to leverage the universe of CTE resources available to students.

One element that appears to be missing is greater collaboration among K–12 and community colleges and all the other CTE providers in the state: universities, private colleges, and private career schools.

Oregon is not alone in this area. With the exception of **Utah**, which has interagency agreements among all its K–16 and workforce state agencies to support CTE, none of the study states reported strong formal or informal ties, beyond K–12 and community colleges, among education sectors around CTE administration. There were many examples of local collaborations, such as articulation agreements and shared classroom space, as well as very broad statewide collaborations around career pathways and data sharing. Because Oregon administrators are using many of these local and general strategies, the next step likely needs to center on strengthening and expanding statewide collaboration and finding formal ways for the entire Education Enterprise to partner on CTE initiatives. Toward this end, MPR makes the following recommendation.

Recommendation: Establish and expand formal and informal administrative partnerships that reach beyond K–12 and community colleges to include private and public colleges and universities, apprenticeship programs, and private career schools.

- Expand all existing statewide CTE articulation agreements to include private and public four-year colleges and universities.

- Encourage regional CTE coordinators and community college deans with CTE responsibility to establish or expand working relationships with private and public colleges, apprenticeship programs, and career schools. That effort may include asking representatives from these institutions and programs in each region to attend meetings to ensure their initiatives and issues are represented as part of their region's approach to CTE.

- Invite representatives from public and private four-year institutions, apprenticeship programs, and private career schools to attend the statewide CTE Network meetings as regular members. Identify roles for the representatives to ensure meetings provide opportunities for all sectors to be fully engaged as participants.

Delivery Systems

Career and Technical Education (CTE) in Oregon is delivered as a sequenced program of studies, beginning in middle school with exploratory, career awareness classes that introduce students to the world of work. High school offers opportunities for youth to learn more about a broad range of careers in one or more of six Career Learning Areas (CLAs) identified by the state and to take progressively more advanced technical coursework within a focus area. Students graduate from high school with an academic and technical skill set that enables them to enter the workforce or enroll in a public community college, public or private four-year college or university, private career school, or registered apprenticeship program to pursue advanced education and occupational training.

Students who choose to enter an Oregon community college may specialize in a particular occupational area, with studies culminating in the award of a credential, certificate, or degree. At this point, many enter the workforce, although some go on to pursue advanced academic or professional degrees in a public or private four-year college or university. Oregon's postsecondary CTE system is also designed to provide continuing workforce education for adults seeking to upgrade their skills or make a career change. The following section describes how high schools and postsecondary institutions in Oregon deliver CTE services and identifies state policies that support system operation. The section closes with recommendations to assist policymakers and state administrators in reinforcing delivery options to achieve state-identified education and workforce development goals.

Secondary CTE Delivery Systems

High school CTE instruction is delivered in more than 220 comprehensive high schools. Two regional skills centers—Sabin Schellenberg Center, in Milwaukie, and CAPITAL Center High School Technology Institute, in Beaverton—supply advanced CTE instruction to students who are transported from neighboring schools. A new charter school opening in fall 2008—The Academy for Architecture, Construction and Engineering (ACE Academy), in Portland—will provide integrated academic and technical instruction for students organized around occupations within the Industrial and Engineering Systems career learning area.

As in **Kansas** and **Nebraska,** secondary CTE services in Oregon are delivered primarily within comprehensive high schools. Remaining study states locate services within comprehensive high schools, within full-time CTE high schools that offer

students academic and CTE instruction, or within area or regional technical schools serving students from one or more neighboring districts.

Among study states, **Michigan** recorded the highest percentage of schools operating as area technical schools in their secondary system in 2002–03, followed by **Indiana** and **Utah** (table 3). And although some states, including **California** and **Washington**, operated a greater number of area centers than Oregon, their relative number was not substantially different when expressed as a percentage of all public high schools in the state. For example, though California operated 74 regional area centers, these centers accounted only for roughly 6 percent of all high schools in the state, as compared to 1 percent in Oregon.[10]

Table 3. Number of High Schools Offering CTE and Area Schools, and Area Schools as a Percentage of all High Schools with CTE, by State: 2002–03

	Number of high schools offering CTE	Number of area technical schools	Area technical schools as percent of all high schools with CTE
Oregon	**227**	**2**	**1**
California[1]	1,100	74	6
Indiana	327	29	8
Kansas	355	4	1
Michigan[1]	380	60	14
Nebraska	308	0	0
Utah	109	9	8
Washington[1]	334	10	3

[1] Data from *2008–2012 California State Plan for Career Technical Education; Michigan State Plan for Career and Technical Education: 2008–2013; The Carl D. Perkins Career and Technical Education Act of 2006: Draft State Plan (Washington).*

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), 2001–02, and Integrated Postsecondary Education Data System (IPEDS), 2001–02; 2005 review by the state CTE directors.

Administrators in study states report that area technical schools can provide a critical link in offering advanced CTE services. By consolidating programs within a single site, states can achieve cost efficiencies, reducing the need for individual districts to maintain and equip separate facilities. Drawbacks do exist, however. Staff in California, for example, report that area schools co-located within a comprehensive high school primarily appeal only to students who live within the housing district because transportation costs, travel time, and student allegiance to their home school can in-

[10] California also funds a network of 290 California Partnership Academies, which operate as schools-within-schools. Academies feature small classes, team-teaching, and career-based instruction that serve to integrate academic content within an industry theme. Although students attending a partnership academy take career-themed coursework intended to prepare them for postsecondary education and careers, CTE curriculum is not offered at the same level of specificity or intensity as that offered in regional centers (Bradby, Malloy, Hanna, and Dayton, 2007).

hibit their participation. Educators in other states complain of reduced student participation in CTE coursework, in general, and lower attendance at area schools, in particular, due to increased high school graduation requirements. Some states also report that stand-alone facilities lack some services, such as access to career guidance and counseling staff, who are typically housed in students' home schools.

And while area schools can play an important role in preparing students for career entry, Kansas is now merging its area schools into its community and technical college system, requiring that each become an accredited technical college with an independent governing board. The expectation is that by July 1, 2008, all area technical schools will be capable of awarding an associate's degree, though secondary students will still be permitted to attend these schools.

Postsecondary CTE Delivery Systems

CTE services in Oregon are delivered through a network of providers that include public community colleges, public and private four-year colleges and universities, apprenticeship programs, and private career schools. Although CTE services are offered in virtually all types of postsecondary and higher education institutions, the allocation of federal Perkins funds is restricted to Oregon's community college system, with each of the state's 17 community colleges offering introductory through advanced CTE coursework leading to skill gains and the award of a credential, certificate, or degree. Oregon community colleges also partner with apprenticeship committees to offer the training component of some registered apprenticeship programs.

What Is Working for Oregon

Oregon is to be commended for its thoughtful efforts in building a cohesive, statewide network to broaden education and career options for youth and adults, while simultaneously addressing employer-identified workforce needs. The next section describes several statewide efforts that have contributed to building and promoting an aligned system of education and workforce development.

Statewide Career Pathways Initiative

Oregon has embarked on a comprehensive effort to create an integrated, articulated set of programs and services to support Oregonians of all ages in gaining the skills they need to find employment and to advance in their careers.[11] Career Pathways are designed to offer multiple entry and exit points, with programs aligned across sectors to accommodate individuals' transitions. Career Pathways efforts target all individu-

[11] See the WorkSource Oregon website for a full description of the statewide Career Pathways Initiative. Go to the Career Pathways section: http://www.worksourceoregon.org/.

als enrolled within Oregon's secondary and postsecondary systems, those enrolled in adult education, and those who are unemployed or who are employed and seeking to return to school to upgrade their job skills.

Tech Prep, Dual Credit (College Now), and Expanded Options

Oregon offers high school students multiple options for combining secondary and postsecondary academic and technical studies, while earning credit that can be applied toward college degrees and certificates. Tech Prep and Dual Credit (known in Oregon as "College Now") programs give students an opportunity to earn college credits for completing advanced secondary coursework in designated courses taught within high schools.[12] Expanded Options allows 11th- and 12th-graders who have completed their high school diploma requirements to earn concurrent high school and college credit, along with early entry into college. To ensure that coursework is rigorous and appropriate, high school instructors collaborate with local college faculty to align curriculum to postsecondary standards and to articulate credit to college programs.

Consistent Messaging

Statewide planning teams have identified and built understanding in the field around four key elements of an integrated Programs of Study system:

- **Alignment and Articulation**—policies and practices that link education curricula and clarify course prerequisites and skill requirements in order to eliminate duplication of effort and the need for remediation.

- **Content and Standards**—industry clusters and pathways and the knowledge and skills underlying each.

- **Accountability and Assessment**—measures and performance benchmarks that provide useful information to drive program improvement, while holding educators responsible for communicating information.

- **Student Support Services**—career guidance and counseling services to help individuals understand their education and career options and to make informed decisions about investing their time in programs that prepare them for college and/or the workforce.

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[12] Tech Prep coursework is primarily focused on CTE students who earn CTE articulated college credit for completing a coordinated sequence of applied educational experiences. Dual credit coursework, available for both academic and CTE students, provides students with lower division college transfer credit.

A Career Pathways Marketing and Communications Committee that includes representatives from high schools and community colleges throughout the state is driving communication efforts. To date, the committee has created a marketing plan to guide continued system development and has drafted brochures and materials that aim to disseminate the Pathways message to multiple audiences.

Recommendations for Delivering CTE in Oregon

Oregon has made a solid start in coordinating its secondary, postsecondary, adult education, and workforce development systems. In comparison to the study states, Oregon demonstrates a remarkable degree of cooperation among statewide agencies and has made great strides in crafting and communicating a consistent vision of how an aligned education system can contribute to students' life and career success. The challenge facing Oregon is how the state can reinforce and extend its ongoing efforts to articulate and align CTE programs offered in secondary and postsecondary institutions, while expanding all students' access to high-quality, cost-effective programs.

Recommendation 1: Provide targeted technical assistance to support the design and expansion of Programs of Study.

CTE is garnering increasing attention as a vehicle for secondary education reform, helped, in part, by recent studies documenting that well-designed, integrated academic and technical coursework can increase student test scores, reduce dropout rates, and increase students' earning power following graduation.[13] Educators have developed a range of approaches for delivering integrated instruction, the most far-reaching of which is called "Multiple Pathways," which entails physically reconfiguring entire high schools around single or multiple pathways so that all students are offered challenging academic instruction connected to demanding CTE coursework.[14] Other options range from operating career academies or stand-alone programs within traditional high schools to offering integrated curriculum incorporated into

[13] For example, Stone et al. (2006) showed that students participating in CTE courses supported with integrated mathematics outscored CTE students participating in the regular mathematics curriculum. Similarly, Plank, DeLuca, and Estacion (2005) found a curvilinear relationship between CTE course taking and dropping out, with students taking a 1:2 ratio of CTE credits to academic credits being least likely to drop out. A NAVE Independent Advisory Panel (2004) report summarizes earnings returns and found that high school students who took four CTE credits had an average increase in earnings of $1,200 immediately following graduation and $1,800 seven years later.

[14] It is not the intention of this report to promote the Multiple Pathways model in Oregon; however, it is worth noting that there is growing recognition in the education field that CTE can play a critical role in school reform efforts when schools are considering reconfiguring their physical and programmatic structures. In the Multiple Pathways model, instruction is delivered within an industry context, typically based on one of the 16 career clusters identified by the State's Career Clusters Initiative. Multiple Pathways emphasizes preparing all students for success following high school, using CTE as a means of providing a context for instruction. For a more detailed description of Multiple Pathways, see Grubb (2007).

Programs of Study that identify the coursework that students need to transition from high school to college or employment within a given CTE program area. Programs of Study emphasize the integration of rigorous academic instruction with demanding technical curriculum, augmented with field-based learning.

No one approach to offering CTE will fit all schools, so Oregon will need to provide educators with a range of options that will enable them to undertake and sustain programmatic reform. At the secondary level, this will entail supplying educators with instructional supports, beginning with adapting existing curricular materials and assessments used in other states, and targeted professional development, which will enable them to create and implement a continuum of approaches to designing Programs of Study.

Technical assistance needs at the collegiate level are less daunting because students enrolling in CTE coursework are primarily interested in obtaining specialized skills that will outfit them for the workforce and advanced education and training. Here the focus of CTE system-building should be on increasing the number of individuals entering postsecondary education and succeeding in achieving their educational goals, regardless of whether they are recruited from secondary or adult education or the existing workforce. State support efforts should be on providing support to improve students' chances of persisting and completing their degrees.[15]

Responsibility for designing Programs of Study will fall primarily upon Oregon Department of Education (ODE) and Oregon Department of Community Colleges and Workforce Development (CCWD) staff, who have a role to play in developing and communicating statewide policies and models, creating and/or sponsoring the dissemination of curricular materials and tools, and providing training and resources to assist instructors in instituting and sustaining change. In providing support, the state should take advantage of existing regional infrastructures, such as its CTE Network, which already serves as a vehicle to provide technical assistance, implement program strategies, and conduct program review and approval. Specific areas that will be addressed as part of the Programs of Study design process are described below.

Curriculum and Assessments

Educators must have access to high-quality, integrated curricular resources if they are to improve the academic skills of students participating in CTE Programs of Study, in particular, and the academic and career preparation of all students, in gen-

[15] In an analysis of community college student persistence rates, Hoachlander, Sikora, and Horn (2003) found that those who were academically qualified to enter postsecondary education were more likely to complete a certificate or degree or to enroll in a four-year institution than those who demonstrated lower academic proficiency.

eral. While a number of national organizations, such as the Center for Occupational Development (CORD), are working to design curricula and assessments covering career clusters and pathway areas, the stock of existing materials is limited. Curricular integration is demanding work; one that requires developers to possess expertise in aligning academic knowledge with technical skills and sufficient time and resources to invest in the process (Hoachlander, 1999).

To continue to promote curriculum development, ODE and CCWD could collaborate to create and pilot a statewide model for connecting academic knowledge with technical skills identified in the Oregon Skill Sets. This could entail convening a CTE Content and Assessment Panel, similar to that used in core academic subject areas, to align identified technical skills with academic knowledge and, where appropriate, operational test items in selected subject areas. While such an effort may eventually be warranted, an undertaking of this scale will likely require the investment of substantial state resources and time. An alternate, more cost-effective approach would be for the state to identify existing, standards-based curricular resources that could be adapted for state use. Models for ramping up prepackaged curriculum already exist; for example, state staff could consult with officials from the **Indiana** Department of Education, which has pioneered a statewide adoption of the Project Lead the Way curriculum, using its federal Perkins Tech Prep grant to support implementation activities. This curriculum, which offers hands-on, project- and problem-based instruction in the Science, Technology, Engineering, and Mathematics (STEM) clusters, has already been successfully piloted within Oregon and dovetails with state efforts to develop a high-technology industrial base.

Another possibility would be to explore the potential for continuing the Oregon expansion of the Math-in-CTE program developed by the National Research Center for Career and Technical Education. The Math-in-CTE program is a research-based, instructional model designed to assist instructors in identifying and teaching mathematical concepts that are embedded within CTE curriculum. Irrespective of whether one or both curricular resources are adopted, the state has a significant role to play in supplying resources to support the statewide adoption of CTE Programs of Study and in training local educators in their use. Originally piloted in Lane Education Service District, the program is currently slated for expansion into approximately 25 new school districts throughout the state.

Professional Development

In the past, CTE often served as a separate educational track for students who had difficulty learning in traditional academic classrooms. Although that perception is changing, bridging academic and CTE classrooms will require intensive professional development to assist educators in designing an integrated curriculum. A number of factors work against these developments, beginning with the physical layout of

schools. Due to noise and other design issues, CTE classrooms and teacher offices are often located at the periphery of campus, meaning that academic and technical instructors seldom encounter one another during the school day. High school teachers' schedules and college faculty contracts are also not structured to provide sufficient time for curricular planning.

Equally problematic is that instructors often lack working knowledge of one another's curricular area. For example, though technical educators are usually knowledgeable about project-based learning, they typically lack formal training in advanced academic subject areas, which can undermine their efforts to introduce academic content into technical subjects (Southern Regional Education Board, n.d.). Academic teachers, in turn, seldom have training in technical subjects, which can make it difficult for them to adopt contextualized learning activities that are aligned with career themes. As noted in the state Perkins plan, instructors will need support in aligning programs to Oregon Skill Sets and other industry standards, and in embedding academic content into CTE instruction.

Individuals preparing to enter the field also will require training to develop and teach integrated curriculum; to engage in team-teaching and project- or problem-based learning; and to establish and support career-related learning experiences. To date, teacher certification and credentialing programs have not had guidelines that specify the performance expectations of teachers planning to teach CTE in a Pathways or Programs of Study environment or with instructional strategies to guide training efforts (Hoachlander, Stearns, and Studier, 2008). The state also suffers from a lack of trained CTE instructors and has increasingly relied on recruiting instructors from industry. Though these individuals have technical skills, their classroom management and pedagogical skills are often not as well developed as those completing formal training programs (Oregon Department of Education and Department of Community Colleges and Workforce Development, 2008).

Educators in the field, and those about to enter it, would benefit from learning more about the Career Pathways and Programs of Study models and the benefits that integrated curriculum and program alignment and articulation can confer. Although ODE currently sponsors technical assistance activities, the state may wish to focus its efforts on training administrators, counselors, and teachers in developing strategies for working together, across departments, to develop integrated curricular models.

State officials would also benefit from considering programs in study states that already have proven to be effective in improving teacher preparation. For example, state administrators may wish to consult with staff in the **Kansas** Department of Education to obtain information on the state's Career and Technical Education Resource Center. Jointly funded by secondary and postsecondary state leadership re-

sources, the Center provides technical assistance and material support to secondary and postsecondary institutions and faculty to support program improvement activities. Center staff members provide support in a variety of subject areas, including curriculum design, professional development, career guidance and academic counseling, career cluster implementation, preparation for nontraditional training and employment, and Career Technical Student Organizations.[16]

State administrators should also explore the potential for coordinating with state education credentialing agencies to ensure that teaching candidates have the necessary abilities to function as effective teachers, are provided with background on Career Pathways and CTE Programs of Study, and receive training on strategies for using CTE to provide applied learning. Suggestions for improving teacher quality range from requiring that all CTE teachers entering the field through alternative certification programs possess at least an associate's degree and/or updated industry certification to requiring that academic and technical education teaching candidates are taught how to work together to integrate curriculum (Harris and Wakelyn, 2007).

Recommendation 2: Enhance options for secondary students seeking advanced skill training.

The costs of staffing and equipping classrooms combine to make CTE more expensive to provide than other forms of instruction. One means of reducing costs would be for the state to consolidate advanced CTE coursework in shared regional skills centers, located as a stand-alone center or within an existing comprehensive high school, which can serve students within neighboring school districts.

While regional skills centers offer some advantages, the costs associated with constructing and maintaining separate facilities and transporting students to and from their home institutions can be considerable. According to **California** administrators, some comprehensive high schools in the state have opted to stop offering technical skill instruction on campus, choosing, instead, to transfer coursework to regional centers. In addition to limiting student access, this action is perceived as diminishing the overall quality of state CTE services because regional center facilities were originally intended to be an extension of district CTE programs, rather than the sole provider.[17] Creation of separate facilities has also reduced the potential for integrating coursework because academic and technical teachers, located at separate facilities, have less opportunity to collaborate.

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[16] A range of promising practices surfaced from the study state profiles that ODE and CCWD administrators should consider in formulating new technical assistance activities. Readers are encouraged to read the state profiles appended to this report for detailed descriptions of promising practices.

[17] In an effort to reverse these policies, California is attempting to shift CTE instruction back into comprehensive high schools. As part of its 2006 Perkins plan, the state is requiring that all comprehensive high schools offer at least one course in a CTE program at a student's home school.

In lieu of creating separate, stand-alone facilities, the state could seek to take greater advantage of existing instructional capacity within workforce regions. State options for strengthening the delivery of cost-effective secondary skill training include the following:

- Providing incentives for neighboring high schools and school districts to coordinate with one another and with community colleges and other workforce development agencies to reduce duplication of programs and leverage capacity at existing facilities;

- Relocating CTE instructional equipment within high schools and colleges and arranging for coordinated purchasing among regional partners to avoid duplication of services across sites;

- Encouraging the development and evaluating the outcomes of charter schools, magnet schools, and academy programs that provide integrated academic and CTE instruction that aligns with the Programs of Study model;

- Coordinating with labor organizations and unions to increase opportunities for students to enter apprenticeships in high-wage, high-skill, and high-demand careers; and

- Co-locating secondary and postsecondary programs in satellite sites in order to share resources, particularly in rural areas where access to specialized training and instructional equipment is limited.

Career-related learning experiences allow students to observe how classroom knowledge is applied in the workplace, while providing opportunities for them to reinforce and expand the technical skills they already possess. While Oregon school districts currently provide opportunities for career-related learning experiences, for example through cooperative education and internships, the scope and quality of these programs vary throughout the state. In concert with efforts to improve instructional quality, ODE should take the lead in developing criteria defining high-quality standards for career-related learning experiences designed for students in different grades and in creating tools and materials that schools and their business partners may consult in developing programs.[18]

The state also has a critical role to play in working with industry and labor representatives to identify external funding sources that can be used to encourage the expan-

[18] Recommendations in this section are drawn from those identified by Hoachlander, Stearns, and Studier (2008) in *Expanding Pathways*: *Transforming High School Education in California*, a policy guide for expanding pathways in California, available from http://www.connectedcalifornia.org/advance_copy/policy_paper.pdf.

sion of career-related learning experiences for all students. This effort could entail creating state-level task forces made up of business, industry, and labor experts within each of the 16 Oregon Skill Set clusters identified by the state in order to explore options for expanding workplace opportunities within the community.

Recommendation 3: Analyze existing data and, if needed, collect additional data to assess how Programs of Study contribute to secondary and postsecondary student success.

To assess the value of CTE Programs of Study, Oregon should evaluate how systems operate, provide information on the challenges that educators face in making transitions into the new delivery model, and assess the outcomes achieved by educators. Doing so will require that state administrators review existing measures and, where necessary, create new data elements that will enable researchers to accurately assess program outcomes. In some cases, this will require that the state create process measures to determine the extent and quality of program adoption, including if and how effectively secondary academic and technical instructors are integrating curriculum and articulating programs to postsecondary education.

Once the data are collected, the state must also communicate the results to the field in order to support local educators in their efforts to improve programs. To accomplish this task, state administrators will need to review program performance data on an annual basis and publish their findings, both by providing illustrations of promising practices and by allowing educators to compare their program's performance against that of programs in other regions.

Performing the work likely will require that state legislators allocate additional resources to ODE to enable the agency and its staff to support and sustain data collection efforts. Supplemental resources may also be necessary to train local educators to collect and enter data regarding Programs of Study implementation and outcomes. To calculate the additional resources that may be required, legislators should consult with ODE to determine the agency's staffing needs and the potential costs of performing this work under differing data collection assumptions.

Recommendation 4: Promote the adoption of statewide articulation agreements to give high school and college students greater flexibility when making transitions among institutions.

In developing Programs of Study, secondary and postsecondary agencies are expected to create articulation agreements that define nonduplicative, sequential programs of study that link high school and college instruction. Past experience with Tech Prep education suggests that, without state guidance, new articulation agree-

ments are likely to be formed between individual postsecondary institutions and individual school districts, and to vary widely in their format, expectations, and provisions.

To encourage student participation in articulated programs of study that terminate in the award of postsecondary credit, Oregon should consider developing statewide articulation agreements that ensure students enrolled in a Program of Study in any Oregon high school possess the educational knowledge and technical skills that will prepare them to enter the postsecondary component of an associated Program of Study offered in any Oregon postsecondary institution. Where appropriate and available, students completing program of study coursework also should be permitted to obtain college credit for secondary coursework meeting state criteria.

For guidance on how to structure such articulation agreements, ODE and CCWD staff may wish to consult with administrators at the Texas Higher Education Coordinating Board, which, in coordination with the Texas Education Agency, have established procedures for the award of postsecondary credit for commonly articulated technical education courses. A state-developed Standard Articulation Agreement provides local agencies with guidelines for program eligibility and structuring agreements.[19]

[19] A copy of Texas state articulation procedures and standard agreements may be downloaded from the following websites: http://www.atctexas.org/articulation/statewide_articulation_guide.PDF and http://www.atctexas.org/articulation/standardagreement.PDF.

Funding Formulas and Mechanisms

This section summarizes how Oregon allocates federal and state resources in support of Career and Technical Education (CTE) instruction and how its distribution policies compare with those of other states. The section opens with an overview of the evidence supporting the added cost of providing CTE services, followed by a description of the formula Oregon uses to apportion federal funding to secondary and postsecondary local education agencies. Although Oregon does not earmark state resources for CTE, the section profiles funding models used by other states to distribute CTE resources, several of which do earmark funding. The section closes with a set of policy options and recommendations that promote the state's goals of increasing the number of high-quality CTE programs, strengthening existing programs, and providing greater access to CTE for secondary and postsecondary students.

The Cost of Offering CTE Instruction

CTE is more expensive to provide than many other forms of instruction. Although educators often focus on the added cost of equipping and supplying CTE classrooms, the majority of added costs are due to staffing issues. While introductory CTE coursework can be delivered in classes that approach the size of academic classes, intermediate and advanced studies often must be delivered in smaller class settings. Lower student to teacher ratios mean that high schools and colleges must hire additional instructors to generate an equivalent number of student contact hours, boosting the average cost of instruction by as much as 20 percent over core academics (Klein, 2001).

Smaller class sizes in CTE are necessary to address student safety and instructional capacity issues. These concerns are greatest for students who concentrate in CTE coursework (i.e., those pursuing advanced training or industry certification). Generally, average class sizes fall as the specificity of skill training rises, and this is particularly the case in trade and industrial arts programs, in which instructors must closely monitor students operating dangerous tools and machinery. The expense of purchasing instructional stations also can place upper limits on the number of students who can participate in a class.

In practice, CTE costs depend on a variety of factors, including the number and type of introductory and advanced CTE courses offered, the equipment used for instruction, and the number of students who enroll in CTE coursework. Equipment and supplies, as well as facility maintenance and operating costs, contribute to increased program expenses. Past efforts to quantify educational agency expenditures

have been complicated by financial recordkeeping that does not routinely differentiate CTE purchases from other capital expenditures. Moreover, simply quantifying existing expenditures may not capture actual local needs, since resource constraints may have, to date, prevented instructors from buying the equipment and materials they desire.[20]

The absence of clear state guidelines on what constitutes a quality CTE program and a lack of state content and performance standards for CTE in Oregon further compounds the issue. Depending upon the instructor, material requirements can vary for a given subject area, with some instructors opting to purchase new, technologically sophisticated equipment while others are content to use reconditioned or decades-old equipment to provide instruction. As a consequence—though it is reasonable to assume that the cost of providing CTE instruction outstrips that of academic coursework—it is virtually impossible without clarifying the goals and expected outcomes of CTE instruction, to use existing state data to quantify the additional cost of equipping CTE classrooms.

Financing CTE in Oregon

CTE in Oregon is funded through a combination of federal, state, and local resources. Federal funds primarily flow through the Carl D. Perkins Career and Technical Education Act of 2006 (Perkins), which provides categorical resources to fund statewide CTE program improvement activities. Though Oregon does not earmark state resources for CTE, school districts and colleges have discretion over how they spend their annual general purpose education grant, meaning that the type and scope of program offerings vary widely across the state. Local resources flow from a variety of sources, including contributions from community, business and industry, and labor groups. Because local agencies are not required to track how donations of equipment, supplies, and volunteer time are expended, it is not possible, using existing provider data, to quantify the level of this nongovernmental support.

Federal Perkins Funding

Each year, the federal government provides Oregon with a categorical grant for CTE services. The size of Oregon's allocation is conditioned on population demographics, with the state receiving an amount equivalent to its proportional share of the eligible national population. The grant has two components: Title I Basic Grant funds, ac-

[20] In an effort to quantify equipment and supply purchases as part of a formula design effort in Wyoming, MPR researchers attempted to collect statewide expenditure data for secondary CTE programs. Ultimately, researchers opted to base equipment and supply funding on average statewide spending, in the belief that schools emphasizing capital-intensive programs would be balanced out by those emphasizing more general skill instruction. See Klein, Hoachlander, Bugarin and Medrich (2002) for a description of this study effort.

counting for roughly 92 percent of the total state allocation, are intended for program improvement and state administrative purposes, and Title II Tech Prep resources are targeted toward specialized programs that align secondary and postsecondary coursework. As these funds are the only resources earmarked for CTE in Oregon, local agencies have come to rely upon them to augment program delivery and, in periods of state economic downturn, to protect services offered in comprehensive high schools and community colleges.

Formula Funding Allocations

Title I Basic Grant funds are distributed via a federally legislated formula, with the bulk of resources (85 percent) allocated to local education agencies based on indicators of student need.[21] Allocations are intended to spur program improvement efforts, which include curriculum design, professional development, student support activities, and equipment purchases. Remaining funds (10 percent) are used for state leadership—such as assessing program services for special needs populations, expanding the use of technology, sponsoring professional development, strengthening academics within technical programs, and supporting correctional education and gender equity activities—and for offsetting state administrative costs (up to 5 percent).

Oregon's expenditures for state leadership and administrative purposes parallel those of study states with the exception of **Indiana**, which reserves just 1.9 percent of its basic grant for state administration. Indiana's diminished level of funding is due to its Legislature's unwillingness to allocate additional resources to meet the dollar-for-dollar state administrative match required in the Perkins Act. According to Indiana staff, decreased funding for state administration has diminished the state's capacity to monitor and offer technical assistance to local agencies, and it was suggested that, if possible, Oregon maintain its match rate to achieve the 5 percent administrative maximum.

Secondary and Postsecondary Funding Split

States have some flexibility in how Perkins funds are split across the secondary and postsecondary sectors. Nationwide, states allocate roughly three-fifths (61 percent) of their Perkins basic grant in support of secondary programs (U.S. Department of Education, 2007). In contrast, Oregon distributes its federal resources equally across the secondary and postsecondary sectors, in part because each sector has roughly equivalent numbers of students participating in CTE, and in part because historically this split has promoted and sustained the creation of secondary-postsecondary partner-

[21] At the secondary level, 30 percent of resources are allocated based on a district's pro rata share of the total number of individuals aged 5 to 17 who reside in the state, and 70 percent on the number of individuals aged 5 to 17 who are from families below the poverty level. Postsecondary resources are based on an institution's pro rata share of the total number of individuals receiving Pell grant support.

ships across the state's 18 CTE regions (Oregon Department of Education and Oregon Department of Community Colleges and Workforce Development, 2008).[22]

Funding splits in study states have paralleled national trends, except in **California** and **Washington**, which allocate a greater proportion of resources to the postsecondary sector (table 4). According to California administrators, the state funding split, which was adopted in the early 1990s, parallels student participation rates in secondary and postsecondary (including adult) CTE programs. A recent change in state policy, which now limits adult participation in regional occupational programs, is reducing the number of adults who may be included in postsecondary counts; as such, it is anticipated that the state funding split will be more evenly distributed over time. Washington looks at the number of students served by each sector each time it updates its Perkins State Plan, which generally occurs on an annual basis. The allocation has been stable for many years, but if the state were to see a swing in the proportion of students served, it would evaluate whether the split of Perkins funds should be altered. Administrators in **Indiana** report that the state is planning to calculate the return on its Perkins investment and will, if necessary, make adjustments to its secondary-postsecondary split to achieve a higher rate of return.

Table 4. Federal Perkins Allocation Funding to States: 2006–07 Program Year

	Total federal funding	Funding split (percent)		Merge basic grant and tech prep
		Secondary	Postsecondary	
Oregon	**$15,559,017**	**50**	**50**	**Yes**
California	140,013,152	43	57	No
Indiana	28,381,708	64	36	No
Kansas	12,570,673	50	50	Yes
Michigan	42,948,582	60	40	No
Nebraska	7,847,803	60	40	Yes
Utah	13,542,456	60	40	Yes
Washington	24,667,861	44	56	No

SOURCE: U.S. Department of Education, Estimated FY 2006 State Allocations; Individual state Consolidated Annual Report Narratives: 2006–07.

While frequent review of the Perkins split can help ensure that resources are allocated more efficiently, states must account for year-to-year fluctuations in enrollment and performance, produce accurate estimates of program returns, and account for ongoing state initiatives that may alter participation or outcomes in the short-term. If Oregon were to consider modifying its Perkins funding split, it would benefit from identifying criteria for quantifying the state's return on its investment under the current Act and from tracking the performance of each education sector over

[22] A description of the state's rationale for splitting resources and its plans for using federal Perkins resources are detailed in the state's 2008–2013 Perkins plan, available at http://web1.ode.state.or.us/teachlearn/pte/stateplan2008-2013.pdf.

time. Given that ongoing state initiatives, such as Programs of Study, may affect high school and community college performance, and that results from these changes will take time to surface, MPR Associates recommends that the state defer making any substantial changes to its funding split until the next Perkins reauthorization cycle.

Tech Prep Resources

Beginning in 2008–09, Oregon will merge its Perkins Title II Tech Prep funding into its Title I Basic Grant. This decision recognizes the substantial overlap between existing Tech Prep programs and the development of new "Programs of Study" called for in the Perkins Act, as described below. The decision is also in alignment with state goals to provide all students with the opportunity to participate in programs that incorporate challenging academic and technical skills in aligned programs of study.[23] To sustain regional momentum, the state has dedicated its reserve funding to support existing regional consortia in collaborating to expand and implement Programs of Study.

According to data compiled by the National Association of State Directors of Career Technical Education (2008) consortium (NASDCTEc), roughly half of all states and three of the seven study states—**Kansas**, **Nebraska**, and **Utah**—have opted to merge their Tech Prep funding with their Basic Grant. It is anticipated that, over time, additional states will follow this route.[24] Indeed, the National Tech Prep Network recently changed its name to the National Career Pathways Network to respond to Perkins legislative changes and membership surveys, which suggest that Programs of Study are the "logical extension, evolution, and strengthening of Tech Prep" programs.[25] Merging funding also allows states to waive reporting on a substantial set of Tech Prep accountability measures, reducing the data burden on state and local program staff.

State CTE Funding: Secondary

Kindergarten through 12th-grade education services in Oregon are funded through a school district equalization formula, which allocates state and local operating revenue based on four grant categories: a general purpose grant, a transportation grant, a

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[23] For an explanation of the state's rationale for merging the funding streams, see *The Oregon Trail: Perkins IV and Merging Tech Prep With Basic Funding* (Schoelkopf, 2008).

[24] Oregon is, however, planning to use reserve funding contained in the Act to continue to fund Tech Prep regional consortia to support the development of Programs of Study. Alternatively, Washington State administrators report that the state is not contemplating merging funding because Tech Prep is considered the basis for promoting the development of Programs of Study. This suggests that the adoption of Programs of Study may be advancing even among states that are not planning to merge their Tech Prep and Basic Grant resource streams.

[25] The rationale for the name change of the National Tech Prep Network is described more fully on the Network website, available at http://www.cord.org/about_us/.

high-cost disability grant, and a facility grant. The majority of these resources (95 percent) are distributed via the general purpose grant, with district eligibility conditioned on the preceding year's weighted Average Daily Membership (ADMw), adjusted for student and school characteristics (e.g., special population characteristics, school location, and size).

District ADMw counts include all students participating in district programs, regardless of the type of coursework they take. The formula incorporates weighted adjustments for students participating in higher cost programs, such as English as a Second Language (ESL) or who are relatively more expensive to educate, such as those on an Individualized Education Plan (IEP). For example, each student on an IEP generates a 2.0 ADMw, compared with a 1.0 ADMw for a student participating in regular school programs. Supplemental funding is intended to compensate districts for the additional staff and other resources that must be invested to provide an equivalent level of education for all students.

Although education grant amounts are determined by student characteristics and school demographics, funds are distributed as a lump sum payment, meaning that local administrators have discretion over how state dollars are allocated across programs. Because funding is not categorical, CTE educators must compete for funding against educators who teach other subjects, including core academics, art, music, physical education, and electives. Oregon does, however, provide categorical funding to support the Oregon Student Leadership Development Center (SLDC), which provides leadership to seven CTE student organizations within the state. According to ODE staff, the state earmarks roughly $700,000 per biennium to these student organizations which are dedicated to helping students achieve academic and career related learning standards while enhancing their academic, leadership, citizenship, and technical skills.

State CTE Funding: Postsecondary

Oregon's Community College Distribution Formula allocates resources based on a three-year rolling average of full-time-equivalent (FTE) enrollment, which is calculated by summing student participation across all eligible college programs. Because the formula is designed to provide equivalent resources for students in different program areas, FTE students participating in CTE coursework generate the same level of resources as those in other types of programs. Funds are distributed as a basic grant, meaning that local college boards determine how resources are distributed to college programs.

Oregon is somewhat unique in applying equal weighting to students participating in all types of programs, including lower division collegiate, CTE, adult basic education, and adult continuing education. Institutions have flexibility, however, in how they

distribute their basic grant funds because the state does not require colleges to expend resources in the program that generated funding. For example, some educational programs either cost less or are funded at lower levels than other programs, allowing administrators to transfer resources to support higher cost programs, such as CTE.

A review of community college allocation formulas in study states indicates that six states—**California**, **Indiana**, **Kansas**, **Michigan**, **Utah**, and **Washington**—do not provide supplemental resources for technical coursework. Instead, community college CTE programs are funded primarily based on institutional FTE enrollments, with no adjustment made for the added cost of offering CTE services.[26] The one exception to this approach is found in **Nebraska**, which assigns an additional weight to CTE participants (as detailed below). This finding parallels other reports in the literature. For example, according to a statewide study of community college funding mechanisms, conducted by the Education Commission of the States in 2000, only Kansas and Nebraska considered program costs when determining state support for courses. And in the time since the national survey's release, Kansas has dropped its supplemental weighting.[27]

CTE Funding Mechanisms in Other States

In recognition of the higher cost of delivering CTE services, some states have adopted education funding formulas that provide supplemental resources to assist secondary school districts in offering CTE coursework. In most cases, this additional aid is categorical, meaning that it must be spent to support or improve CTE programs. In other cases, states may allocate these resources based on a consideration of CTE cost factors; however, to provide flexibility to school district administrators, they do not require that these funds be spent directly on CTE services.

State funding formulas fall into five broad categories, although, in practice, states may employ components of one or more models. To provide a context for Oregon's funding options in this study, MPR researchers selected representative states from each funding category to model the operations of the major formula types.[28] The

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[26] Kansas maintains a system of 29 two-year technical colleges that provide CTE instruction. Funding for these institutions is provided through federal Perkins funding, a state line item grant, and from charges for tuition and fees, though the source and amount of funding differs by institution.

[27] The 2000 Education Commission of the States study, *State Funding for Community Colleges: A 50-State Survey*, has not been updated since it was published. Information on Kansas' funding formula surfaced due to the state's inclusion in this study; however, no attempt was made to follow up on states not selected for this study, and it is possible that other states have added categorical funding for post-secondary CTE programs to their state funding formula since 2000.

[28] A description of the selection process and state funding approaches can be found in the report titled, *Assessing Administrative Structures, Delivery Models, and Funding Mechanisms for Offering High-Quality Career and Technical Education in Oregon: Selection of States for Analysis* (Klein, Richards, and Pedroso, 2008).

Information on funding in a few states is not enough to serve as the basis for recommending a funding formula for Oregon.

following section reviews the operation of the various formula mechanisms in the study states, quantifies states' level of supplemental investment in CTE, and describes state administrators' beliefs about the advantages and drawbacks of their state approach.

It should be noted that, while state profiles can provide useful insight into how models operate, information obtained from a review of a single state employing a given funding model cannot serve as the sole basis for recommending one formula over another or for specifying the level of funding or weighting that should be attached to CTE programs or participants. With appropriate modification, any given model can steer additional resources to CTE in a way that supports Oregon's statewide goals, although funding constraints and political realities may make one approach more feasible than another. In addition, though researchers sought to obtain objective assessments of states' funding mechanisms, the opinions of those interviewed do not represent the official state position on formula operations.

Model 1: Foundation Funding

Like Oregon, **California** and **Nebraska** do not provide separate state funding for CTE programs offered in comprehensive high schools. Instead, school districts receive a single education grant, usually conditioned on student Average Daily Membership (ADM), adjusted for factors such as student characteristics, district size, or geographic conditions. District administrators distribute these resources across all school programs—academic and technical—according to local priorities.

Although **California** does not provide supplemental weighting for CTE coursework offered in comprehensive high schools, the state does provide separate funding for technical programs offered in county-administered regional occupational centers and programs (ROC/Ps).[29] These ROC/Ps operate as shared-time facilities, with students from surrounding districts transported to a stand-alone center (or center within a comprehensive high school) to receive advanced technical instruction. Coursework is intended to offer advanced studies within a selected program, with priority given to 11th- and 12th-grade students who have demonstrated a specific occupational interest. These facilities are supported as a separate line item in the state budget, which amounted to $418 million in 2006–07 (California Department of Education, n.d.).

[29] As noted earlier, California also funds a network of 290 California Partnership Academies, which operate as schools-within-schools. Although state contributions to academies totaled roughly $20.6 million in 2004–05, roughly 76 percent of the funding comes from local contributions, generated from district matches and employer contributions (Bradby et al., 2007).

Nebraska also does not provide categorical funding for CTE programs offered at the secondary level, though the state has invested resources to promote CTE system development. In 2007, the State Legislature authorized the Career Education Partnership Act Grants program, which supports schools and colleges in their efforts to continue and enhance CTE programs. Under the terms of the Act, the state distributes roughly $500,000 annually through a competitive grant process. Funds are used to assist collaborative projects of two or more public schools with an educational service unit, or a public postsecondary institution and an advisory group, in (1) developing academic competencies, technical competencies, and basic work-skill foundations for students; (2) developing curriculum; (3) employing certificated teachers; and (4) providing professional development for certificated teachers to provide course instruction. Grants are limited to $75,000 per collaborative project.

According to the Nebraska State Director, lack of categorical funding has spurred state efforts to align secondary and postsecondary education systems around the state's Career Pathways Model. Absent dedicated funding, CTE educators have identified career clusters and pathways as a means of promoting student involvement, and they are actively collaborating with academic teachers to build comprehensive programs of study that integrate academic and technical content. Resources from the 2007 grant program are also contributing to system development, although annual requests outstrip available funds.

While the State Director expressed an occasional wish for categorical funding, he also reported that its absence has reduced competition for resources between academic and CTE educators, thereby fostering a more positive working relationship within schools. And while high school curricula were described as more broadly defined, with secondary students more likely to be engaged in foundation-level versus occupationally specific studies, advanced CTE coursework is still available to students, either onsite or at a neighboring community college through dual-credit or dual-enrollment opportunities.

Model 2: Unit Cost Funding

Utah provides add-on funds to encourage each of its 40 districts and 8 charter schools to offer CTE instruction. Resources are distributed based on student participation in CTE coursework, with roughly three-quarters of funding (72.2 percent) allocated based on district CTE enrollment. Remaining funds are being distributed as an add-on, based on relative student participation in summer agriculture programs (1.7 percent), comprehensive guidance programs (13.1 percent), work-based learning (2.1 percent), middle school introductory programs (1.6 percent), career/technical student organizations (0.7 percent), and the number of students who pass the state's CTE assessment (8.6 percent). The state also provides an additional $2.8 million set-aside for equipment. Funding to support the state's five Applied

Technology Centers and three Applied Technology Service Regions is issued as a separate line item in the state budget. According to legislative predictions, the state will spend roughly $67.5 million on CTE services in the upcoming 2009–10 program year.

According to state staff, funds allocated for CTE are critical to providing high-quality programs; in its absence, it is not clear that comprehensive high schools would continue to offer the same level or type of program services. And because state resources provide ample support for secondary programs, Utah uses its Perkins funds primarily for program improvement; for example, the state is currently committing its federal resources to build its Career Pathway System. To ensure that funding keeps pace with student demand, state administrators review student participation data annually, and they have done so over the past 20 years of formula use. If student participation rates rise in the future, the state will attempt to add additional funding to hold spending constant. However, the state is sensitive to the fact that in the past, shortfalls in some years have led to budget cuts.

Model 3: Cost Reimbursement

Michigan reimburses secondary districts for a percentage of the extra costs they incur in providing CTE as compared to non-CTE programs. Reimbursable services, which are compensated on a per student, hourly basis, include those related to counseling, curriculum development, technology and equipment, supplies and materials, work-based learning, evaluation, career placement services, student leadership organizations, and up to 10 percent of the costs of planning and coordination. Costs are capped, meaning that if a district's total costs per FTE CTE pupil exceeds the per pupil funding provided though the state's basic grant formula, the state will only reimburse up to 75 percent of the added cost. In 2004–05, the state provided roughly $28.6 million for disbursement to local agencies on a cost reimbursement basis.[30]

Cost reimbursement dates back to the early 1970s, when Michigan obtained federal grants intended to promote CTE program building. The Michigan legislature matched these grants through budgetary line items and, once federal grants disappeared, opted to maintain its allocation for CTE. The state currently earmarks 60 percent of its added cost funding for distribution to a set of priority CTE programs, ranked every four years on whether they offer students employment in occupations with (1) high statewide demand for workers, (2) high wages, and (3) high rates of related placement for program completers. The remaining 40 percent of funds are al-

[30] Audited budget information for the 2006–07 school year was unavailable at the time this report was produced. According to the Michigan State Director, state allocations for CTE have remained constant over time, meaning that 2004–05 audited distributions are roughly comparable to current spending levels.

located based on each agency's proportional share of the state's total student hours and grade 9–12 enrollment. Local programs must spend 90 percent of their added cost funds for program improvement and provide a local match equal to at least 25 percent of added costs. Although funds are distributed based on state priority ranking, districts may choose where to spend their additional funding (i.e., funds need not be spent on the program that generated them).

The Michigan State Director reports that cost reimbursement provides an excellent approach to funding CTE programs. Because Michigan selects the categories of reimbursement, the state can establish and reinforce a consistent statewide policy. And because total state expenditures for CTE are limited to the budgeted amount, the state does not face unexpected cost overruns should total expenditures spike in a given year. This can introduce some uncertainty at the local level, however, because cost reimbursement rates are a function of statewide expenditures in a given year.

Model 4: Weighted Student Funding

Kansas and **Washington** have each incorporated a weighed adjustment to their secondary school funding formula to compensate districts for the added cost of serving CTE students. In **Kansas**, FTE students in approved CTE programs contribute an additional 0.5 weight, meaning that an FTE CTE student would generate a funding weight of 1.5 units, compared to 1.0 unit for a regular high school student. Only classes at the 10th-grade level or above are eligible for weighting, and revenue generated by the weight must be spent on CTE services. Although elementary and middle school (K–8) and introductory high school courses are not eligible for weighting, 9th-grade courses within a program sequence may be funded if they are not offered as an introductory course.

According to the Kansas State Director, the use of weighted funding has created a strong incentive for districts to classify coursework as CTE to qualify for additional resources. To ensure that only eligible courses are funded, the state has developed detailed criteria defining CTE classes, and state staff closely review the coursework districts propose. Also, as part of its annual audit of district enrollments, local auditors carefully review student course-taking records to verify that locally reported counts are valid.

The State Director believes that the 0.5 CTE student weight has protected CTE programs during economic downturns in Kansas, because districts would otherwise cut these higher cost programs to balance budgets. In particular, weighting appears to protect Trade and Industry and other programs that require less advanced postsecondary education, because, with the advent of career pathways, local districts are now gravitating toward technologically advanced programs, such as Science, Tech-

nology, Engineering, and Mathematics (STEM), which allow students to earn an associate's or bachelor's degree at completion.

The state of **Washington** calculates funding for its comprehensive high schools and skill centers based on weighted FTE enrollment in combination with a staffing enhancement. Specifically, district FTE enrollment is calculated employing differential weighting for academic and CTE students: schools and skill centers generate 1.0 regular FTE students for each 1,000 hours of academic coursework, compared with 1.0 FTE CTE students for every 900 hours of approved coursework completed. This translates to a 1.11 weight for each FTE CTE student.

The state also provides a staffing enhancement, with academic courses generating a maximum of 0.92 certificated instructional staff (CIS) units and 0.08 certificated administrative staff (CAS) units for each of 21.2 regular FTE students enrolled. In contrast, CTE courses offered in high schools generate a similar number of CIS and CAS units for each of 19.5 FTE CTE students in attendance, and CTE courses offered in skill centers receiving an enhancement for each of 16.67 FTE CTE students. Schools must also spend no more than 15 percent of their state CTE funds on indirect costs (e.g., repayment of debts, principal's office costs, guidance and counseling, health services, pupil management and safety, utilities, and facilities management) to qualify for the enhancement (Washington Office of Superintendent of Public Instruction, 2006).

In 2008, the Washington legislature passed a comprehensive CTE bill intended to assist school districts in reintroducing programs lost during the last recession, in particular, programs that provide students with training for high-demand occupations. The state has provided $1.7 million, on a one-time basis, for use in purchasing or improving curriculum, creating pre-apprenticeship programs, and upgrading technology and equipment to meet industry standards. An additional $1.95 million is provided to support various initiatives, including the development of model Programs of Study, alternative assessments for CTE students, and a marketing campaign to increase public awareness of CTE (Washington State Legislature, 2008).

Nebraska is the only study state to report that it provides supplemental funding for CTE programs in community colleges. Resources are allocated through an enrollment-driven formula that weights courses in relation to their cost. Academic transfer courses are assigned a 1.0 weight, "light" CTE courses a 1.5 weight, and "heavy" CTE courses a 2.0 weight. A light program is one that requires the use of equipment, facilities, or instructional methods easily adapted for use in a general academic transfer program, while a heavy program is one that requires the use of specialized equipment, facilities, or instructional methods not easily adaptable.

According to state staff, the origins of the state funding formula date back to the 1980s, when the state gave community colleges the opportunity to grant academic transfer credits. Before that, Nebraska community colleges emphasized applied technology and occupational education, with the goal of preparing students for immediate employment. Concerns that the introduction of academic transfer would lead colleges to drift from their original mission led the State Legislature to introduce a CTE formula weight. The application of the CTE weight to promote CTE instruction appears to be working. Although academic transfers have increased, roughly 85 percent of Nebraska community college students currently participate in CTE programs, although the state does not calculate the actual amount of resources allocated in support of CTE versus academic transfer credit instruction.

Model 5: Incentive Funding

Secondary CTE resources in **Indiana** are distributed based on the number of credit hours completed by students in six program categories, ranked by wages paid in associated occupations and labor market demands for workers. Credit hours are differentially reimbursed, with students in high-wage, high-demand programs compensated at $450 per credit hour, with lower rates paid for programs providing skills that are less in demand (table 5). Students enrolled in CTE programs not identified in wage and demand categories are funded at a flat rate of $250 per student. According to state administrators, the state allocated $83.5 million in fiscal year 2008 in support of CTE services.

Table 5. Funding Amounts per Credit Hour in Indiana

	High wage	Moderate wage
More than moderate labor market need	$450	$375
Moderate labor market need	375	300
Less than moderate labor market need	300	225

SOURCE: Indiana Department of Education, Office of Financial Management, Analysis, and Reporting, 2008.

Area career centers do not qualify for state funding; instead, they rely on tuition payments from "sending" schools, which negotiate a participation rate based on the number of students and the amount of time students attend a center. Sending schools are eligible for a flat $150 payment from the state for each student attending an area school, which is intended to offset transportation costs.

According to the Indiana State Director, providing incentives for coursework supports the state's goal of increasing the number of graduates in areas of economic need. In particular, the number of state-identified programs offered by schools has risen, while some less beneficial programs in low-demand areas have been elimi-

nated. And though some good programs in lower demand areas have also been closed, overall, the funding approach is helping the state achieve its workforce development goals.

Attaching additional state resources to selected programs has driven some schools to invest significant resources and staff in developing desired programs. While this works well as long as programs maintain their elevated funding status, experience has shown that schools can face financial shortfalls if a program falls in the rankings. Indiana has attempted to eliminate this problem by holding the list of qualifying programs constant over time, but questions remain as to how the state can maintain program flexibility without compromising local provider financing.

A second challenge with Indiana's funding model is that it guarantees schools a fixed dollar amount for every student enrolled in eligible CTE coursework. Because funding for CTE has remained constant while the number of students taking courses has risen, the state faces increasing resource demands. As a consequence, Indiana has exceeded its CTE budget in each of the past three years, with one year's shortfall approaching $10 million.

Funding Technical Equipment

Equipping and supplying CTE classrooms can be a significant expense, particularly without dedicated state funding. Recognizing the importance of keeping instructional equipment current, a number of study states have developed or are considering adopting state grant programs to assist secondary educators in maintaining up-to-date instructional materials. State approaches take two forms: periodic grants and annual appropriations.

Some states periodically allot resources to allow CTE educators to update equipment. For example, in **California**, the Governor's 2006–07 budget request provided for a one-time grant of $40 million to support middle and high schools in purchasing CTE equipment and supplies. Additionally, legislators in **Washington** recently adopted legislation (described above) to allocate one-time grants to middle schools, high schools, and skill centers for use in upgrading high-demand CTE programs. In contrast, **Utah** provides an annual appropriation of $2.8 million for equipment replacement and software updates at the secondary level, along with occasional one-time appropriations. Postsecondary institutions receive funding to support equipment and software upgrades in response to legislative appropriation requests.

The literature provides little guidance on the tradeoffs of earmarking annual state funding for CTE equipment versus allotting one-time funds for periodic purchases. Logically, CTE providers in states that offer annual allotments for CTE equipment

Money does not necessarily equate to quality.

might be expected to have more up-to-date instructional equipment than those that do not. However, simply providing additional resources does not necessarily mean that there will be an improvement in program quality, because district purchases may not align with state education goals or may lead to cost inefficiencies if items duplicate equipment in neighboring schools or community colleges or are more technologically sophisticated than needed.

Options for Funding CTE in Oregon

As Oregon legislators review the options for funding CTE in the state, they will need to consider how different models will affect educators and students in other non-CTE subject areas and whether there are sufficient resources to support each model. State education and workforce agencies are also pursuing a range of policy initiatives to align the secondary, postsecondary, adult, and workforce sectors; consequently, legislators will also need to contemplate how augmenting CTE financing will affect these other ongoing efforts.

Funding Option 1: Retain the existing state funding model for secondary and community college education.

Although Oregon's secondary and community college education funding formulas do not directly earmark funds for CTE, resources are incorporated into the state's secondary general purpose and postsecondary institutional grant, which compensates districts and colleges for the cost of educating students averaged across all educational programs and activities. Local control enables school district and college administrators to choose how to allocate resources across programs, with expenditures tailored to balance institutional budgets and student needs. This flexibility can lead to differences in CTE offerings across districts and community colleges.

While all colleges in Oregon offer academic and technical instruction, some school districts choose to concentrate their general purpose grant on academic programs, offering students limited access to CTE studies. Others opt for a mix of academic and CTE programs, containing costs by offering technical subjects that can be taught with less expensive equipment or in classes of similar size as academic ones. Still others choose to offer relatively more expensive programs, for example, by offering students access to technically sophisticated equipment or offering instruction in classes enrolling fewer than the state's average number of students.

A review of statewide CTE enrollments between 2001–02 and 2006–07 shows that the number of students achieving concentrator status has fallen in both the secon-

dary and postsecondary sectors (by 1 percent and 7 percent, respectively).[31] Secondary Tech Prep enrollments have, in contrast, increased over the period by nearly one-quarter (24 percent), suggesting that state efforts to promote program alignment are somewhat successful (table 6). While drops in student participation in Tech Prep programs at the postsecondary level could reflect issues in the postsecondary component of Tech Prep programs, it is also possible that enrollment declines reflect the difficulty that postsecondary educators have in attempting to identify Tech Prep students transitioning from secondary programs. If so, this result would be in keeping with experiences reported in other states: according to the U.S. Department of Education, at the postsecondary level, 15 states were unable to provide complete data on Tech Prep student performance in the 2006–07 program year (U.S. Department of Education, 2007).

Table 6. Total Number of Oregon Students and CTE Concentrators: 2001–02 and 2006–07

	Total all students		Percent	CTE concentrators[1]		Percent	Tech prep		Percent
	2001–02	2006–07	change	2001–02	2006–07	change	2001–02	2006–07	change
High schools	170,068	182,645	7	11,093	10,946	-1	8,654	10,731	24
Community colleges[2]	102,019	91,456	-10	6,103	5,681	-7	1,873	137	-93

[1] CTE concentrators are based on the number of students reported in the denominator of the state's Perkins completion measure.

[2] Community college "all students" totals are based on the total number of full-time equivalent (FTE) students attending community colleges during the year. Postsecondary CTE participants are based on the unduplicated headcount reported to the U.S. Department of Education, Office of Vocational and Adult Education to meet Perkins accountability requirements.

SOURCE: Oregon state report www.edcountability.net for 2001–02; Oregon Consolidated Annual Report 2006–07; *Oregon Community College Profiles 2001–02 and 2006–07*.

It is possible that the absence of categorical funding in the State School Fund Formula or Community College Distribution Formula has contributed to a decline in CTE course availability, as school and college administrators have responded to budget shortfalls by cutting back on relatively higher cost programs. Enrollment declines in CTE may also be attributed to other, nonfiscal factors, including a greater emphasis on academics resulting from No Child Left Behind Act requirements, and, at the postsecondary level, tuition increases that have reduced students' ability to enroll in CTE coursework. An economic recession that has limited students' ability to take time away from work may also account for enrollment declines (Oregon Department of Community Colleges and Workforce Development, 2007).

The question that state legislators will need to answer is whether an adjustment to the state secondary or postsecondary formula is warranted at the current time, given

[31] The state has defined a secondary CTE concentrator as a student who has earned one or more credits in a technical skill course within a state-approved CTE program, of which one-half credit is designated as required for the program. An Oregon-approved CTE program must be at least two credits.

that Perkins Programs of Study have yet to be fully articulated, appropriately piloted, or rigorously evaluated for their potential contribution to education and workforce development. Modifying either or both of the state's funding formulas to include a CTE component could eventually be justified; however, any decision will benefit from more information on initiative outcomes and the cost of providing CTE services, which have not yet been quantified.

Funding Option 2: Incorporate categorical funding for school districts into the state funding formula.

The addition of a categorical funding element to the state education formula could potentially help stabilize CTE services, in part by removing incentives for school administrators to cut relatively higher cost CTE programs in times of budgetary crisis. Increased funding could also improve the quality and safety of CTE equipment, which is more expensive for CTE than for other types of instruction. Consequently, if legislators wish to solidify Oregon's commitment to CTE instruction, the state could choose to add a categorical funding element to the state's K–12 education funding formula.

Review of the limited information available on state community college funding models indicates that, with the exception of **Nebraska**, which provides weighted funding to community colleges based on FTE CTE enrollment in selected courses, states do not consider the added costs of offering CTE in their postsecondary funding formulas. Therefore, while Oregon could choose to introduce categorical funding into its state formula, to do so would put it in the minority of states adopting such a practice.

A majority of states do, however, provide categorical aid to secondary school districts via their state education formula. This funding is intended to offset all or a percentage of the additional costs local providers face in providing CTE services. Should Oregon elect to pursue this path, state legislators should look toward funding formulas that cap annual state obligations, for example, by obligating a fixed amount each biennium for CTE services, as is the case in **Michigan, Utah,** and **Washington**. Given that much of the added cost of providing CTE instruction is associated with advanced coursework, the state could also consider allocating resources based on the number of students within schools achieving concentrator status, who should be among the most expensive to educate.

It is beyond the scope of this study to suggest a specific funding amount needed to implement categorical funding. Doing so will require collecting and analyzing statewide data on school district investments in CTE staffing and equipment to determine current and projected statewide expenditures. Moreover, given ongoing initiatives to align programs across secondary and postsecondary sectors, it is not yet

clear how much money will be needed to support more high-quality programs that are accessible to students across the state.

As documented in table 7, there is substantial variation among the profiled states in the amount of funding earmarked to support CTE programs offered in comprehensive high schools. To estimate average expenditures, funds allocated for CTE via the state education formula were divided by the number of CTE concentrators reported as taking technical assessments in the 2006–07 program year.[32] As an example, if Oregon had earmarked $3,500 per secondary CTE concentrator in 2006–07, an estimate considerably lower than the $4,698 average of the four states in table 7, Oregon would have needed roughly $41.6 million to meet the needs of its 11,877 secondary CTE concentrators in the 2006–07 program year.[33]

Table 7. State Categorical Funding for CTE: 2006–07 Program Year

	Allocation model	Categorical state funding	Number of CTE concentrators	Funding per concentrator
Average	—	—	—	**$4,698**
Indiana	Incentive	$82,045,875	12,163	6,746
Kansas	Weighted	84,555,763	11,032	7,665
Michigan[1]	Cost reimbusement	28,587,908	33,940	842
Utah[2]	Add-on	70,498,704	19,915	3,540

— Not available.

[1] Based on 2004–05 state revenue and CTE concentrator reports; however, according to state administrators, state contributions for CTE remain constant over time.

[2] Based on 2009 legislative estimates.

SOURCE: Personal communications conducted between MPR Associates and individual states to obtain study information.

While there is precedent for the Oregon Legislature to allocate supplemental resources for certain types of populations, existing weights in the state formula are directed only toward offsetting the increased costs of transporting students and providing instructional services for special education students. If the Oregon Legislature were to categorize funding for CTE instruction, it would need to be prepared for requests from other stakeholders, including art, music, and physical education

[32] The reader is cautioned that expenditures reported in this table are intended solely as an example of the broad range of funds allocated among states, using CTE concentrators as a base. Because nearly all high school students take a CTE class at some point in their secondary career, concentrators provide a better indicator of relative student participation in higher cost CTE coursework. Due to differences in how states define a CTE concentrator, and the population identified for the CTE technical skill attainment measure, comparisons may not accurately capture state expenditures for CTE coursework. Should the state seek to institute a categorical funding element into the education formula, it will need to perform a methodologically rigorous study to accurately quantify state needs.

[33] Supplemental state expenditures for CTE were unavailable for Washington.

instructors, who also offer noncompulsory coursework that is relatively more expensive to provide.

Increasing CTE funding will also require that the Oregon Legislature provide additional resources for education or reallocate a percentage of its existing secondary education funds for CTE. Given that state support for education currently lags behind the recommended funding levels in the Quality Education Model, the Legislature will need to determine whether it is feasible to either add in or carve out funding from the general purpose grant for CTE, and if so, whether this is the most effective use of state resources (Quality Education Commission, 2006).

As in other states employing categorical funding, Oregon would also need to develop data collection and management policies governing local reporting of student participation in, or program expenditures for, qualifying CTE coursework. Depending upon the formula selected, the state would also need to collect more detailed information on local expenditures for equipment, facilities, and supplies. This task would likely add a significant data burden on school districts, because according to Oregon Department of Education (ODE) administrators, local educators do not routinely collect or report these types of data for CTE programs. Collecting and monitoring data would also require adding state staff to manage the reporting of financial information, which could have cost implications.

Finally, care must be taken to ensure that categorical CTE funding does not erode local control. Institutional administrators currently have discretion in determining how to expend state general funds. This flexibility allows them to transfer funds across programs to meet pressing educational needs, as well as to ensure that expenditures reflect communities' instructional preferences, including how much and what type of technical coursework is offered. Dictating at the state level how grant resources should be spent potentially removes a tool in the budgetary arsenal of district superintendents, community college presidents, and local district and college boards.

Funding Option 3: Institute a regional categorical grant program to promote CTE Programs of Study development.

To date, state efforts to develop career pathways have proceeded on many fronts. For the past four years, Oregon has used federal Incentive Grant funding, awarded to the state for exceeding performance targets on its Perkins, Workforce Investment Act (WIA) Title II, and WIA Title IB measures, to fund regional collaboratives composed of representatives of the K–12, community college, university, adult education, and workforce community. At the postsecondary level, the State Board of Education has deployed community college Strategic Fund resources to promote the development and implementation of the Career Pathways Initiative across Oregon.

Working together, these groups have developed *Pathways Action Plans* that include strategies for aligning college pathways with high school Programs of Study, as well as with Adult Basic Skills programs.

ODE also has developed policy guidelines and materials to support the development of Programs of Study, as required in the 2006 Perkins Act. State work has focused on defining core elements of Programs of Study, including the (1) identification of standards and content; (2) the alignment and articulation of coursework and curriculum; (3) the design of accountability standards and assessments; and (4) the provision of student support services. Programs of Study development is projected to gain momentum across the state, as districts work to convert all CTE offerings to Programs of Study before the sunset of the 2006 Perkins legislation.

According to ODE staff, development and implementation of Programs of Study is proceeding at different rates and levels of coordination within and across regions. Some staff are also concerned that current Perkins funding levels are not sufficient to support continued system development, and that the use of funds to build pathways and Programs of Study is diverting funding from other purposes, including program start-up and improvement efforts.

To support institutions in developing and implementing CTE programs that align with ongoing state initiatives, the Oregon Legislature could follow the lead of **Nebraska** and **Washington,** which have recently instituted regional categorical grant programs to improve CTE delivery within and across the secondary and postsecondary sectors. To qualify for a grant, Oregon districts would submit a proposal, in collaboration with a community college partner, documenting the rationale for pursuing grant resources, labor market data detailing the need for pathway development, and the intended uses of grant funds. Grants could be allocated on the basis of relative student participation or concentration in CTE coursework within regions, with funding directed toward programs meeting the criteria for preparing students to work in high-demand, high-wage occupations.

Adoption of a regional grant program would enable the Oregon Legislature to allocate supplemental resources for a period of one or more biennia, without instituting permanent expenditure requirements. Grants could also be configured to fill gaps in ongoing state efforts to develop CTE Programs of Study, while providing time for ODE to obtain the necessary data to assess CTE administrative and programmatic costs. While supplemental funding would support local educators in offsetting some of the costs associated with offering CTE in the short term, awareness that the grant will sunset will encourage regions to focus on creating and sustaining programs with available resources. Furthermore, once new regional systems were put in place, the state would be in a better position to take up the issue of whether a categorical grant

for CTE should be incorporated into the state's secondary education funding formula.

Funding Option 4: Provide resources to support purchases of new or replacement equipment.

Oregon educators have come to rely on federal Perkins funds to upgrade or replace instructional equipment, although the limited amount of resources provided by the Act likely affects local educators' capacity to keep pace with evolving marketplace technology. And although Oregon high schools and community colleges have continued to provide technical training in the absence of categorical state funding, the type and quality of local equipment holdings are presently unknown.

If Oregon's situation is similar to that of other study states, then it is likely that CTE programs at all levels would benefit from an infusion of capital to replace or upgrade existing equipment to industry standards. Although some states, such as **Utah**, provide annual funding for equipment and supplies, the Oregon Legislature may wish to consider providing a one-time grant, following the lead of **California,** which could be renewed should there be sufficient resources and need in future years.

To assess the relative need for statewide investment, ODE and the Oregon Department of Community Colleges and Workforce Development (CCWD) could choose to conduct an audit of current equipment and capacity needs at the secondary and postsecondary levels, including where appropriate, public and private colleges and universities and private career schools. The state could also choose to audit high school and college facilities to assess whether the existing infrastructure can accommodate instruction organized around the Programs of Study model.

Simply providing additional resources for CTE equipment may risk introducing a level of duplication and redundancy within and across the secondary and postsecondary sectors, particularly if individual education agencies are permitted to apply for grants. Given statewide commitment to program alignment, the Legislature could require that secondary and postsecondary agencies applying for funding also produce evidence that they are leveraging equipment and facilities within regions to mitigate duplication of effort. This would require high schools and colleges to submit a proposal to the state documenting the types of programs offered within a given pathway, the equipment and facilities needed to meet curricular offerings at each institution, and evidence that agencies are collaborating to make the most cost-effective use of existing equipment, for example, by strategically relocating equipment across sites.

Recommendations for Funding CTE in Oregon

Like many states, Oregon is redesigning the manner in which CTE instruction is organized and delivered. In particular, the state's focus on creating Programs of Study to align secondary and postsecondary CTE instruction and regional development of career pathways promises to improve students' access to high-quality programs that prepare them simultaneously for postsecondary education and career success.

As work proceeds, the state is faced with the reality that CTE is more expensive to provide than other forms of instruction, and that the current method of funding education assumes that, on average, state funding is sufficient to support academic and CTE programs offered within schools and colleges. There is, however, no evidence to support or refute this assumption. Although the state has leveraged federal and state resources to promote Programs of Study, it is not clear that available resources are sufficient to meet existing need, let alone expand capacity to address workforce development expectations. Indeed, ODE staff have expressed concern that current Perkins funds are inadequate to sustain current system design efforts, and that their use for this purpose is diverting resources from supporting program start-up and other improvement efforts.

Although Oregon policymakers could choose to do nothing to address the CTE funding issue, to do so ignores the question of whether existing education funding is sufficient to achieve the goals Oregon has set for CTE provision. One option, then, would be for the state to initiate efforts to quantify the added cost of providing secondary CTE services and to fund these programs accordingly. Assuming CTE funding levels identified in other states were to apply in Oregon, the state would need to allocate a substantial amount of resources, likely in the tens of millions of dollars to support meaningful formula adoption.[34]

In practice, any of the education funding models profiled in this report could be tailored to fit Oregon's needs. When crafting a formula, it would be to the state's advantage for legislators to identify specific CTE program components critical to the provision of high-quality programs and/or to identify a subset of high-wage, high-demand programs eligible for funding.[35] Establishing such priority categories can of-

[34] Care must be taken when considering funding allocations used in other states because these levels of investment reflect individual state goals for CTE that likely differ from those of Oregon, and because these expenditure levels were established before the Programs of Study movement was introduced.

[35] As noted in the Delivery Systems chapter, the development of Programs of Study will require that the state address a number of pressing issues, including curriculum development and professional development to support system adoption. Consequently, the state could choose to earmark resources for particular uses, as Michigan has done with its cost reimbursement model. The Oregon Employment Department, in collaboration with the Oregon Workforce Investment Board (OWIB), Oregon Department of Education, and other partners, have developed definitions for high-wage, high-skill, and high-demand occupations that have been used to identify qualifying programs within state regions. A

fer the state a set of policy levers that it can use to drive the development of a system that would be aligned with state education goals and workforce development needs.

State budgetary constraints, pressure from competing education stakeholders, ongoing efforts to reformulate the provision of CTE, and a dearth of information on current program spending and needs combine to make the addition of a categorical funding adjustment to the state secondary education formula less viable in the near term. This is not to suggest that a categorical adjustment in Oregon is unnecessary; only that, given existing information, a rationale for formula adoption and the level of investment needed to support formula use is presently unknown.

As further information on the adoption of Programs of Study becomes available, it will be possible to determine whether Oregon's general purpose grant is sufficient to offset the increased costs of offering technical instruction. If it is determined that it is not, then the Legislature may eventually choose to earmark separate funding for CTE, no matter how expensive or politically unpopular such action may be. In the meantime, targeted state investment through a regional grant program could lay the groundwork for achieving state CTE goals at a modest cost, while generating the necessary data the state will require to make a more informed investment in CTE.

Recommendation 1: Establish a grant program to support regional development of CTE Programs of Study.

MPR Associates recommends that the Oregon Legislature consider implementing a categorical grant program for the next biennium to promote continued development of CTE Programs of Study in the secondary and postsecondary sectors. Legislative language could parallel that contained in **Nebraska** and **Washington's** legislation, which survived legislative scrutiny and gained political support in each state.[36]

While it is beyond the scope of this project to specify a dollar amount that will be necessary to support such an initiative, a review of grant programs employed in other states suggests that the Legislature could seed project work with an annual grant of $3,00,000 to $4,000,000 in the next biennium budget. For context, Nebraska has allocated $500,000 per year, over the past two years, to support statewide CTE improvement activities, with grants limited to $75,000 per applicant. Washington, in contrast, has allocated $3,000,000 for its CTE improvement activities, with funding spread across a number of activities.

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copy of these definitions is available at:
http://www.qualityinfo.org/olmisj/PubReader?itemid=00005527.

[36] For more information on the states' legislation, refer to the Nebraska and Washington state profiles appended to this report.

A grant from the Legislature would ensure that the state could provide each state education region with a minimum base-funding amount, to be determined by the Legislature, with remaining resources allocated based on state-established criteria, for example, the number of CTE participants or concentrators identified within a given region.

Regional grants should be tailored to focus resources upon the following efforts:

- Support curricular integration and alignment efforts within secondary districts and across secondary and postsecondary sectors, preferably within programs that prepare students for entry into regionally identified high-skill, high-wage, and high-demand occupations and in collaboration with Regional Workforce Investment Boards;

- Promote regional adoption of programs that research has shown are effective in preparing students for career success and equipping students with the foundation skills needed for high-wage, high-demand occupations consistent with Oregon's economic development strategies (examples may include Project Lead the Way and Math in CTE);

- Offer in-service training to build teacher and faculty understanding of program alignment opportunities;

- Implement strategies (in collaboration with the Teacher Standards and Practices Commission) to access and utilize the expertise of incumbent workers from high-demand occupations as CTE teachers or classroom coaches/experts to participate in Programs of Study development;

- Create statewide articulation to ensure that students who complete qualifying coursework are able to transfer credits to any college within the state; and

- Fund expansion of guidance and career counseling programs to support CTE students in developing education plans and profiles.

To ensure that funds are targeted on identified needs, the state should establish a set of grant expectations, including an agreement that consortia collect data on program expenditures and submit to a formative evaluation of the use of resources. Applicants would also need to provide assurances that program funds will be used to supplement, not supplant, existing expenditures and describe steps that would be taken to sustain project work once grant funding lapses.

Legislators will also need to consult with ODE and CCWD administrators to determine whether grant administration could be overseen by existing state staff, or whether additional staff members would be required.

Recommendation 2: Create a categorical grant to support secondary and postsecondary agencies in upgrading and aligning CTE equipment holdings.

In the interests of student safety and to support continued development of CTE Programs of Study, MPR Associates recommends that the state consider allocating grant resources for the purchase of CTE equipment. To date, Oregon has not provided supplemental resources to assist school districts and community colleges in updating or replacing obsolete equipment, even as it asks them to develop Programs of Study that support system alignment. Providing a one-time grant for equipment upgrades could promote statewide efforts to connect educational systems, particularly if grants were targeted on regional partnerships of secondary and postsecondary agencies that identified equipment needs to reinforce program alignment.

Based on grant amounts allocated in profiled states, Oregon could likely allocate between $1,000,000 and $1,500,000 on a competitive basis to support equipment upgrades. To ensure funds are allocated in the most efficient manner, the state should limit grants to partnerships of secondary and postsecondary agencies that demonstrate how proposed equipment reinforces or extends the development of Programs of Study. As part of this effort, requesting agencies would need to conduct an audit of existing equipment, describe how new and existing resources would be located or relocated across partners, and specify how new equipment would be applied. To leverage additional resources, the state might also consider assigning priority to grant requests from regional partnerships that secure matching funds from industry organizations representing high-wage, high-demand occupations.

Recommendation 3: Undertake a study to quantify the cost of providing CTE services in school districts and community colleges that have successfully implemented the Programs of Study model.

The adoption of Programs of Study may lead to cost efficiencies if high schools and postsecondary institutions succeed in aligning and articulating their CTE educational services. To quantify the added cost of providing CTE services under the Programs of Study model, ODE and CCWD should collaborate on a study to assess whether CTE class sizes, equipment and supplies, and facility needs differ among agencies that have and have not adopted the Programs of Study model, and how costs for these two approaches differ from those for core academic subject areas.

This will entail identifying high school and community college partners that have succeeded in adopting the Programs of Study model, and collecting and analyzing state fiscal data to determine the costs associated with instructional delivery. Collecting this data may require that the state work with local agencies to capture cost information that is not currently collected. For example, although many schools districts collect data on educational equipment expenditures, not all disaggregate CTE purchases from other instructional expenditures. Study results would inform the Legislature whether a categorical funding element is needed, and if so, the level of resources that will need to be authorized to achieve the goals the state has established for CTE provision.

Summary and Conclusions

Oregon's Governor, legislators, and business people have demonstrated their commitment to strengthening the skills and knowledge of Oregon's workforce through education and training and are embarking on initiatives like the Education Enterprise and the Workforce Strategic Plan to achieve their goals. The state envisions building a workforce that is competitive in the global marketplace, has the capacity to attract new businesses to the state, and equips citizens to make positive contributions to their communities. Providing strong, high-quality Career and Technical Education (CTE) programs that are accessible to students in multiple education sectors and throughout the state will support and promote those goals.

A review of CTE systems in seven study states—**California**, **Indiana**, **Kansas**, **Michigan**, **Nebraska**, **Utah**, and **Washington**—suggests that Oregon has an opportunity to build upon its solid CTE foundation in order to enhance the administration, delivery, and funding of the state's CTE programs. Recommendations in this report focus on gaps in the current system that, if filled, could assist Oregon in providing more high-quality CTE services to students across the state.

Administrative Structures

A review of administrative structures within the seven study states suggests that Oregon has a relatively strong CTE administrative structure, particularly around Perkins-funded programs. The State Board of Education's joint oversight of prekindergarten through 12th grade and community colleges provides for consistent governance and close collaboration between state and local agencies. The Oregon Department of Education (ODE) and Oregon Department of Community Colleges and Workforce Development (CCWD) also partner informally in a number of ways, most importantly through the CTE Network.

Recommendation: Oregon can expand its strong informal partnerships at the administrative level into public and private colleges and universities and private career schools by using the following approaches:

- Expanding all existing statewide CTE articulation agreements to include private and public four-year colleges and universities.

- Encouraging regional CTE coordinators and community college deans with CTE responsibility to establish or expand working relationships with private and public colleges, apprenticeship programs, and career schools. That effort may include ask-

ing representatives from these institutions and programs in each region to attend meetings to ensure their initiatives and issues are represented as part of their region's approach to CTE.

- Inviting representatives from public and private four-year institutions, apprenticeship programs, and private career schools to attend the statewide CTE Network meetings as regular members and identifying roles for the representatives to ensure that meetings provide opportunities for all sectors to be fully engaged.

Delivery Systems

Oregon's Career Pathways and Programs of Study initiatives seek to align and articulate secondary and postsecondary programs and address state workforce and labor market needs. The state also has developed a strong communication system that provides information to educators, parents, and students regarding the contribution of CTE to successful, education, career and life outcomes for students. The state's next opportunities lie in how it seeks to reinforce and expand upon these ongoing efforts.

Recommendation 1: Oregon can promote the development of Programs of Study by providing targeted technical assistance to schools, colleges, and educators through the use of the following strategies:

- Identifying existing, standards-based curricular resources that might be adapted for state use. Examples of such resources include Project Lead the Way, which Indiana has adopted statewide, or the Math-in-CTE program, successfully piloted by the Lane Education Service District.

- Creating and piloting a statewide model for connecting academic knowledge with technical skills identified in the Oregon Skill Sets.

- Providing targeted professional development to equip academic and CTE instructors, at both the secondary and postsecondary levels, with the skills they need to create and support the development of Programs of Study.

Recommendation 2: To assist students in reaching their goals and preparing them for the workplace, Oregon can expand advanced skill training opportunities for secondary students by doing the following:

- Providing incentives for neighboring high schools and districts to coordinate with one another and with community colleges and other workforce development agen-

cies that provide advanced CTE training. Such efforts will reduce duplication and leverage capacity at existing facilities.

- Relocating CTE instructional equipment among high schools and colleges and arranging for coordinated purchasing among regional partners to avoid duplication of services across sites.

- Encouraging the development and evaluating the outcomes of charter schools, magnet schools, and academy programs that provide integrated academic and CTE instruction that aligns with the Programs of Study model.

- Coordinating with labor organizations and unions to increase opportunities for students to enter apprenticeships in high-wage, high-skill, and high-demand careers.

- Co-locating secondary and postsecondary programs in satellite sites in order to share resources, particularly in rural areas where access to specialized training and instructional equipment is limited.

- Improving career-related learning experiences by developing criteria that define high-quality career-related learning standards for students in different grades and by creating tools and material supports that schools and their business partners can use when developing programs.

Recommendation 3: Oregon can use data to measure how Programs of Study contribute to student success by doing the following:

- Reviewing existing measures and, where necessary, creating new data elements to enable researchers to assess program outcomes accurately.

- Communicating results to the field to support local educators in their efforts to improve programs. State administrators should review program performance data on an annual basis and publish their findings regarding promising practices and comparisons of program performance.

- Provide resources to state agencies to support and sustain data collection efforts.

Recommendation 4: Oregon can promote the adoption of statewide articulation agreements to provide high school and college students with greater flexibility when making transitions among institutions by:

- Developing statewide articulation agreements that ensure students enrolled in a Program of Study in any Oregon high school possess the educational knowledge and

technical skills that will prepare them to enter the postsecondary component of an associated Program of Study offered in any Oregon postsecondary institution. Articulation agreements should guarantee that the secondary coursework students take as part of an approved Program of Study will be accepted and awarded postsecondary credit when appropriate.

Funding Formulas and Mechanisms

CTE is more expensive to provide than other forms of instruction. Although few states earmark funding for CTE programs at community colleges, Oregon is one of a handful of states that does not earmark state funds to support secondary CTE programs. In Oregon, school districts support their CTE services by using funds allocated through the federal Carl D. Perkins Career and Technical Education Act of 2006 and state resources allocated as a general purpose grant. Although CTE programs are offered in most high schools throughout the state, available resources are likely insufficient to maintain instructional programs and simultaneously support the development of new federally required Programs of Study within all the CTE programs offered in the state.

While adopting guaranteed state funding for CTE may eventually be warranted, ongoing efforts to align CTE services across educational sectors and a dearth of information on current program spending and needs combine to make the addition of a categorical funding adjustment to the state secondary education formula less viable in the near term. This is not to suggest that a categorical adjustment in Oregon is unnecessary; it suggests only that, given existing information, a rationale for formula adoption and the level of investment needed to support formula use is presently unknown.

Accordingly, to address state funding needs in the short term, the Oregon Legislature may seek to promote system development by making a modest grant investment in CTE services.

Recommendation 1: Oregon can establish a grant program to support regional development of CTE Programs of Study by using the following strategies:

- Providing seed funds with a grant of $3,000,000 to $4,000,000 in the 2009–11 budget. This would allow the state to provide a base-funding amount per region, with remaining resources allocated based on criteria that further the development of Programs of Study, as determined by ODE, CCWD, and local education agencies.

- Ensuring that funds are targeted on specific needs by establishing a set of grant expectations, including data and financial reporting and evaluation. Applicants would

also need to provide assurances that program funds will be used to supplement, not supplant, existing expenditures and to describe steps that would be taken to sustain project work once grant funding lapses.

Recommendation 2: Oregon can upgrade and leverage CTE equipment resources by using the following strategies:

- Allocating between $1,000,000 and $1,500,000 on a competitive basis to support equipment upgrades at high schools and community colleges. Limit grants to partnerships of secondary and postsecondary agencies that demonstrate how proposed equipment upgrades or purchases reinforce or extend the development of Programs of Study.

- Leveraging additional resources by assigning priority to grant requests from regional partnerships that secure matching funds from industry organizations representing high-wage, high-demand occupations.

Recommendation 3: Oregon can seek to quantify the added cost of providing CTE services in school districts that have successfully implemented the Programs of Study model by:

- Identifying high school and community college partnerships that have successfully implemented regionwide Programs of Study and collecting expenditure data (labor and capital) to quantify the added cost of offering CTE instruction.

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Appendix A: Concentrator Definitions and Measurement Approaches

The following tables display each state's secondary and postsecondary concentrator definitions and measurement approaches for four Perkins indicators. This information was taken from the *Carl D. Perkins Vocational and Technical Education Act of 1998, Report to Congress on State Performance: Program Year 2004–05*. The report can be located on the Peer Collaborative Resource Network web site at http://www.edcountability.net.

Table A-1. Secondary Concentrator Definitions and Measurement Approaches, by State

State	Secondary Concentrator	1S1 Secondary Academic Skill Attainment	1S2 Secondary Vocational Skill Attainment	2S1 Secondary Diploma	3S1 Secondary Placement
California	A secondary school student enrolled in the second and advanced level courses of a planned CTE program sequence.	Percentage of grade 12 CTE program completers receiving a high school diploma.	Percentage of secondary students completing a vocational skills program.	Percentage of grade 12 CTE program completers earning a high school diploma.	Percentage of grade 12 students completing a CTE program placed in military, advanced education, training, employment, or a combination of the above.
Indiana	A student who enrolled in a sequence of courses or instructional units that provides the academic and technical skills, knowledge, and proficiencies to prepare the individual for employment or further education, or both.	Number of CTE students who passed the Indiana Statewide Testing for Educational Progress Plus Graduation Qualifying Exam and leaving secondary education in the reporting year.	Number of students who passed a CTE program skill test and left secondary education in the reporting year.	Number of CTE program completers who attained a high school diploma or its recognized equivalent and who left secondary education.	Number of students who completed a CTE program and received a diploma or its equivalent in the reporting year and placed in further education, advanced training, employment, military service, or a combination of the above.
Kansas	A grade 11 or a grade 12 student who has taken three courses in the program sequence.	Total number of secondary students who attained a 2.0 GPA or greater during the reporting year.	Number of students who attained the 80 percent threshold level of CTE and met state-established, industry-validated vocational skill standards and left secondary education in the reporting year.	Number of secondary CTE students who attained a high school diploma and left secondary education in the reporting year.	Number of students who completed secondary CTE programs, and received a high school diploma, and left secondary education in the reporting year, and placed in postsecondary education, advanced training, employment, military service, or a combination of the above.
Michigan	A student who is enrolled in a state-approved career and technical education program and who has completed at least 60 percent of the required program course work.	The number of grade 10 through grade 12 CTE program concentrators who participated in Michigan Educational Assessment Program tests and attained an endorsement status of at least a level 3 (basic level) on four of the tests.	Number of grade 11 and grade 12 CTE program concentrators who left school and obtained a GPA of 2.0 or greater.	Number of CTE program concentrators who received a secondary school diploma or its recognized state equivalent.	The number of grade 12 program completers who graduated the previous year and were in postsecondary education, advanced training, employment, military service, or a combination of the above.

See notes at end of table.

Table A-1. Secondary Concentrator Definitions and Measurement Approaches, by State—Continued

State	Secondary Concentrator	1S1 Secondary Academic Skill Attainment	1S2 Secondary Vocational Skill Attainment	2S1 Secondary Diploma	3S1 Secondary Placement
Nebraska	A student who completed a sequence of three or more CTE courses (or completed all of the courses offered in an area) during their high school attendance, which leads to entry-level occupations, apprenticeship, military, or postsecondary training and has achieved the 12th-grade level.	Percentage of students concentrating in CTE who meet academic standards.	Percentage of students concentrating in CTE who attained program-defined and validated CTE skills.	Percentage of seniors concentrating in CTE who graduated from high school.	Percentage of students included in the denominator enrolled in documented postsecondary programs, advanced training, in the military, employed, or a combination of the above, within one year of graduation.
Oregon	A student who accumulated at least two credits in an approved CTE during the four years of high school.	Percentage of CTE concentrators who scored at or above the statewide proficiency level on grade 10 reading, writing, and math tests during program year.	Percentage of CTE concentrators who made satisfactory progress during program year.	Percentage of CTE concentrators enrolled during their senior year graduating from high school.	Percentage of CTE concentrators completers employed or engaged in further education within one year after program completion.
Utah	A student who completes three semesters (1.5 credits) of training in the same CTE program area during grades 9–12.	Percentage of concentrators scoring at or above the state average on the Stanford Achievement Test.	Percentage of concentrators passing a skills test in the area of concentration.	Percentage of concentrators receiving a high school diploma with class.	Percentage of completers placed in employment within next quarter or enrolled in higher education fall semester within the state.
Washington	A student who enrolled in more than one vocational course within a single program area but has not yet completed the instructional program.	Percentage of CTE completers who attained a high school diploma.	Percentage of CTE completers who attained a high school diploma.	Percentage of CTE completers who attained a high school diploma.	Percentage of CTE completers who have either employment reported in unemployment insurance wage records, enrollment in higher education, enlistment in the military during the third post-exit quarter.

SOURCE: U.S. Department of Education, Office of Vocational and Adult Education. (2007). *Carl D. Perkins Vocational and Technical Education Act of 1998, Report to Congress on State Performance, Program Year 2004–05* . Washington, DC: Author.

Table A-2. Postsecondary Concentrator Definitions and Measurement Approaches, by State

State	Postsecondary Concentrator	1P1 Postsecondary Academic Skill Attainment	1P2 Postsecondary Vocational Skill Attainment	2P1 Postsecondary Certificate, Credential, or Degree	3P1 Postsecondary Placement
California	Attainment of Academic Skills, Postsecondary (1P1) & Attainment of Vocational Skills, Postsecondary (1P2): A student enrolled in any vocational course designated as a course in the middle or end of a vocational program. Completion of Diploma or Credential, Postsecondary (2P1), Placement and Retention, Total Placement, Postsecondary (3P1), Placement and Retention, Retention, Postsecondary (3P2) & Completion of Nontraditional Programs, Postsecondary (4P2): A student who had successfully completed a minimum threshold of 12 or more credit units of related course work in a vocational or technical program area with one or more of those courses designated as being in the middle or end of a vocational program or received a certificate or degree in the cohort year.	Percentage of students enrolled in Sequence Alignment Modeling (SAM), A through C coded courses who earned a GPA of 2.0 or greater in those SAM, A through C coded courses.	Percentage of students enrolled in SAM, A through C coded courses who earned a GPA of 2.0 or greater in those SAM, A through C coded courses.	Percentage of concentrators earning a certificate, degree, or transferring to a four-year university.	Percentage of concentrators found in unemployment insurance covered employment in any quarter in the year following the cohort year or a four-year university.
Indiana	A student who enrolled in a sequence of courses or instructional units that provides the academic and technical skills, knowledge, and proficiencies to prepare the individual for employment or further education, or both.	Number of postsecondary students who complete occupationally-specific programs and have a cumulative GPA of 2.5 or greater on a 4.0 grading system.	Number of students who complete occupationally specific programs and who have met program-defined and industry-validated CTE skill standards and have stopped program participation in the reporting year.	The number of full-time beginning first year students who enroll in occupationally specific programs as degree seeking students and attain a postsecondary degree or credential within three years.	Number of postsecondary students who complete occupationally-specific programs and are placed in further education, employment within Indiana or national military service.
Kansas	A student enrolled in a postsecondary institution that has completed 50% of an approved career and technical education program but has not received an associate degree or technical certificate.	Number of postsecondary students who attained a 2.0 GPA or greater and who have met program-defined academic standards, and stopped program participation in the reporting year.	Number of postsecondary CTE students who met the 80 percent level of CTE and completed a CTE program, met state-established, industry validated CTE skill standards, and stopped program participation in the reporting year.	Number of students enrolled in postsecondary CTE programs and who received or were eligible to receive a postsecondary degree, certificate, or credential, or reached their predetermined goal, and stopped program participation in the reporting year.	Number of students who completed a postsecondary CTE program in the reporting year and were placed in further postsecondary education, advanced training, employment, or military service after stopping participation in the postsecondary program.

See notes at end of table.

Table A-2. Postsecondary Concentrator Definitions and Measurement Approaches, by State—Continued

State	Postsecondary Concentrator	1P1 Postsecondary Academic Skill Attainment	1P2 Postsecondary Vocational Skill Attainment	2P1 Postsecondary Certificate, Credential, or Degree	3P1 Postsecondary Placement
Michigan	An occupational student officially enrolled (as of the officially recognized federal count date) in an occupational program and who has earned at least 12 credits (excluding developmental course work) towards the completion of an award as of the beginning of the reporting year.	Number of successful course completions in academic courses by occupational students.	Number of successful course completions in occupational courses by occupation students.	Number of students that received an occupational award.	Number of occupational completers who received an award (and responded to the survey) the prior year and either transferred, were employed, or entered military.
Nebraska	A student who during the program year, declared a vocational major, and has completed 20 or more semester (45 or more quarter) hours as reported to the Integrated Postsecondary Education Data System (IPEDS).	Percentage of students who concentrated on a program leading to a certificate or associate degree will meet program-defined academic standards.	Percentage of students concentrating in a program, leading to a certificate or associate degree who attained program-defined and industry-validated CTE skills.	Percentage of students, who attain an associate degree, credential, or certificate.	Percentage of students who attained an associate degree or certificate who were employed, entered the military, or advanced training one year after graduation.
Oregon	A student who completed more than half of a state approved professional-technical education certificate or degree program.	Percentage of community college concentrators with a GPA of 2.0 or greater in academic courses during program year.	Percentage of community college concentrators with a GPA of 2.0 or greater in CTE courses during program year.	Percentage of community college concentrators who received a postsecondary degree or certificate during program year.	Percentage of concentrator completers who were employed or engaged in further education within one year after program completion.
Utah	A full-time student (initially registering as fulltime) with a declared major in CTE certificates, or A.A.S., or approved Applied Technology Education A.S. degrees. A completer is a concentrator who graduates with a career and technical education certificate, or A.A.S., or approved Applied Technology A.S. degree. For postsecondary technical colleges, these are adults completing 60 or more hours in preparatory programs.	Percentage of concentrators achieving a GPA of 2.0 or greater in general education courses.	Percentage of concentrators achieving a GPA of 2.0 or greater in Applied Technology Education (ATE) courses.	Percentage of concentrators graduating with degrees or certificates.	Percentage of completers placed in employment within the next quarter within the state.
Washington	Locally determined by each local education agency.	Percentage of CTE concentrators who have attained formal awards (a degree, certificate, apprenticeship, or an industry certification) or who completed at least 45 CTE credits with a 2.0 GPA or greater.	Percentage of CTE concentrators who have attained formal awards (a degree, certificate, apprenticeship, or an industry certification) or who completed at least 45 CTE credits with a 2.0 GPA or greater.	Percentage of CTE concentrators who have attained formal awards (a degree, certificate, apprenticeship, or an industry certification) or who completed at least 45 CTE credits with a 2.0 GPA or greater.	Percentage of CTE concentrators who have either employment reported in unemployment insurance wage records, enrollment in higher education, or enlistment in the military during the second post-exit quarter.

SOURCE: U.S. Department of Education, Office of Vocational and Adult Education. (2007). *Carl D. Perkins Vocational and Technical Education Act of 1998, Report to Congress on State Performance, Program Year 2004–05* . Washington, DC: Author.

Appendix B: California

System Characteristics

California is the third largest state in terms of land area and has the greatest population in the U.S. with over 36 million residents (U.S. Census Bureau, 2006). Its secondary school system enrolls more than 6.3 million students in over 1,000 school districts and 9,600 schools. The California public higher education system is considered the "largest in the world" (California Department of Education and California Community Colleges, 2008, p.11). While still expected to remain the most populated state through 2030, the state's population is projected to grow more slowly over the next decade as the result of an aging population. In particular, the number of state residents aged 55 years and over is expected to increase, while the size of the school-aged population is expected to decrease. Additionally, Hispanics, comprising approximately 36 percent of the total state population in 2006, are expected to experience significant growth over the next several years to become the state's largest ethnic group in 2015 (California Department of Education and California Community Colleges, 2008).

The state's residents are relatively diverse; 28 percent of the population was born outside of the United States and 43 percent of the population over age five speaks a language other than English at home. Approximately 80 percent of the population over age 25 possesses a high school diploma (over 29 percent possess a bachelor's degree). The state's median family income is slightly higher than the national figure ($64,563 vs. $58,526, respectively) (U.S. Census Bureau, 2006).

Service Providers

Career and Technical Education (CTE) services are offered at 1,100 comprehensive high schools, 74 regional occupational centers and programs (ROCPs), and at adult schools in 361 school districts. The California Department of Education also funds CTE programs at 290 Partnership Academies and 21 Specialized Secondary Programs. At the postsecondary level, federally funded CTE programs are offered in all of the state's 109 community colleges (table B-1).

Table B-1. Characteristics of California CTE System: 2006–07

Providers	Number
Comprehensive High Schools	1,100
Community Colleges	109
Area/Regional Technical Centers	74
Adult Schools (administered by school districts)	361

SOURCE: California Department of Education and California Community Colleges. (2008). *2008–2012 California State Plan for Career Technical Education.* Oakland, CA: WestEd.

Student Characteristics

California reported serving over 1.5 million secondary (including ROCP participants) and over 1.4 million postsecondary students in both Basic Grant and Tech Prep programs during the 2006–07 program year.[1] According to state administrators, secondary CTE enrollment has been declining over the last decade. In 1993, CTE enrollment represented 61 percent of all secondary enrollments in California. By 2006, CTE enrollment decreased to 31 percent of all enrollments (WestEd, 2006). State administrators suggest both increased demands on schools due to federal legislation, such as the *No Child Left Behind* act, and inaccurate coding of CTE courses in the state data system as possible explanations for the decline in secondary enrollment.[2] Recent legislation introduced by the governor attempts to raise student interest in CTE and increase program enrollment.

During the 2006–07 program year, the last under the 1998 Perkins legislation, California defined a CTE concentrator at both the secondary and adult levels as a student enrolled in "the second or more advanced level course (including the capstone course of a planned CTE sequence of courses, or program." At the postsecondary level, a CTE concentrator is defined as a student "enrolled in any career technical course designated as a course in the middle or end of a career technical program" (California Department of Education, 2007). Of the state's CTE enrollment, over 200,000 secondary students, 560,000 postsecondary students, and 248,000 adults are considered concentrators as defined by the state (table B-2).

In terms of gender, a slightly higher percentage of male students enrolled and concentrated in secondary CTE programs than female students. However, the reverse is true at the postsecondary level: females account for slightly higher percentages of

[1] State administrators suggest that the reported postsecondary enrollment figure represents just one semester's enrollment and that the number should be doubled for the entire school year.
[2] The University of California system grades public education courses on an "a–g" scale. Over 6,000 CTE courses receive credit on this scale. However, state administrators believe that some schools report CTE courses under an academic rather than CTE code, and therefore fewer CTE courses are reported than are actually offered.

Table B-2. California CTE Participants and Concentrators: 2006–07

	High Schools			
	Participants		Concentrators	
	Number	Percent	Number	Percent
Total	**1,554,611**	**100.0**	**202,502**	**100.0**
Male	862,368	55.5	108,043	53.4
Female	692,243	44.5	94,459	46.6
Unknown	0	0.0	0	0.0

	Community Colleges			
	Participants		Concentrators	
	Number	Percent	Number	Percent
Total	**1,472,656**	**100.0**	**562,121**	**100.0**
Male	696,076	47.3	270,573	48.1
Female	758,173	51.5	287,581	51.2
Unknown	18,407	1.2	3,967	0.7

	Adults			
	Participants		Concentrators	
	Number	Percent	Number	Percent
Total	**369,377**	**100.0**	**248,252**	**100.0**
Male	145,563	39.4	97,759	39.4
Female	223,814	60.6	150,493	60.6
Unknown	0	0.0	0	0.0

NOTE: Detail may not sum to totals because of rounding.

SOURCE: 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

CTE participants and concentrators than males. Adult CTE participants and concentrators are overwhelmingly female (60 percent) (table B-2).

In keeping with state demographics, CTE concentrators were relatively diverse, with White and Hispanic students representing the largest percentages of secondary, postsecondary, and adult concentrators. California also reports a large number of special population concentrators, including "nontraditional" students and students from economically disadvantaged backgrounds (table B-3).

Administrative Structures

The California State Board of Education serves as the lead state agency for administering Perkins activities, with cooperation from the Board of Governors of the California Community Colleges through an interagency agreement. A Joint Advisory Committee for CTE, made up of representatives from the State Board of Education and the community college system, oversees service delivery for the state.

Table B-3. Characteristics of California CTE Concentrators: 2006–07

	High Schools		Community Colleges		Adults	
	Number	Percent	Number	Percent	Number	Percent
Sex	**735,365**	**100.0**	**562,121**	**100.0**	**248,252**	**100.0**
Male	401,313	54.6	270,573	48.1	97,759	39.4
Female	334,052	45.4	287,581	51.2	150,493	60.6
Unknown	0	0.0	3,967	0.7	0	0.0
Race/Ethnicity	**735,365**	**100.0**	**488,826**	**100.0**	**248,252**	**100.0**
American Indian	7,851	1.1	5,566	1.1	1,967	0.8
Asian/Pacific Islander	76,994	10.5	64,319	13.2	38,084	15.3
Black	58,001	7.9	44,139	9.0	26,794	10.8
Hispanic	329,712	44.8	157,795	32.3	103,513	41.7
White	231,827	31.5	217,007	44.4	62,238	25.1
Other or Unknown	30,980	4.2	0	0.0	15,656	6.3
Special Populations[1]	**887,607**	**100.0**	**491,827**	**100.0**	**383,306**	**100.0**
Disabled	37,359	4.2	21,847	4.4	14,916	3.9
Economic Disadvantaged	185,269	20.9	239,962	48.8	107,930	28.2
Single Parent	4,041	0.5	31,525	6.4	17,202	4.5
Displaced Homemaker	746	0.1	12,605	2.6	3,689	1.0
Limited English Proficient	79,870	9.0	32,810	6.7	16,336	4.3
Nontraditional	361,881	40.8	113,197	23.0	164,550	42.9
Tech Prep	172,822	19.5	39,881	8.1	29,722	7.8
Other Barrier	45,619	5.1	0	0.0	28,961	7.6

[1] Special populations shows duplicated counts of students because some students have more than one barrier.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

State Agency Organization: Secondary

At the secondary level, CTE is housed in the Secondary, Postsecondary, and Adult Leadership Division (SPALD) at the California Department of Education (CDE). The director of SPALD serves as the State Director for career and technical education and oversees 15 subject matter specialists. Subject matter specialists support local implementation of career education and pathways in the state's 15 industry sectors.

State administrators describe California as a "local control" state in every aspect of governance, including public education. When applied to CTE, this means that county offices of education maintain significant say over the design and implementation of local programs. As a result, program content and quality varies significantly throughout the state. For example, similar programs may be titled differently at various locations, often making it difficult to articulate with community college programs or transfer within the system. The state agency plays a regulatory role towards local programs, determining program eligibility through compliance monitoring and administrating federal funds.

State Agency Organization: Postsecondary

At the postsecondary level, the California Community Colleges Chancellor's Office (CCCCO) directs statewide career and technical education activities. Within CCCCO, major administrative responsibility for CTE resides in the Economic Development and Workforce Preparation Division. This group oversees implementation of Perkins funds in the community colleges and manages the Governor's career pathways initiative, working closely with the California Department of Education to facilitate alignment of CTE activities at both levels.

The state agency oversees statewide postsecondary career and technical education and connects with local college CTE programs through a three-tiered leadership structure:

- *Advisory committees*—assigned to six discipline areas (Agriculture and National Resources, Business Education, Family and Consumer Sciences, Health Careers, Industrial and Technical Education, and Public Safety Education) and four special interest groups (Career Development, Research and Accountability, Special Populations, and Work-Based Learning and Employment Services) to inform the state agency on ways to expand and enhance career and technical education.
- *Collaboratives*—assigned to carry out the work of each advisory committee and improve career and technical education in the 10 areas. Their work includes monitoring industry standards, proposing new programs, and developing CTE models.
- *Regional consortia*—organized to coordinate CTE services at various community colleges within a region and charged with disseminating models and ensuring sufficient labor market demand for the development of new programs.

At CCCCO, the Economic Development and Workforce Preparation Division, led by a vice chancellor, is divided in two units: Career Technical Education and Economic and Workforce Development. The Career Technical Education unit is responsible for distributing postsecondary Perkins funds and overseeing statewide community college career and technical education programs. Currently, the Career Technical Education unit functions with 14 staff members, which include a dean, 5 specialists, and 7 support staff. The specialists—who must hold a professional degree in their assigned content area—provide support to a regional consortium and advisory committee. The Economic and Workforce Development unit, staffed with a dean, three specialists, and various support staff, work on strengthening ties to industry and meeting employee training and skills demands.

Challenges and Benefits of State Administrative System

State administrators note challenges in coordinating CTE administration between two separate state agencies. Since CDE is designated as the primary agency for implementing the Perkins Act, it is held responsible for both secondary and postsecondary career and technical services. Representatives from both agencies meet on a weekly basis as part of the Perkins joint management team. The state plan (California Department of Education and California Community Colleges, 2008) depicts a similar challenge at the delivery level. In addition to coordinating CTE administration at the state level, the state must work hard to ensure proper alignment of services at the local level. The state plan envisions a streamlined statewide system for career and technical education, which will require better "alignment and coordination" between the two state agencies.

Delivery Models

CTE services are offered in a variety of secondary, adult, and postsecondary institutions. At the secondary level, CTE programs are offered in 1,100 comprehensive high schools, which include 290 state-funded partnership academies and 21 Specialized Secondary Programs, and at 74 regional occupational centers and programs (ROCPs). At the postsecondary level, CTE programs are offered in all of the state's community colleges, which are organized into 10 regions and governed by 7 regional consortia. Career and technical education programs for adult learners are offered at adult schools, administered by local education agencies. Given the large number and types of CTE providers, CTE courses vary widely across the state in terms of content and delivery.

Comprehensive High Schools

Over 34,000 CTE courses are offered through comprehensive high schools to students as either individual courses or sequences of courses. Additionally, secondary students can enroll in one of the state-funded California Partnership Academies, which function as schools-within-a-school to give students exposure to career themed instruction, or Specialized Secondary Programs, which allow for deeper exploration of a particular occupation for student cohorts.

Regional Occupational Centers and Programs

ROCPs draw junior and senior students from regional high schools to participate in advanced career training in over 100 career pathways. Students also receive career counseling and work experience. A county office of education, consortium of school districts, or a single school district may operate an ROCP.

Community Colleges

Career and technical program offerings at the postsecondary level are available at each of the 109 community colleges, with courses at over 5,000 locations. Postsecondary course options include noncredit programs, credit programs for certificates and degrees, transition programs for transfer to four-year institutions, and workforce development programs for future and incumbent workers. According to staff at the CCCCO, all of these programs intend to prepare participants for transfer to either credit-level courses at community colleges or to four-year institutions, in addition to meeting technical skill requirements. Specific CTE programs offered by community colleges include:

- *Credit-Bearing Occupational Programs*—located at community colleges and offering programs in more than 270 career areas. Students may earn a certificate or industry-administrated license.
- *Non-Credit Programs*—offering continuing and adult education courses, including instruction in English as a second language, parenting skills, basic literacy, and short-term workforce training programs (for adults at various locations in the community).
- *Apprenticeship Training*—on-the-job training programs approved by CCCCO to provide skills training in more than 66 trades.
- *Tech Prep Programs*—connecting high school and community college curricula in specific career areas. Upon completion of the program, students receive an associate's degree or industry certificate.
- *Contract Education*—courses designed to meet the particular needs of a business or industry and offered on-site at the workplace or at the community college campus.

Adult Schools

Operated by local school districts, adult schools provide basic skills training, English language instruction, high school completion programs, workforce training, and other services for adult learners. They offer short-term CTE programs, often in collaboration with local employers. In 2005–06, California adult schools offered instruction at 1,000 sites in 361 school districts.

Student Support Services

California administrators identify two supplemental programs/initiatives that provide support to students and instructors. These include:

- **California Career Resource Network (CalCRN)**—an interagency collaboration that disseminates career exploration resources to students, teachers, and counsel-

ors. Resources include job listings, a self-assessment tool, links to career counseling centers, and labor market data, among other career-related information.[3]

- **California Partnership for Achieving Student Success (Cal-PASS)**—professional-learning councils that provide a forum for high school and community college faculty to meet regularly to discuss curricular alignment and instructional best practices within disciplines. Currently, over 500 instructors across the state participate in Cal-PASS learning councils (California Department of Education and California Community Colleges, 2008).

Career Clusters and Pathways

In 2005, Governor Schwarzenegger introduced the Governor's Career Technical Education Pathways and Workforce Development Program (SB 70), with the goal of aligning the state's K–12 and community college CTE systems. This legislation initially allocated $20 million to help strengthen partnerships between the two systems and expand career pathways for students. Funding increased to $50 million for the 2007–08 school year.

Additionally, the state has organized career and technical education into the following 15 industry sectors that reflect labor market and educational needs in California:

1. Agriculture and Natural Resources
2. Arts, Media, and Entertainment
3. Building Trades and Construction
4. Education, Child Development, and Family Services
5. Energy and Utilities
6. Engineering and Design
7. Fashion and Interior Design
8. Finance and Business
9. Health Science and Medical Technology
10. Hospitality, Tourism, and Recreation
11. Information Technology
12. Manufacturing and Product Development
13. Marketing, Sales, and Service
14. Public Services
15. Transportation

[3] See http://www.CaliforniaCareers.info.

These sectors have been further grouped into six career clusters—representing Agriculture Education, Business and Marketing Education, Health and Human Services Education, Home Economics Careers and Technology Education, Industrial and Technology Education, and Arts, Media, and Entertainment Education; 57 statewide career pathways have been identified within the clusters. California's 15 industry sectors pre-date the federal career clusters classification. When compiling federal reports, state administrators try to align the state's 15 industry sectors with the 16 national career clusters.

At the postsecondary level, CTE programs are aligned with the industry-based statewide advisory committees, which include: Agriculture and National Resources, Business Education, Family and Consumer Sciences, Health Careers, Industrial and Technical Education, and Public Safety Education.

Content Standards and Curriculum

In 2005, the state legislature adopted "model curriculum standards" for each of the industry sectors in 7th–12th grade. The standards include both foundation standards, which specify the cross-discipline skills and knowledge that students must master for every industry, and pathway standards, which define technical skills and content necessary for further education or employment in a specific industry. According to state administrators, these standards were intentionally made to be very general to allow for local interpretation, given the state's emphasis on local control. The State Board of Education introduced a second piece of legislation in 2007, which established the framework for implementing the standards in the secondary classroom and provides sample lesson plans and curricular materials for teachers. While state law mandates use of the standards as voluntary, state administrators note that in future applications for Perkins funding they will require grant recipients to align their programs with the model curriculum standards and framework.

At the postsecondary level, industry standards and requirements guide curriculum development and instruction. The state's advisory groups, collaboratives, and regional consortia help local programs remain up-to-date with the knowledge and skills needed to succeed in various industries and monitor curricula to ensure relevancy to labor market demands. Business and industry partners play a role on these various groups to make sure their hiring and skills needs are reflected in the state's career and technical education programs.

Statewide CTE Assessments

At the secondary and postsecondary levels, state administrators report that there is no statewide CTE assessment and no plans to develop one. CTE programs currently report on the state negotiated outcomes in the Perkins Act. Community colleges

have defined a "C" grade as evidence of technical skill attainment; the secondary system also plans to adopt this measure.

Delivery System Alignment

California sponsors a number of initiatives to support the alignment of CTE services among secondary and postsecondary institutions, and with business and industry. For example, many existing state articulation agreements were developed through Tech Prep and/or other cooperative initiatives. The state also facilitates alignment of secondary and postsecondary curricula through the Cal-PASS professional learning committees and the governor's career and technical education initiatives. The governor's initiative specifically allocates a portion of funds to develop articulation agreements. Other opportunities for alignment are evident in the state's dual credit programs and middle college and early college high schools.

Businesses also play several critical roles in the development and delivery of career and technical education in California, ranging from providing input on discipline-specific advisory committees to offering work-based education experiences. Additionally, state legislation requires that local community colleges partner with workforce agencies to strengthen workplace-training opportunities at postsecondary institutions.

Funding Models and Formulas

California funds career and technical education (CTE) services at the secondary and postsecondary levels with a combination of state resources derived from state general funds, which includes resources generated from local taxing effort (i.e., property taxes and local bonds), and federal Perkins funding. An effort from the governor's office to expand career and technical education in the state has made additional state funding available in recent years.

Fiscal Allocation Method: Federal Perkins Funding

California received a total of $129,514,828 in Title I Basic Grant and $11,260,243 in Title II Tech Prep funding for allocation in the 2007–08 program year. California's state plan indicates that a minimum of 45 percent of the funds received from Perkins should be distributed to the secondary level and 55 percent to the postsecondary level (table B-4).

Table B-4. California Federal Perkins Allocations: 2007–08 Program Year

	Dollars	Percent
Total Federal Funding	**$140,775,071**	**100.0**
Title I Basic Grant	129,514,828	92.0
Title II Tech Prep[1]	11,260,243	8.0
Perkins Formula Distribution (85 percent)	119,658,810	100.0
Secondary (45 percent)	53,846,465	45.0
Postsecondary (55 percent)	65,812,346	55.0
State Leadership (10 percent)	14,077,507	100.0
Nontraditional	150,000	1.1
Corrections/Institutions	13,927,507	98.9
State Administration (5 percent)	7,038,754	†
State Match	7,038,754	†

† Not applicable.

[1] California does not plan to merge Tech Prep funds with Basic Grant funds.

SOURCE: California Department of Education and California Community Colleges. (2008). *2008–2012 California State Plan for Career Technical Education.* Oakland, CA: WestEd.

Similar to other states, federal funds are allocated according to legislative formulas, with 85 percent of funds distributed among local providers, 10 percent set aside for state leadership activities, and 5 percent dedicated for state administration. The state has not established a reserve fund.

State Resources: Secondary

Secondary CTE programs at California comprehensive high schools do not generate separate state resources for CTE participants. Instead, state funds are allocated to secondary schools through the general state formula, which awards funds based on average daily attendance (ADA) figures. ROCPs are funded through an annual appropriation in the state budget, which in the 2005–06 program year came to $420,674,000. Funds are allocated to ROCPs based on a revenue limit unique to each agency and a limit (cap) on the number of ADA units that can be funded in each ROCP.

State Resources: Postsecondary

California does not earmark state general fund resources to support CTE services offered in postsecondary institutions. State funding is allocated to institutions based on FTE enrollment, and the state does not distinguish between students who participate in regular academic programs and those who participate in CTE. Each year, institutions are provided with state general funds based on their total FTE enroll-

ment, and are free to allocate funds across programs according to institutional preference.

Equipment and Start-up Funding

In his 2006–07 budget request, Governor Schwarzenegger provided for a one-time grant of $40 million to support middle and high schools in purchasing CTE equipment and supplies. Governor Schwarzenegger also allocated $20 million under SB 70 to expand statewide CTE services and develop articulation agreements between secondary and postsecondary CTE systems. The bill calls for five years of additional funding to be allocated to secondary and postsecondary programs through a competitive grant application for such work as developing career exploration programs for middle school students, designing programs to increase CTE enrollment in secondary and ROCP programs, and developing articulation agreements with community colleges. Currently, SB 70 is managed and distributed by the community college system, but there are plans to move at least a portion of the fund's management to CDE.

Facility Construction

In 2006, California voters approved Proposition 1D, which made $500 million available for expanding secondary CTE programs. The money is distributed to eligible schools through a competitive grant application for use in constructing or remodeling CTE facilities. Schools can apply for up to $3 million and must supply the necessary matching funds. According to state administrators, eligibility for Prop 1D funding also requires collaboration with business and industry. Schools may use a portion of these funds to purchase equipment with a 10-year lifespan.

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Appendix C: Indiana

System Characteristics

Indiana is a moderately sized state, with a population in 2006 of roughly 6.31 million individuals distributed across 35,866 square miles. Ranked 38th in size but 15th in population, the state is relatively densely populated compared to other states in the study, ranking 3rd out of 8 states in terms of population density. According to the 2000 U.S. Census data, Indiana had 170 individuals per square mile, roughly twice the national average of 80 persons (U.S. Census Bureau, n.d.-a).

Although the median age of residents of Indiana was roughly similar to that of the U.S. population in 2006 (36.3 vs. 36.4 years, respectively) (U.S. Census Bureau, n.d.-b), studies suggest that the state will continue to see slow population growth, with an additional half-million residents expected over the next quarter century. In keeping with national statistics, the state population is projected to age during this period, with the median age projected to increase to 37.4 in 2020, compared to a nationwide average of 38.0 over the same period (U.S. Census Bureau, n.d.-c). Population aging is anticipated to have some workforce implications, with some state studies suggesting that the state will need to attract individuals from outside the state to fill anticipated labor shortages (Sagamore Institute, 2007).

Indiana residents are primarily White (86 percent), with a small but rapidly growing immigrant population. Although just 4 percent of Indiana's population is foreign born, the state has experienced rapid immigration since 2000, ranking 12th in the nation in terms of percentage change in foreign population. And although Latinos constituted less than half of new immigrants in 2005, the Hispanic/Latino community has exhibited unprecedented growth, increasing by over 50 percent in the last five years (Sagamore Institute, 2007).

While the percentage of persons age 25 years or older possessing a high school diploma exceeded the national average in 2000 (82.1 percent vs. 80.4 percent, respectively) the state lagged in higher education achievement. Just over two-thirds (42 percent) of residents in Indiana over age 25 have had at least some postsecondary education or training, while less than two-fifths (19.4 percent) have earned a bachelor's or graduate degree, compared to nearly one-quarter (24.4 percent), nationwide. Statistics also indicate that Indiana's per capita income is nearly 10 percent lower than the national average ($22,781 vs. $25,267, respectively), and the second lowest among states included in this analysis.

Service Providers

At the secondary level, Indiana is organized into 49 area vocational districts. A total of 292 secondary agencies received Perkins funding during the 2006–07 program year. At the postsecondary level, federal Perkins funds were distributed to 29 postsecondary institutions, including 15 state universities and 14 campuses of the Ivy Tech state colleges (table C-1).

Table C-1. Characteristics of Indiana CTE System: 2006–07

	Secondary	Postsecondary
Local Education Agencies	295	29
Offering CTE Services	292	29
Consortia	49	†
Consortia Members	292	†
Universities	†	15
Technical Colleges	†	14

† Not applicable

SOURCE: *Indiana Consolidated Annual Report: 2006–07*; *Indiana State Plan: FY 2009–2013.*

Student Characteristics

Indiana reported 82,960 secondary and 52,861 postsecondary students participating in Career and Technical Education (CTE) programs funded using federal Perkins basic grant and Tech Prep funding during the 2006–07 program year. At the secondary level, males were relatively more likely to participate in CTE than females, as compared to relatively equal numbers of each sex participating at the postsecondary level.

During the 2006–07 program year, the last under the 1998 Perkins legislation, Indiana defined a CTE concentrator at both the secondary and postsecondary levels as a student who enrolled in a sequence of courses or instructional units that provides them with the academic and technical skills, knowledge, and proficiencies to prepare the individual for employment or further education, or both.

A relatively modest number of CTE participants attained this higher threshold at either the secondary (12,163 of 82,960 participants) or postsecondary (5,345 of 52,921 participants) levels. And although males participating in secondary CTE programs were somewhat more likely to participate in CTE than females, a smaller number of these students went on to concentrate in a CTE program area (table C-2).

Table C-2. Indiana CTE Participants and Concentrators: 2006–07

	High Schools			
	Participants		Concentrators[1]	
	Number	Percent	Number	Percent
Total	**82,960**	**100.0**	**12,163**	**100.0**
Male	50,711	61.1	6,596	54.2
Female	32,249	38.9	5,567	45.8
Unknown	0	0.0	0	0.0

	Universities and Technical Colleges			
	Participants		Concentrators[1]	
	Number	Percent	Number	Percent
Total	**52,921**	**100.0**	**5,345**	**100.0**
Male	25,251	47.7	2,931	54.8
Female	27,610	52.2	2,378	44.5
Unknown	60	0.1	36	0.7

[1] Based on the denominator of the Perkins Technical Attainment measure.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

In keeping with state demographics, CTE concentrators were overwhelmingly White at both the secondary and postsecondary levels (85 and 83 percent, respectively) (table C-3). Among special populations, the state reported relatively large numbers of concentrators from economically disadvantaged backgrounds engaged in Tech Prep education at the secondary level, and in programs preparing individuals for nontraditional employment at the postsecondary level.

These statistics may, however, provide an incomplete picture of state special population involvement in CTE programs. Like many states, Indiana has had difficulty collecting special population data for some populations of students, in part due to privacy issues that limit state capacity to collect data, and in part due to differences in how local providers identify eligible students and collect data. As a consequence, data on special population groups are likely incomplete and should be viewed with caution, particularly for results reported at the postsecondary level.

Administrative Structures

The Indiana Department of Workforce Development (IDWD) serves as the sole state agency for administering the federal Perkins grant. The Governor appointed Indiana Commission for Career and Technical Education (ICCTE), which operates under the IDWD umbrella, administers and accounts for federal funds, and coordinates with staff of the Indiana Department of Education (IDOE) and Indiana Commission for Higher Education (ICHE) to develop, implement, and evaluate state Perkins activities.

Table C-3. Characteristics of Indiana CTE Concentrators:[1] 2006–07

	High Schools		Universities and Technical Colleges	
	Number	Percent	Number	Percent
Race/Ethnicity	**12,147**	**100.0**	**5,344**	**100.0**
American Indian	26	0.2	25	0.5
Asian/Pacific Islander	71	0.6	46	0.9
Black	1,076	8.9	553	10.3
Hispanic	455	3.7	121	2.3
Other or Unknown	158	1.3	150	2.8
White	10,361	85.3	4,449	83.3
Special Population Status[2]				
Disabled	204	1.7	21	0.4
Economic Disadvantaged	1,434	11.8	156	2.9
Single Parent	510	4.2	4	0.1
Displaced Homemaker	259	2.1	3	0.1
Limited English Proficient	32	0.3	1	0.0
Nontraditional	617	5.1	376	7.0
Tech Prep	5,881	48.4	0	0.0
Other Barrier	1,247	10.3	202	3.8

[1] Based on the denominator of the Perkins Technical Attainment measure.

[2] Special populations shows duplicated counts of students because some students have more than one barrier.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

State Agency Organization: Secondary

The Office of Career and Technical Education within IDOE coordinates secondary Perkins activities for secondary local eligible recipients through a Memorandum of Understanding with IDWD. The agency also administers CTE courses offered for high school credit on behalf of the Indiana State Board of Education. The office is staffed with 18 administrators, including a

- State Director who oversees secondary state and federal programs;
- Assistant Director who oversees secondary projects, services, and activities;
- six education program consultants with individual oversight of career fields identified by the state;
- six consultants for CTE student organizations; and
- four administrative assistants.

State Agency Organization: Postsecondary

Although the ICHE is responsible for oversight of the state's postsecondary institutions, coordination of CTE programs falls upon IDWD staff. In addition, a full-time IDWD staff member has been assigned to work with postsecondary agencies to develop dual credit agreements, integrate academic and technical studies, and improve the number of students who enroll in and complete CTE degree programs. Eleven staff members within the IDWD administer state Perkins' postsecondary activities for postsecondary local eligible recipients. These individuals include a

- State Director of CTE, who oversees state and federal programs;
- two grant coordinators;
- four program coordinators;
- supervisor of data and information management;
- leader of program innovation; and a
- senior compliance coordinator.

Challenges and Benefits of State Administrative System

The IDOE maintains specialists in six secondary program areas, four of whom are supported with state funding. Because these individuals are experts in their field, they have a comprehensive understanding of their subject area and are able to provide targeted professional development and technical assistance to the field. Specialists also understand the importance of career technical student organizations, and work with the field to develop an appropriate role for these organizations in the state's career technical system.

The organization of the state secondary agency, which supports interaction of CTE staff with other secondary agencies, also helps ensure that CTE maintains visibility within the state.

Prior to hiring a new state director at IDWD, state administrators reported that there had been relatively little communication between IDWD, IDOE, and CHE staff, which hampered program coordination. State staff are striving to build positive relationships among the agencies, and plans are underway to hold regular meetings among agency staff. IDWD staff are also working with CHE administrators to ensure that postsecondary institutions' use of funding aligns with federal purposes defined in the Act.

Delivery Models

Secondary Students

Career and technical education (CTE) services are provided at the secondary level via consortia housed at one of 49 area vocational districts that serve 295 school corporations located throughout Indiana.

The state also maintains area career centers, which may be housed within a comprehensive high school or operate as a separate, stand-alone facility. In some situations, rural schools may offer specialized CTE instructional programs; here, students travel among schools to attend a facility that offers services in their area of interest. Students participating within a stand-alone facility are bussed to and from the school by their sending district, which pays tuition to the area center in exchange for instructional services. Area schools may offer academic coursework in addition to technical coursework, which can support curriculum integration efforts.

State administrators believe that the current system for delivering secondary services works relatively well. While the area technical system works well in providing students access to programs that they might not otherwise have at their sending school, ensuring that the system operates smoothly requires that staff work to coordinate scheduling, programs, transportation, and other logistical and programmatic issues. When proper attention to program coordination is not provided, the situation can prove troublesome.

To improve Tech Prep program operation, the IDWD recently changed the process by which schools qualify to participate in the federal Title II grant program. Under the previous system, any school, or individual staff within a school, could choose to submit a Project Lead the Way (PLTW) grant, which led to inefficiencies and a lack of communication among sites. The state now requires that the area vocational director be involved in any PLTW programs offered, which has helped to coordinate services among sites.

Adult Learners

Postsecondary services are offered at 7 public postsecondary institutions with 28 campuses. The state provides limited funding for programs offered in public school corporations, based on the number of students served, which may include a small number of adults. The majority of support for adults occurs at the postsecondary level, which is designed to prepare high school graduates for first-time careers, as well as adults who are interested in changing careers or upgrading their skills. Postsecondary programs are characterized by close-working relationships between employers and institutions, and in many cases, partnerships have been established with

local and regional employers to provide customized, technical skill development, which may be offered on-site to incumbent workers. Indiana is also working to emphasize the role of public four-year institutions in providing educated workers with skills that meet employer demands.

Student Support Services

Federal leadership funding for secondary education has declined in recent years, which, according to state administrators, may have reduced state capacity to deliver some program improvement services. The state does provide, however, some unique programs that may be worthy of consideration in other states. These include:

- **Indiana Gold Star School Counseling Workshop Series—**In cooperation with the American Student Achievement Institute, the state provides secondary schools with resources and technical support to assist them in designing and implementing school counseling programs that meet the Indiana Program Standards for School Counseling. Schools participating in the workshop series are prepared for submission of a School Counseling Portfolio to the Indiana Department of Education, which qualifies them for the Indiana Gold Star School Counseling Award. Schools that receive this award are automatically eligible for the national Recognized American School Counselor Association Model Program Award.
- **Jobs for America's Graduates (JAG)—**In 2006, the IDWD instituted the JAG program in 12 high schools with Workforce Investment Act funds. JAG is a school-to-career preparation program, used in high schools, alternative schools, community colleges, and middle schools that is designed to keep young people in school through graduation and provide work-based learning experiences that will lead to career advancement opportunities or enrollment in a postsecondary institution. Program outcomes indicate that the program may benefit other students, and the state is in the process of exploring whether Perkins IV funds might be used to expand program services from the current 11th- and 12th-grade programs into 9th and 10th grades, particularly because the state's new Core 40 graduation requirements are limiting students' ability to take CTE coursework.
- **WorkEthic Program—**In 2006 the IDWD introduced WorkEthic to promote the development of student skills and behaviors valued in the marketplace. Focused on workplace readiness skill development, secondary students who complete the program are awarded certificates documenting their attainment of the program's core standards: attendance, community service, commitment, discipline, organizational skills, teamwork, respectfulness, and timeliness. To date, over 50 high schools have implemented the program, and over 550 employers have pledged to implement it as a fundamental criterion for internships and as a part of their standard hiring process.

- **Longitudinal Surveys of Graduates**—Indiana requires local agencies to conduct one- and five-year follow-up surveys of graduates of secondary CTE programs. Intended to assess what graduates do after completing their program, surveys include questions on college enrollment, full-time or part-time employment, military service, and apprenticeship participation. Survey results are also used to help CTE administrators make more informed assessments of program strengths and weaknesses. In 2006, the state also collaborated with faculty from the Purdue School of Engineering and Technology to support a longitudinal study of CTE graduates, geared on measuring student satisfaction with their high school program and the extent that they felt prepared for employment and further education and training, with baseline data collected in 2006–07. If funds are available, the project will continue through the 2010–11 program year.

- **Professional Development for Workplace Specialist Teachers**—A consortium of faculty from teacher training institutions work to deliver teacher training services to qualified, occupationally competent individuals so that they can complete the requirements to obtain a CTE Workplace Specialist I teaching license. Candidates complete a 45-hour program, delivered in person and online, where they learn instructional strategies, using technology in the classroom, and other teacher approaches. Teacher mentors are assigned to each candidate during the first two years of teaching, and must develop goals for professional growth that will be addressed over the next five years. Individuals may also earn points for activities, such as completion of college courses, participation in staff development, industry training or internships, curriculum development, and CTSO leadership. Project retention rates approach 95 percent for the second year of teaching.

Career Clusters and Pathways

Indiana has adopted 14 career clusters to help students investigate a range of occupations in an industry or field. Just prior to entering secondary school, students are encouraged to declare a career focus area based on their career interest, and use this pathway selection to design a four-year career course plan for high school, which is included in the student's guidance portfolio. State clusters, modeled after those identified by the States Career Clusters Initiative, include:

1. Agriculture
2. Art, Media, and Communications
3. Engineering, Science, and Technologies
4. Manufacturing and Processing
5. Mechanical Repair and Precision Crafts
6. Business, Management, and Finance

7. Building and Construction
8. Educational Services
9. Health Services
10. Personal and Commercial Services
11. Legal, Social, and Recreation Services
12. Protective Services
13. Marketing, Sales, and Promotion
14. Transportation

The state is currently working to develop sample Programs of Study that will serve as models for local recipients. Locals may implement these state samples or develop their own programs using state criteria. All locally developed programs are subject to state review and approval prior to implementation. Sample Programs of Study, which can assist locals in designing their CTE coursework, are posted on the Indiana Department of Education website as they are developed by the state.

In keeping with Perkins requirements, all local recipients are required to implement one state-approved Program of Study of their choice (or a locally developed Program of Study that meets state criteria) by the end of FY 2008. All new programs implemented beginning in FY10 will be required to include a Program of Study; and in addition, eligible recipients must have a plan to transition existing programs into the Program of Study model, such that, by 2013, at least 85 percent of secondary CTE programs offered within local agencies must include a Program of Study.

At the postsecondary level, plans are underway to complete pathway elements over the next two to three years, so that a seamless transition is in place for students moving from secondary to two- and four-year degree programs and into careers. To date, work has begun to develop postsecondary sequences for pathways in three cluster areas: Agriculture, Food, and Natural Resources; Information Technology; and Manufacturing.

Until postsecondary elements are completed, state identified pathways are linked to LEARNMORE Indiana (http://www.learnmoreindiana.org/Pages/default.aspx), a website that allows students to explore college and career programs available within the state. LEARNMORE also distributes a "Career and Course Planner" to each high school for all students. This portfolio includes space for students to record test score information, extracurricular activities, service learning and work experiences, and personal improvement plans.

The introduction of Programs of Study is not anticipated to have any adverse effect on educational services offered at comprehensive high schools or on the operation of area career centers. For example, programs may be structured such that the first two courses in a program are offered within a comprehensive high school, with the capstone course offered at the career center. This setup can actually promote cooperation between school and technical centers.

State administrators report that area vocational directors are often in a better position to establish program of study connections between secondary schools and postsecondary institutions. This is because staff members at comprehensive high schools are not as familiar with the Programs of Study model or as well connected as area directors with programs offered at the postsecondary level. While state administrators reported that area vocational directors would play an important role in the adoption of Programs of Study over time, Programs of Study development is currently moving along slowly because area directors are working to establish connections with individual colleges in their region.

Content Standards and Curriculum

Indiana has established broad CTE content standards to help schools design and implement CTE programs. These standards describe the minimum expectations for secondary CTE programs and courses, and address issues related to student safety, advisory committee formation, teacher licensing, and course curriculum. Although these generic, crosscutting standards apply across all CTE programs, regardless of cluster area, the state also is developing more specific content standards that describe in greater detail what students should know and be able to do after completing specific coursework. The state does not currently provide curricular resources for secondary instructors, and no plans currently exist to develop such resources.

At the postsecondary level, programs are locally controlled, meaning that institutional staff are responsible for developing their own standards and curriculum. State administrators are currently working to develop statewide articulation agreements and are encouraging the development of Programs of Study.

Statewide CTE Assessments

The Indiana State Board of Education has adopted new course and credit requirements for a high school diploma. Beginning in fall 2007, students have the option of earning one of four diploma types:

1. *General*—students may graduate with less than 40 credits, but to do so, must follow a formal opt-out procedure.

2. *Core 40*—all students must complete 40 credits to obtain a regular high school diploma, and, beginning in 2011, the Core 40 diploma is the minimum college admission requirement for entry into the state's public four-year university system.

3. *Core 40 with Academic Honors*—requires that students obtain a minimum of 47 credits with additional coursework in mathematics, and meet minimum grade, grade point average, and postsecondary testing expectations.

4. *Core 40 with Technical Honors*—requires that students obtain a minimum of 47 credits with additional CTE coursework, and meet minimum grade and grade point average expectations. Specific expectations include that students acquire 8 or more CTE credits, and demonstrate technical achievement, either through taking WorkKeys, earning dual credits, receiving an industry-recognized certification, and/or successful completion of a work-based learning experience.

IDWD and IDOE staffs have developed a list of industry-recognized certifications that can be used to qualify for the Core 40 with Technical Honors diploma. For federal secondary Perkins reporting purposes, the state bases its reporting on the number of students who attain proficiency on state-approved, locally developed technical skill competencies.

Postsecondary institutions report on the number of students concentrating in a program leading to a certificate or associate degree that attained program defined and industry validated vocational-technical skills.

Delivery System Alignment

Indiana has put in place a number of policies to support the alignment of CTE services among secondary and postsecondary institutions, and with business and industry. These policies include:

- **Dual Credit—**Secondary students have the option to earn dual credits that count towards both a high school diploma and a postsecondary degree. While in the past, these agreements have been negotiated between area career centers and regional postsecondary institutions, the state is developing statewide agreements to support transferable, transcripted credits. The state has also developed a Core Transfer Library (CTL) to allow students to transfer college credits among public college and university campuses. Currently nine courses listed in the CTL are CTE courses, and plans are underway to increase the number of CTE courses on this list or to develop a parallel list of courses. When completed, students will be able to earn secondary and postsecondary credit simultaneously while in high

school, and to transition to certificate, associate, and/or baccalaureate degree programs.

- **Cooperative Education and Workplace Learning**—Indiana provides for students to participate in a variety of workplace learning programs, and has developed a website to assist teachers and employers in structuring meaningful placements. The website includes manuals and guidelines for structuring cooperative learning agreements, information on workshops to share information, and opportunities for teachers to network with other co-op coordinators. The website may be accessed at: http://www.doe.in.gov/octe/bme/curriculum/CooperativeEducation.htm.

- **Project Lead the Way (PLTW)**—Indiana is committed to two curricular areas supported by PLTW: pre-engineering and biomedical sciences. The state has over 230 middle and high schools implementing the pre-engineering program and an estimated 35 high schools coming on board in 2008–09 to pilot and implement the biomedical sciences curricula. Indiana is the national leader in number of sites, with school Superintendent, Dr. Sueellen Reed, serving on the PLTW Board of Directors. The courses delivered through PLTW are used to develop POS for the following career clusters: Health Science; and Science, Technology, Engineering & Mathematics. More information on the program can be accessed online at: http://www.pltw.org/index.cfm.

- **Indiana E-Transcript**—High school students in Indiana may order an official high school transcript online, which can be sent for free, to participating in-state colleges and universities. The transcript program, sponsored by an education loan company, in partnership with the IDOE and ICHE, is available to Indiana residents. Starting in fall 2008, the service will be expanded to include colleges nationwide. More information can be found at: http://www.learnmoreindiana.org/college/applying/AdmissionsRequirements/Pages/IndianaETranscript.aspx.

- **Magazine**—the IDOE and ICHE have partnered to produce a magazine series for high school students. The *On Track* publication, which targets 9th- and 10th-graders, provides tips on being a successful student, provides study and test-taking strategies, and offers tips on early planning for college. A companion publication, *Indiana Next*, provides 11th- and 12th-graders with information on selecting college and degree programs, on applying for apprenticeships, and on finding funding for postsecondary schooling.

Challenges and Benefits of CTE Delivery

According to state secondary administrators, the adoption of new Core 40 requirements, which are required for graduation, have reduced students' opportunity to take CTE coursework. This is particularly problematic for area centers that serve multiple school districts, since students' travel time to get to and from the center de-

creases their opportunity to take academic coursework at their sending school. However, the adoption of Programs of Study called for in the new Perkins legislation is not expected to have an effect on the delivery of CTE instruction in area centers, satellite sites, or in comprehensive high school based programs.

Funding Models and Formulas

Indiana funds career and technical education (CTE) services at the secondary and postsecondary levels with a combination of state resources derived from state general funds, which includes resources generated from local taxing effort (i.e., property taxes and local bonds), and using federal Perkins funding.

Fiscal Allocation Method: Federal Perkins Funding

At the secondary level, Indiana is organized into 49 area vocational districts. The state designates one local education agency within each district to serve as the Perkins grant recipient, and this fiscal agent is responsible for receiving and administering the area's federal, Title I Basic Grant funds. Each area's resource pool is based on its funding eligibility, which is defined in the Perkins secondary distribution formula. Local education agencies seeking to obtain federal Perkins funding must join the district consortium within their area vocational district to participate in Perkins.

At the postsecondary level, Perkins Title I funding is allocated to eligible recipients based on the postsecondary distribution formula. Institutions unable to achieve the $15,000 minimum form consortia in order to quality.

Federal Tech Prep (Title II) funding is distributed in two categories. *Tech Prep Programs of Study* grants, which account for roughly half of Tech Prep allocations, are distributed to local agencies to support curricular alignment activities. In 2008, the state awarded 21 grants totaling $948,514 for this purpose. Project Lead the Way grants are awarded to schools participating in or seeking to enhance existing programs that are part of the Project Lead the Way effort. In 2008, the state awarded 52 grants totaling $895,450 to promote Project Lead the Way programming.

Local agencies can apply for Tech Prep or Project Lead the Way funding via one of three approaches:

1. *Tech Prep Planning Grant*—sites not previously funded through the IDWD can apply for funding to develop pathways leading to a Program of Study;

2. *Tech Prep Implementation Grants*—for existing sites to support implementation of a plan that enhances a current pathway leading to a Program of Study or a new pathway; or

3. *Project Lead the Way Grant*—agencies seeking to develop a pre-engineering pathway may apply for a grant that commits them to offer a four-year PLTW curriculum and implementation strategy, with a capstone course offered in year four, and to offering at least one new PLTW course each year of the four-year grant.

All planning and implementation grants must be in either a STEM career-related field or provide students preparation for entry into an occupation listed on the "Hoosier Hot 50 Jobs" list.

Indiana received a total of $25,572,913 in Title I Basic Grant and $2,463,650 in Title II Tech Prep funding for a combined federal allocation of just over $28 million in the 2007–08 program year. The Indiana General Assembly has legislated that a minimum of 60 percent of the funds received from Perkins should be distributed to the secondary level. For the past few years, the split has slightly favored secondary schools, which have received just over nearly two-thirds (63.6 percent) of available resources.

State administrators were unable to explain the rationale for the current funding split, indicating that the current funding had been in place for many years and likely reflects historical practice, rather than a strategic response to state conditions. During the transition year the state is planning to analyze the split based on an analysis of its Return on Investment, and will make adjustments to provide the best return. The state currently has no plans to combine or commingle its secondary and post-secondary funding.

Formula Allocations

Federal funds are allocated according to legislative formulas, with 88.1 percent of funds distributed among local recipients (table C-4). In prior years, the state established a reserve fund from its basic grant resources, which was released by an RFP process to agencies based on rural school enrollment. Starting in Year 2 of the 2006 Perkins Act, the state will no longer maintain a reserve fund, but will instead combine these resources with its basic grant.

The state has set aside 10 percent of resources for state leadership activities, with 5.9 percent of these funds intended to support services to adults and youth in state correctional institutions, and 2.3 percent for support activities that prepare individuals for nontraditional fields. Although Perkins provides for up to 5 percent of federal resources to be used for state administrative activities, Indiana has allocated just 1.9 percent for this purpose.

Table C-4. Indiana Federal Perkins Allocations: 2007–08 Program Year

	Dollars	Percent
Total Federal Funding[1]	**$28,036,563**	**100.0**
Title I Basic Grant	25,572,913	91.2
Title II Tech Prep[1]	2,463,650	9.6
Perkins Basic Grant Formula Distribution	22,520,700	88.1
Secondary	14,318,661	63.6
Postsecondary	8,202,039	36.4
State Leadership (10 percent)	2,557,290	11.4
Corrections/Institutions	150,000	5.9
Nontraditional	60,000	2.3
State Administration	494,923	1.9
State Match	494,923	1.9

[1] Includes grants for Tech Prep and Project Lead the Way.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: *Indiana State Plan: FY 2009–2013.*

Fiscal Allocation Method: State Resources

State Basic Grant allocations for secondary education are based on several different factors, including tuition support, based on Average Daily Membership of students enrolled in grades K–12; academic honors, which rewards schools for students who graduated with an academic honors diploma in the previous school year; special education; career and technical education grant; and a Prime Time grant, paid on the basis of a target pupil/teacher ratio calculated for each school corporation or charter school.

The Career and Technical Education Grant, introduced in 2002, provides funding for CTE programs on the basis of wage and labor market demand data generated by the Department of Workforce Development. Program funding is distributed in eight categories, with resources in six of the eight based on credit hours completed by students enrolled in technical programs.

The CTE grant system is intended to address state economic needs, with student participation in program coursework differentially reimbursed based on state-identified labor market needs. Specifically, students participating in high-wage, high-labor market need areas generate $450 per credit hour, compared to $225 per credit hour for students participating in moderate-wage, less-than-moderate labor market need areas (table C-5).

Table C-5. Funding Amounts per Credit Hour for 1, 2, and 3 Credit Hour Classes

	High Wage	Moderate Wage
More than Moderate Labor Market Need	$450	$375
Moderate Labor Market Need	375	300
Less than Moderate Labor Market Need	300	225

SOURCE: *Digest of Public School Finance in Indiana: 2007–2009 Biennium.*

Students enrolled in CTE programs not addressed by the wage and demand categories are funded at $250.00 per student, while students enrolled in CTE programs served in an area vocational school that receives students from more than one high school are funded at $150.00 per student.

To determine program-funding levels, each year the IDWD and IDOE collaborate to develop a funding crosswalk that links programs to wage and labor market demand categories. With few exceptions, the majority of CTE courses are reimbursed at the $450 level with the second highest number of courses generating $375 per student. No courses currently qualify for the lowest level of reimbursement. New program development for training in emerging careers is typically based on demand and wage data.

School Corporation funding is based on fall enrollment data from the preceding year. For example, program year 2007–08 funding is based on fall enrollment data collected during fall 2006. Local agencies may count credit hours for one credit, two credit, or three credit hour classes per semester, with the number of credit hours eligible for state funding capped at three credit hours per semester.

At the time of this state profile, data on secondary and postsecondary state allocation amounts for 2006–07 were unavailable.

Area Career Centers

Area career centers are tuition supported: sending schools pay area schools a negotiated rate based on the number of students and the amount of time students attend a center. Sending schools are eligible for a flat $150 payment for each student attending an area school, which is intended to compensate schools for the cost of transporting students to-and-from the facility. Area schools located within a high school are funded out of the school's state grant.

Postsecondary Education

Indiana does not earmark state general fund resources to support CTE services offered in postsecondary institutions. State funding is allocated to institutions based

on FTE enrollment, and the state does not distinguish between students who participate in regular academic programs and those who participate in CTE. Each year, institutions are provided with state general funds based on their total FTE enrollment, and are free to allocate funds across programs according to institutional preference.

Equipment and Program Start-up Funding

Local agencies may use federal Perkins funding to support the provision of instructional technology consistent with industry needs. To qualify for a federal grant, secondary programs must demonstrate that they provide adequate equipment to support instruction of technical and academic content standards and align with current and emerging technology used by business and industry within a particular career field. Programs are strongly encouraged, however, not to use more than 50 percent of their Perkins grant for equipment purchases.

Local program area advisory committees, of whom a majority of representatives must be from business, industry, or labor, advise CTE directors and instructors on new and emerging technologies. These groups also recommend purchases to ensure that programs offer cutting-edge technology.

State funding is provided though the Capital Projects Fund to purchase building materials used for vocational building and trades classes.

Challenges and Benefits

Although district eligibility for state CTE funding is based upon student credit hours, CTE generated resources need not be spent on CTE services. This flexibility allows school administrators to direct resources toward areas of greatest programmatic need, irrespective of whether they are academic or technical in nature.

According to state administrators, funding programs based on the high wage/high demand model supports the state's goal of increasing the number of trained students in areas of greatest economic need. In particular, the number of state-identified programs offered by schools has risen, while some less beneficial programs in low-demand areas have been eliminated. And although some good programs in lower demand areas have also closed, state administrators report that the funding approach is working and that, overall, the state is moving in the right direction.

Attaching additional state resources to high-wage, high-demand programs has caused some schools to respond by investing significant resources and staff in developing identified programs. While this works fine while programs maintain high funding status, schools face financial shortfalls if a program subsequently falls off the

higher tier funding level. The state has attempted to eliminate this problem by holding the list of qualifying programs constant over time, but questions remain as to how the state can maintain program flexibility without compromising local provider financing.

A second challenge with the state's funding model is that is guarantees schools a fixed dollar amount for every student enrolled in eligible CTE coursework. Since funding for CTE has remained fixed as the number of students participating in coursework has risen, the state faces increased resource demands. As a consequence, the state has gone over budget on CTE for the past three years, with one year's shortfall approaching $10 million. Since schools are guaranteed resources, the state has had to pull funding from other sources to meet its current year obligations, and then cut subsequent years to balance resources.

Career and Technical Student Organizations

The state uses federal Perkins funds from its state leadership resources to support advisors for two of its six career technical student organization staff positions. Remaining positions are funded using state resources. By law, federal resources may not be used to provide direct student benefit, but are used, instead, to provide organizational support, for instance by covering advisor costs associated with conference attendance.

The state also provides over $500,000 in scholarships annually to Indiana winners of CTSO regional and state contests who demonstrate exceptional skills in their areas of study.

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Appendix D: Kansas

System Characteristics

Kansas is a large, predominantly rural state, ranked 15th in the nation according to size, with a population in 2006 of about 2.76 million individuals distributed across 82,277 square miles. This translates to an average of just under 33 individuals per square mile, which is roughly two-fifths the national average of 80 persons per square mile (U.S. Census Bureau, n.d.-b). And among the eight states selected for study inclusion, Kansas ranked 6th in terms of population density.

Although the median age of Kansans was roughly equal to that of the U.S. population in 2006 (36.3 vs. 36.4 years, respectively) (U.S. Census Bureau, n.d.-a), studies project that the state population will age faster than the rest of the nation, in part due to high levels of out-migration, and in part due to population aging, which will depress fertility rates (Harrah, 2007). Between 2000 and 2006, international migration into Kansas accounted for 60 percent of state population growth, as compared to a decline of 87 percent in domestic migration.

As of 2006, Kansas residents were primarily White (89.1 percent), followed by Black (6.0 percent), and Asian (2.2 percent). Though state statistics put the population of individuals claiming Hispanic or Latino background at 8.6 percent, well below the national average of 14.8 percent, state projections suggest that persons of Hispanic or Latino ancestry will represent an increasing percentage of the state population.[4] Indeed, changes in state demographics are due largely to rapid growth in the state's Hispanic and Latino population, which, between 1980 and 2004, has accounted for over two-thirds (68.6 percent) of state growth (Krider, Hurd, and Hanson, 2006).

Rapid increases in Kansas' Hispanic and Latino population have led some economists to express concerns about the state's ability to field a well-educated, skilled workforce. Over one-third (34.5 percent) of Hispanic and Latinos age 25 and older lacked a high school degree in 2004, with over two-fifths (22.2 percent) possessing less than a 9th-grade education (Krider et al., 2006). Though dropout rates for Hispanics and Latinos have fallen faster than for any other ethnic group since 1994–95, the state's postsecondary and adult education system will still have an important role to play if preparing existing workers for the higher skilled, higher paying jobs the state is seeking to add.

[4] Since Hispanics and Latinos may be of any race, the percent Hispanic cannot be added to percentages for other racial categories.

Overall, the state's level of educational attainment lags that of the nation. The percentage of Kansans age 25 or older possessing a high school diploma exceeded the national average in 2000 (86.0 vs. 80.4 percent, respectively), though the percentage of adults holding a higher education degree was less robust. Less than two-fifths (19.4 percent) of Kansans have earned a bachelor's or graduate degree, compared to nearly one-quarter (24.4 percent) nationwide.

Kansas' per capita income is nearly 10 percent lower than the national average ($23,818 vs. $25,267, respectively), and the third lowest among study states. (U.S. Census Bureau, n.d.-b). Employment growth has lagged that of the United States, with the state's goods-producing sector the only one outperforming that of the U.S. economy. According to state forecasts, unless changes occur, Kansas will continue to experience slow growth in employment, income, and population over the coming decade.

Service Providers

Career and Technical Education (CTE) services are offered in 296 secondary school districts, of which 271 have Perkins approved programs. During the 2006–07 program year, the state provided federal Perkins funding to 26 secondary consortiums, made up of 222 local eligible agencies that did not qualify for the minimum $15,000 grant. At the postsecondary level, federally funded CTE programs are offered in 30 postsecondary institutions, including 19 community colleges, 6 technical schools, 4 area technical schools and 1 university, all coordinated by the state and governed at the local level (table D-1).

Table D-1. Characteristics of Kansas CTE System: 2006–07

	Secondary	Postsecondary
Local Education Agencies	296	30
Offering Perkins-Funded Services	271	30
Consortia	26	†
Consortia members	222	†
Individual Providers	49	30
Community Colleges	†	19
Technical Schools	†	6
Area Technical Skills	†	4
Public 4-years	†	1

† Not applicable.

SOURCE: *Kansas Consolidated Annual Report: 2006–07; Kansas State Plan for Career and Technical Education: 2008–2013.*

Student Characteristics

Kansas reported 22,723 secondary and 18,717 postsecondary participants in CTE programs funded with federal Perkins funding in 2006–07. The percentage of males and females participating in CTE courses were relatively equivalent for both the secondary and postsecondary sectors, suggesting that educators are able to attract relatively equivalent numbers of male and female students within their CTE programs (table D-2).

Table D-2. Kansas CTE Participants and Concentrators: 2006–07

	High Schools			
	Participants		Concentrators[1]	
	Number	Percent	Number	Percent
Total	**22,723**	**100.0**	**11,032**	**100.0**
Male	11,681	51.4	5,520	50.0
Female	11,042	48.6	5,512	50.0
Unknown	0	0.0	0	0.0

	Community Colleges and Technical Schools			
	Participants		Concentrators[1]	
	Number	Percent	Number	Percent
Total	**18,717**	**100.0**	**6,412**	**100.0**
Male	9,963	53.2	3,198	49.9
Female	8,754	46.8	3,214	50.1
Unknown	0	0.0	0	0.0

[1] Based on the denominator of the Perkins Technical Attainment measure.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

The state reported a total of 11,032 secondary and 6,412 postsecondary CTE concentrators taking a secondary CTE assessment or meeting the 80 percent level and completing their CTE program during the 2006–07 program year.[5] The number of male and female students achieving concentrator status was remarkably similar across both the secondary and postsecondary sectors, and, in keeping with state demographics, overwhelming White (83 percent and 81 percent, secondary and postsecondary, respectively) (table D-3).

[5] Since states do not report concentrators separately, the number of concentrators was identified as the base of students reported in the states vocational skill attainment measure (1S2/1P2) in 2006–07. Under Perkins III, Kansas defined a secondary concentrator as a student in grade 11 or 12 who has taken three courses in a program sequence. At the postsecondary level, a concentrator is defined as a student enrolled in a postsecondary institution that has completed 50 percent of an approved career and technical education program, but has not received an associate degree or technical certificate.

Table D-3. Characteristics of Kansas CTE Participants and Concentrators:[1] 2006–07

	High Schools		Community Colleges and Technical Schools	
	Number	Percent	Number	Percent
Race/Ethnicity	**11,032**	**100.0**	**6,425**	**100.0**
American Indian	127	1.2	72	1.1
Asian or Pacific Islander	249	2.3	109	1.7
Black	713	6.5	382	5.9
Hispanic	727	6.6	383	6.0
Other or Unknown	62	0.6	291	4.5
White	9,154	83.0	5,188	80.7
Special Population Status[2]				
Disabled	613	5.6	135	2.1
Economic Disadvantaged	1,735	15.7	2,045	31.8
Single Parent	273	2.5	285	4.4
Displaced Homemaker	0	0.0	60	0.9
Limited English Proficient	134	1.2	171	2.7
Nontraditional	2,968	26.9	907	14.1
Tech Prep	3,923	35.6	766	11.9
Other Barrier	347	3.1	808	12.6

[1] Based on the denominator of the Perkins Technical Attainment measure.

[2] Special populations shows duplicated counts of students because some students have more than one barrier.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

Among special populations, the state also reported relatively large numbers of concentrators from economic disadvantaged backgrounds and participating in Tech Prep education and programs preparing individuals for nontraditional employment.

Administrative Structures

The Kansas Board of Regents (KBOR) serves as the lead state agency for administering Carl D. Perkins funding.

State Agency Organization: Secondary

Coordination for secondary CTE programs is maintained through the Kansas State Department of Education (KSDE), which operates under the authority of the Kansas State Board of Education. The Academic and Technical Services branch within the Learning and Innovation Services Division of the KSDE administers secondary services. The office is staffed with 12 administrators responsible for coordinating statewide secondary CTE services. Staff includes

- the Director of Innovation and Improvement, who oversees state and federal programs and school improvement activities;
- the Assistant Director of Academic and Technical Education, who oversees secondary projects, services, and activities;
- seven program consultants with individual oversight of a career field identified by the state and special populations and nontraditional initiatives;
- three career and technical student organization consultants; and
- a research analyst who maintains data files and materials, and conducts data analyses.

State Agency Organization: Postsecondary

In 2006, the Kansas Legislature created the Kansas Technical College and Vocational School Commission, to study the mission, governance, and funding of CTE in the state. Based on taskforce findings, in 2007, the Kansas State Legislature created the Kansas Postsecondary Technical Education Authority (Authority) as an oversight authority within the KBOR, and charged it with coordinating statewide planning, monitoring, and evaluation of postsecondary CTE services.

Prior to this action, the coordination of state postsecondary CTE services was incorporated within the general structure of the Regent's agency. In creating the Authority, the Legislature sought to place greater emphasis on CTE programs offered within the state's higher education system. As evidence of the state's commitment to the Authority, in 2007 the Legislature earmarked $817,687 from the state general fund to support five full-time equivalent positions annually through June 30, 2014.

Authority membership is comprised of 12 representatives, including 4 members appointed by the State Board of Regents, 3 members appointed by the governor, 2 business and industry representatives appointed by the Legislature (1 from the Senate and 1 from the House), and 3 ex-officio members—the Kansas Commissioner of Education, the Secretary of Commerce, and the Secretary of Labor. Authority members are charged with

1. coordinating statewide planning of existing and new postsecondary CTE programs and contract training;

2. recommending for adoption by the State Board of Regents rules and regulations for the supervision of postsecondary technical education;

3. reviewing existing and proposed CTE programs and program locations and making recommendations to the State Board of Regents for approval or disapproval of programs for state funding purposes;

4. reviewing requests for state funding for postsecondary programs and making recommendations for funding amount and distribution criteria;

5. developing benchmarks and accountability indicators;

6. developing a policy agenda and advocating for postsecondary education;

7. conducting studies to maximize utilization of resources and industry;

8. conducting studies to develop strategies and programs for meeting the needs of business and industry;

9. reporting on the performance of its functions and duties together with any proposals and recommendations it may formulate with respect to the State Board of Regents and the state Legislature; and

10. coordinating the development of a seamless system for the delivery of CTE between the secondary-school level and the postsecondary level.

Activities and initiatives of the Authority are operationalized by the Vice President for Workforce Development—a legislatively created position—who reports to the Authority and President/CEO of the KBOR. The Vice President also directs the Workforce Development/Career and Technical Education unit within the KBOR, which provides leadership and technical assistance to postsecondary institutions, administers federal and state funds, and monitors the performance, compliance, and accountability reporting for postsecondary CTE programs.

When fully staffed, the Workforce Development/Career and Technical Education unit will function with the equivalent of 12 full-time staff positions, including a

- Vice President for Workforce Development;
- Director of Federal Initiatives for Technical Education who administers the state plan and coordinates all Perkins related activities;
- Director of Technical Education Programs and Curriculum who is responsible for all program and curriculum activities/initiatives;
- Director of Workforce Training and Education Services who serves as a liaison between the Kansas Board of Regents and the Kansas Department of Commerce;

- Five associate directors (four who provide technical assistance and provide oversight of programs of study, Perkins monitoring, technology, instructor internships, and statewide nursing initiatives; and one who assist with program and curriculum development);
- Associate Director of institutional research;
- Associate Directors of finance (one full-time and one half-time position); and an
- Associate Director of Communications (one half-time position).

The state has no formal governance structures for administering public and private colleges and universities and private career schools outside KBOR and/or KSDE. The six state public universities are governed by KBOR, although they do not participate in Perkins. One public municipal university is coordinated by KBOR, which means they have their own governing board, but must get KBOR approval for advance degree level programs. (Note: This university does offer some AAS programs that are also Perkins-approved programs.)

Private colleges and universities and private for-profit career schools must have KBOR approval to operate and grant degrees within the state, and state operational rules and regulations have been established for these institutions. KBOR has a director responsible for private postsecondary institutions—both for-profit and nonprofit. Other than articulation agreements between technical/community colleges and two of the state universities, there are no local partnerships with these agencies. And although some personnel from state educational service centers participate in regular CTE meetings with K–12 and community/technical colleges, no representatives from public and private colleges and universities or private career schools are represented.[6]

Challenges and Benefits of State Administrative System

The new postsecondary state administrative structure grew out of recommendations made by the 2007 legislative task force. Since the system is still new—the Authority was only created in 2007 and some positions are still vacant—state administrators believe that the organizational structure will help the state make better use of its CTE resources. Prior to the reorganization, only Perkins-approved programs that awarded a technical certificate and AAS degrees were identified as CTE. The new state structure expands the scope of state planning beyond Perkins, instituting a more systemic view of career preparation that better aligns the states secondary and postsecondary delivery systems, while addressing the state's unique economic and workforce needs.

[6] Education service centers provide services for multiple smaller local education agencies and serve as consortia administrators for Perkins funds.

State administrators also believe that the fifty-fifty split of federal Perkins resources across the secondary and postsecondary sectors helps strengthen CTE services. Because each agency is equally funded, the message is that both sectors are important players in the CTE arena. State staff at the secondary and postsecondary agencies also have established a good working relationship and are collaborating to implement clusters and programs of study to create a seamless educational connection. Splitting resources also has meant that fiscal administrators at both the KBOR and KSDE have had to work together to ensure that funds are not sitting idly, and that the two agencies communicate regularly to coordinate and monitor program expenditures.

Delivery Models

CTE services are offered in a variety of secondary and postsecondary agencies. Due to the rural nature of the state, secondary school districts are encouraged to form consortia; federal Perkins funding flows to 26 consortia with 222 members. At the postsecondary level, CTE programs are offered in community colleges, technical colleges, technical schools and a university, all governed at the local level and coordinated by the KBOR.

Kansas currently has four area technical schools (governed by local school districts) and five area technical schools that are part of a community college (either by merger or design) that serve secondary, adult, and postsecondary students. The state is in the process, however, of merging or affiliating the schools currently connected to local USD's with a community or technical college, or requiring that each become an accredited technical college with an independent governing board. The expectation is that by July 1, 2008, all postsecondary institutions administered by the KBOR will be capable of awarding an associate's degree. While secondary students will still be permitted to attend area schools, these institutions will be reclassified as postsecondary, degree-granting institutions.

Although the state has not, to date, collected data on adults participating in technical programs, the state does offer short-term technical programs of less than 16 credit hours that serve adult learners. The state is in the process of developing a new application to allow institutions to submit data on adults participating in short-term programs, but does not yet have a time frame for when these data will be available.

Student Support Services

Kansas provides a variety of services to support students at the secondary and postsecondary levels. Activities are primarily funded from the federal Perkins state leadership resources. Among the permissible uses of state funding, the states provide a

number of unique programs with potential application in other states. Programs that may be worthy of replication include:

- **Kansas Career and Technical Education Resource Center**—Jointly funded by secondary and postsecondary state leadership resources, the Center provides technical assistance and material support to secondary and postsecondary institutions and faculty to support program improvement activities. Staffed by a Center director and administrative aide, the Center maintains a website with resource materials, publications, a calendar of upcoming events, and links to other important information. Center staff provides support in a variety of subject areas, including curriculum design, professional development, career guidance and academic counseling, career cluster implementation, preparation for nontraditional training and employment, and career technical student organizations. The Center also provides outreach services to state staff, career and technical student organizations, state conferences, workforce development partnerships, and all other CTE stakeholders. The website may be accessed at http://www.kcterc.org/.

- **Kansas Career Pipeline**—An Internet-based system, the Pipeline was developed to provide students and other citizens with career awareness and planning information. Modeled after systems in use in Missouri and Nebraska, the Pipeline helps individuals match their personal career interests to current and emerging employment needs. The website features links for students, parents, and educators, and provides information on workforce centers and career interest planning tools. Individuals may also take a free Kuder career planning assessment to help them identify their preferred career options. Plans are also underway to develop an employer-posting link, which will allow firms to provide information about job offerings and scholarship and internship opportunities. The website may be accessed at http://www.kansascareerpipeline.org.

- **Connecting Education and Employment Conference**—Each year, the KBOR and KSDE sponsors a joint secondary and postsecondary conference to provide educators with information on state initiatives and promising instructional strategies. The conference features presentations by education and business and industry experts; breakout sessions organized around topical areas; and plenary sessions with keynote speakers. A copy of the February 2008 conference can be found at http://www.kcterc.org.

- **Breaking Traditions Scholarship**—Each year, the KBOR sponsors an annual statewide competition to award outstanding male and females students who are enrolled in CTE programs that lead to nontraditional employment. Corporate sponsors from business and industry and organizations interested in promoting nontraditional employment donate the scholarship funds that are awarded. Two regional winners are selected from each of the state's four regions, and two state

winners from the regional pool. Each regional winner receives a $250 scholarship, and each state winner receives a $500 scholarship.

- **Math-in-CTE Program**—Kansas is participating in the National Research Center for Career and Technical Education's "Jump Start 2" program, which is an instructional model designed to assist instructors in identifying and teaching mathematical concepts that are embedded within CTE curriculum. The state is sending five teams to the training, which must be composed of one CTE and one mathematics instructor. Teams will commit to 10 days of training and agree to serve as statewide leaders in helping train other instructors throughout the state. More information can be downloaded at http://conferences.ksde.org/Default.aspx?alias=conferences.ksde.org/mathincte.

- **Project NEXT STEP**—In October 2007, KBOR's Adult Education program was awarded a grant from U.S. DOE/OVAE to implement NEXT STEP, which is designed to enhance the state's efforts to transition adult learners completing the Adult Education program into postsecondary CTE programs and training opportunities. The project includes adding higher levels of language arts and mathematics courses within the Adult Education program and identifying additional support services to help these adult learners transition into postsecondary CTE programs. This project is being implemented in seven of the state's community colleges.

Career Clusters and Pathways

Kansas has adopted the 16 career clusters identified by the States' Career Clusters Initiative. These clusters have been consolidated by the state into six broad career fields, including:

1. Environmental and Agricultural Systems
2. Arts, Communication, and Information
3. Business, Marketing, and Management
4. Health Science
5. Human Resources and Services
6. Industrial, Manufacturing, and Engineering Systems

For example, the Human Resources and Services cluster encompasses four cluster areas, including (1) Law, Public Safety, and Security, (2) Education and Training, (3) Government and Public Administration, and (4) Human Services. Pathways within each cluster, corresponding to those identified by the States' Career Clusters Initiative, outline career specializations in which students may concentrate.

The decision to consolidate the 16 clusters into 6 career fields was driven, in part, by existing program organization, and, in part, based on information obtained from neighboring states. Prior to adopting the cluster organization, the KSDE maintained six education program consultants, each with an area of expertise that overlapped the current career field organization. State administrators also consulted with Nebraska CTE administrators, and, after reviewing state materials, believed that the state's organization of clusters and pathways was a good fit for Kansas. State administrators also reported that, due to Kansas' rural composition, consolidating the career areas into six fields enables small, isolated districts to offer students access to two or more broad career fields, as compared to only a subset of more focused career cluster and pathway areas.

State expectations are that all secondary and postsecondary CTE programs leading to a technical certificate and/or an associate's degree will create a Program of Study that incorporates cluster and pathway knowledge and skills. Institutional CTE plans, to be submitted in spring 2008, must include a plan for the development of local programs of study and a timeline for their implementation for each approved program. Any new programs implemented in the 2009 fiscal year or thereafter must also provide a program of study plan and implementation timeline as part of the approval process for receiving Perkins funding.

Content Standards and Curriculum

At the secondary level, Kansas has formed statewide career cluster curriculum advisory committees for each of the 16 career cluster areas identified by the States' Career Clusters Initiative. These committees, composed of secondary and postsecondary instructors, counselors, administrators, and representatives from business and industry and professional organizations, are working to develop programs of study models for state approval. Project work builds upon the knowledge and skills adopted by the career clusters initiatives, with committee members working to identify appropriate courses for instructional delivery.

Prior to establishing the KBOR Authority, postsecondary programs in Kansas varied across a number of dimensions. For example, one study of automotive technology programs throughout the state reported that, though the end result of training—award of a technical certificate or associate's degree—was similar, that there were differences across institutions in the number of credit hours and semesters of training required to complete the program. Program variations were due, in part, to local control over institutional offerings, and, in part, to competition among providers, who felt they needed to differentiate their programs from other institutions to attract learners.

To standardize postsecondary programs across institutions, better align secondary and postsecondary coursework, and improve cost effectiveness, in 2006 Kansas initiated a statewide standards and curriculum development process. The *Kansas Workforce Education Curriculum Project* brought together instructors from the state's technical colleges, technical schools, and community colleges to standardize CTE program offerings across institutions. The project goal is to identify core program standards and course outcomes that all institutions, regardless of where they are located, can use to structure programs.

Project work initially focused on 12 subject area disciplines. Curriculum committees composed of subject matter experts from education, and business and industry, worked to identify common program lengths, program names, course lengths, course names, CIP codes, course standards, course curriculum, and learner outcomes. Because institutional participation in this project was voluntary and the limited number of program areas involved, the results were very limited and did not drive the systemic change desired.

Along with establishing the Technical Education Authority, Kansas has developed a new Program Standards and Alignment process. This process includes establishing State Technical Committees, made up of business and industry representatives (employers) and accrediting entities for each program area. These committees will identify and recommend standards to meet the needs of business and industry (including of competencies and learner outcomes, equipment, instructor qualifications, industry-based credentials, etc.). State Faculty Committees then meet to develop curriculum for state approval that will then be implemented in each postsecondary institution delivering the program. The end result will be that programs eligible for state funding will be consistent—consistent program titles, CIP codes, program lengths, and end of program assessments as well as consistent course titles, length, and competencies/learner outcomes.

To help standardize curriculum, the state is also using Worldwide Instructional Design System (WIDS), originally developed for the Wisconsin technical system, during the curriculum development phase. The state is also in the process of building a statewide curriculum database that educators throughout the state can access to download the approved curriculum and related resources.

Statewide CTE Assessments

Kansas does not currently have any state-recognized technical skill assessments at the secondary or postsecondary levels. At the secondary level, state reporting for Perkins is based on the number of students who achieve proficiency on state-approved, locally-developed technical skill competencies. Competencies must be based on industry standards validated by the local program advisory committee for each program

and approved by KSDE. Students are asked to demonstrate proficiency in the classroom, clinical, and/or work environment, with students' proficiency level evaluated and reported by the instructor. The state is also planning to incorporate cluster knowledge and skills into statewide exams, and is working with a state university to begin developing assessments.

Postsecondary institutions report on the number of students who obtain certification and/or licensure. In cases where licensure or certification is not required for employment, many programs encourage, but do not require, program graduates to sit for an examination. Currently, the state is seeking to identify specific assessment instrument(s) for each program area through institutional follow-up surveys of program concentrators and/or direct contacts with assessment vendors. Where possible, KBOR staff will develop agreements with state licensing/credentialing agencies and assessment vendors to gain access to individual student performance data.

Delivery System Alignment

Kansas has put in place a number of policies to support the alignment of CTE services among secondary and postsecondary institutions, and with business and industry. These policies include:

- **High School and Postsecondary Articulation**—Many existing articulation agreements were developed through Tech Prep and/or other cooperative initiatives. The state also has a postsecondary concurrent enrollment policy that provides secondary students with an opportunity to earn postsecondary credit while still enrolled in high school. It is anticipated that on-going efforts to align postsecondary program and course titles, program and course lengths, and learner competencies will improve the development of articulation agreements potentially on a statewide basis.
- **Programs of Study**—Programs of Study development began during the FY 2008 transitional plan year as part of state plans to phase-in development of Programs of Study between existing CTE programs, with the goal of having all state-approved programs function as Programs of Study by June 30, 2013. It is anticipated that once a state Program of Study model has been created, institutions will need one year to implement their program. The state timeline for model development is:
    - By June 30, 2009 (end of FY 09)—at least 4 state career cluster Program of Study models (including associated pathways within each cluster) will be developed and approved;

- By June 30, 2010 (end of FY 10)—at least 4 additional state career cluster Program of Study models (including associated pathways within each cluster) will be developed and approved;
- By June 30, 2011 (end of FY 11)—at least 4 additional state career cluster Program of Study models (including associated pathways within each cluster) will be developed and approved; and
- By June 30, 2012 (end of FY 12)—the remaining 4 state career cluster Program of Study models (including associated pathways within each cluster) will be developed and approved.

Approved cluster/pathway models will provide a framework for use by local institutions in developing local Programs of Study addressing CTE program offerings at each institution. Institutions will be encouraged to follow the implementation process outlined in the resource materials developed by the career clusters initiatives. A KBOR CTE staff member will also work with a representative from each postsecondary institution to coordinate the Programs of Study initiative. Each postsecondary institution is assigned to a geographic quadrant of the state, in which a designated KBOR CTE staff member is assigned to provide technical assistance. KSDE staff members also serve as career cluster consultants to provide statewide technical assistance and support for secondary career and technical programs and institutions.

The Kansas Advisory Committee for Career and Technical Education provides input and advice primarily to the KSDE, Kansas State Board of Education, but also to KBOR, and the Authority on the provision of CTE programs at the secondary level. Committee membership includes representatives from business and industry representing each of the 16 career clusters, large and small businesses, and the geographic diversity of the state. The group meets twice each year to provide input on the delivery of CTE and on trends in state workforce development needs.

The Kansas Secretary of Labor, the Kansas Secretary of Commerce, and the Commissioner serve as ex-officio members and are active participants on the Authority. Their participation helps to ensure the joint planning and coordination of programs and activities among these state agencies and to strengthen existing partnerships. In addition the Department of Commerce and KBOR jointly support a shared staff position to focus on and increase collaboration related to workforce development training opportunities and CTE programs. As a result, the capacity of postsecondary institutions to develop curriculum and deliver training appropriate for Kansas companies has been enhanced.

An interagency planning team has been established to consolidate state planning and to ensure coordination and nonduplication of programs and activities. The planning team is made up of program level staff from Workforce Services and Registered Apprenticeships (Commerce), and Academic and Technical Education (KSDE, and Career and Technical Education (KBOR/Authority). This team will meet on a quarterly basis to

- identify barriers to the continuum of K–20 education and training;
- ensure, at the program level, that education and workforce development programs, policies, and planning are aligned to prevent duplication of services and inefficient use of resources;
- participate in multi-agency state planning for federal compliance purposes; and
- make recommendations to agency leadership for improving resource, program, and policy alignment.

Funding Models and Formulas

Kansas funds CTE services at the secondary and postsecondary levels with a combination of state resources derived from state general funds, which includes resources generated from local taxing effort (i.e., property taxes and local bonds), and using federal Perkins funding.

Fiscal Allocation Method: Federal Perkins Funding

Kansas received a total of $11,335,552 in Title I funding for allocation in the 2007–08 program year. The state plans to consolidate its Title II Tech Prep funds, totaling $1,066,366, with its Title I Basic Grant allocation, meaning that the state will distribute $12,401,918 in program improvement funds across the state for the 2007–08 program year (table D-4).

The Kansas KSDE and KBOR have agreed to share Perkins funding equally across the two agencies, with each receiving 50 percent of federal funds. This approach ensures that secondary and postsecondary education institutions have equal opportunity to offer quality programs and initiatives, and, it is believed, this will foster stronger, more consistent program linkages across levels throughout the state.

Table D-4. Kansas Federal Perkins Allocations: 2007–08 Program Year

Total Federal Funding[1]	**$12,401,918**
Title I Basic Grant	12,401,918
Title II Tech Prep[1]	†
Perkins Formula Distribution (88.06 percent)	$10,541,630
Secondary	5,270,814
Postsecondary	5,270,814
State Leadership (10 percent)	1,240,192
Nontraditional	150,000
Corrections/Institutions	124,146
State Administration (1.94 percent)	620,096
State Match	620,096

† Not applicable.
[1] Kansas is consolidating $1,066,366 in Tech Prep funds with its Basic Grant funds.
SOURCE: *Kansas State Plan for Career and Technical Education: 2009–2013* .

Allocation Mechanism

Federal funds are allocated according to legislative formulas, with 85 percent of funds distributed among local recipients, 10 percent set aside for state leadership activities, and 5 percent for state administration. Of the 85 percent earmarked for local distribution, the state has established a reserve fund of 10 percent, which is allotted through a competitive grant process. Permissible uses include providing support for innovative CTE programs or delivery approaches, or program expansion in areas with critical workforce development needs.

To compete for reserve funding, agencies must be located in a rural area—defined as a county with a population density of less than 150 persons per square mile—or, at the postsecondary level, enroll large numbers or high percentages of CTE students.[7] Qualifying postsecondary institutions are those with 1,000 or more CTE students enrolled in an approved CTE certificate or associate degree program, or whose percentage of enrolled CTE students is 60 percent or more of the institution's total population for the previous year.

State leadership funding is used to support 12 of the 15 permissible activities stipulated in the Perkins legislation.[8] The state also has allotted 1 percent of its leadership

[7] Since all secondary agencies in Kansas must offer CTE curricula as part of their required curricula for graduation, secondary enrollments are not used to determine school districts' reserve fund eligibility.
[8] Kansas supports 12 of 15 permissible activities: (1) provision of technical assistance to local providers; (2) improvement of career guidance and academic counseling programs; (3) establishment of Tech Prep agreements between secondary and postsecondary agencies; (4) support for cooperative programs;

funds for support services to adults and youth in state correctional institutions, and $150,000 for support activities that prepare individuals for nontraditional fields. The state will, however, be reducing by half its nontraditional allocation to $75,000 in the 2008–09 program year.

State Resources: Secondary

State general fund allocations for secondary education are based on regular, full-time equivalent (FTE) student enrollment within school districts. Enrollment adjustments, in the form of student weights, are designed to compensate districts for the added cost of serving certain high cost populations, for transporting pupils to or among schools, for operating smaller or larger enrollment districts, and for adding or operating new school facilities. In total, the state provides 13 weights, one of which provides supplemental funding for students participating in CTE programs.

Following the 1992 legislative session, Kansas attached a 0.5 weight to FTE students participating in approved CTE programs. Although current state staff were not present for the discussions relating to changing the funding formula, the assumption is that the formula was modified to address the higher costs associated with offering CTE coursework (e.g., equipment costs, lower student-teacher ratios).

Only classes at the 10th-grade level or above are eligible for additional weighting, which is calculated by multiplying the FTE enrollment in CTE programs by a factor of 0.5. District revenue generated by the weight must be spent for CTE services. To be approved for state weighted funding, secondary programs must assure the state that program offerings have adequate facilities and equipment to support the teaching of state-adopted technical and academic content standards, and that program technology reflects that of current and emerging systems used by business and industry within career cluster areas.

State expenditures for public K–12 education totaled $5.1 billion in 2006–07. State general fund revenues accounted for roughly $2.9 billion of this figure, or roughly 56 percent of total statewide spending for education. Remaining funds were generated from local revenue and federal sources. State funding in support of CTE instruction totaled $84.6 million, or roughly 1.6 percent of total statewide spending. These resources, generated based on CTE enrollments, must be spent in support of CTE instruction. The state also provided a total of $18.6 million in support of area vocational schools, which flowed through the postsecondary system (table D-5).

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(5) support for career technical student organizations; (6) support for charter schools offering CTE programs; (7) support for CTE programs that emphasize all aspects of an industry; (8) support for family and consumer sciences programs; (9) support for education and business partnerships; (10) support to improve or develop new CTE programs; (11) provide CTE services to adults and dropouts; and (12) offer assistance to help students find jobs or to continue their education.

Table D-5. Kansas State Revenues for Secondary CTE: 2006–07

	Dollars	Percent
Total State Spending	**$5,142,076,915**	100.0
General Fund	2,888,960,769	56.2
Local Revenue	1,867,723,060	36.3
Federal Revenue	385,393,086	7.5
Vocational Education Formula Weight	84,555,763	1.6
Area Vocational School Funding	18,608,813	0.4

NOTE: Detail may not sum to totals because of rounding.
SOURCE: Kansas Education Comparative Performance and Fiscal System.

The 0.5 weighted funding cannot be spent for a purpose associated with non-CTE classrooms, offices, facilities, events, or staff. Acceptable expenditures include, but are not limited to:

- extended summer contracts;
- equipment for shop, labs, or classroom;
- computers, digital cameras, scanners, printers;
- software and site licenses;
- instructional materials, videotapes, textbooks, DVDs;
- internet services, connections, subscriptions, and wiring expenses;
- facility improvements such as painting, rewiring, or expanding classrooms;
- professional organization dues and expenses;
- in-service registration, transportation, meals, and motel rooms;
- substitute teacher when instructor attends conferences or in-services; and
- consumable supplies required for operation of the program.

Statewide CTE funding is based on student enrollment in identified high school courses as of September 20th of the school year. Although elementary, middle school (K–8), and introductory high school courses are not eligible for weighting, 9th-grade courses within a program sequence may be funded if they are not offered as an introductory course. Programs must, however, include one introductory course taught by a certified CTE instructor.

According to the State Director, the use of weighted funding creates a strong incentive for local districts to classify coursework as CTE in order to quality for additional resources. To ensure that only qualified courses are funded, the state has developed detailed criteria defining CTE classes, and state staff closely review district proposed coursework. Also, as part of its annual audit of district enrollments, local auditors carefully review student coursetaking records to verify that locally-reported counts are valid.

In the Director's opinion, the additional 0.5 CTE student weight has helped shelter programs in times of budget deficits, since districts would otherwise cut their higher cost CTE programs in favor of lower cost academic ones. Weighting has also protected trade and industry and other programs that require less advanced postsecondary education, because, with the advent of Career Pathways, local districts are gravitating toward adopting technologically advanced programs, such as science, technology, engineering, and mathematics (STEM) programs that terminate in an associate's or bachelor's degree.

State Resources: Postsecondary

Kansas does not currently earmark state general fund resources to support CTE services offered in community colleges. Prior to 2001, the state contained a multiplier of 1.75 per credit hours in state aid for CTE programs. In 2001, the state adopted a new operating grant formula which removed state aid. According to state staff, the new formula was implemented at a time of a tremendous state recession, which may have influenced state funding policy.

As in Oregon, state funding is allocated to community colleges based on student credit hours, with CTE participants weighted no differently than other students. Colleges qualify for state aid based on their total credit hours generated, receiving a pro rata share of the state resources available in the Community College Operating Grant. In 2006–07, the state calculated that $27,902,759 was distributed among colleges based on vocational credit hours alone; however, because funding is not categorical, colleges are free to allocate resources across the institution to address their locally-identified needs.

According to the state director, Kansas is planning to modify its postsecondary allocation formula to concentrate funding on high-wage, high-demand programs identified by the state. These programs include: Advanced Manufacturing, including Aviation; Healthcare; Energy, including conventional and renewable sources; Bioscience; and Communications. Although the state has contemplated adopting a weighted formula similar to that used in secondary education, it is now considering incorporating cost reimbursement as the distribution criteria. However, the state has not yet determined a timeline for adopting a modified formula.

Kansas earmarks resources for distribution to technical colleges as postsecondary aid. In 2006–07, the state allocated $32,365,765 to support programs offered in technical colleges and areas schools (table D-6). Since this money is destined for technical institutions, it is categorical in the sense that it is only used to support CTE programs.

Table D-6. Kansas State Funding Allocations for Postsecondary CTE

	2006–07	FY 2008
Total State Spending	**66,413,524**	**72,591,954**
Postsecondary Aid[1]	32,365,765	34,010,397
Community College Operating Grant (Voc. hours only)[2]	27,902,759	29,018,870
Vocational Education Capital Outlay Aid	2,565,000	2,565,000
Nursing Initiative Grants		
Nursing Faculty Salary/Supplies	1,200,000	1,800,000
Nurse Educator Scholarships	200,000	200,000
Nursing Facility & Equipment Upgrades	2,000,000	0
Technical Education Technology & Equipment Grants	0	4,000,000
Innovative Technology Grants	130,000	130,000
CTE Faculty Internship Grants	50,000	50,000

[1] Postsecondary Aid is primarily for postsecondary technical institutions.

[2] Reflects portion of community college operating grant for vocational hours.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: Kansas Board of Regents, personal communication, 2008.

Equipment and Program Start-up Funding

Eligible recipients at the secondary and postsecondary level may commit up to 50 percent of their Perkins funds for the purchase of equipment that integrates such technology into programs. Postsecondary institutions also have access to state funding sources, including Technical Education Technology and Equipment Grants and Innovative Technology Grants appropriated by the legislature, which are distributed through either a formula or competitive grant process.

In the 2008 fiscal year, the Kansas Legislature appropriated $4.0 million in state funding to support the purchase of technology and equipment for CTE programs located in technical schools, technical colleges, and community colleges. These state Technical Education Technology and Equipment Grants were distributed by KBOR through a competitive process and require matching funds. Grant awards are also subject to an institution meeting its annual performance agreement with KBOR.

Program start-up or expansion is funded at both the secondary and postsecondary levels using Reserve Funds awarded to agencies on a competitive basis. These funds are intended to support the development or expansion of CTE programs that address regional or statewide workforce development needs in high-skill, high-wage, or high-demand occupations in critical or emerging industries. These projects often involve requests to purchase innovative technology and equipment upgrades.

Facility Construction

Postsecondary institutions have access to state Vocational Education Capital Outlay Aid, which can be used to expand or upgrade CTE facilities. According to state administrators, this funding, which amounted to roughly $2,565,000 in the 2008 fiscal year, is not sufficient to build new facilities, which are funded out of local tax sources.

Other

The state provides funding for Nursing Initiative Grants, intended to fund faculty salary and supplies, Nurse Educator scholarships, and Nursing facility and equipment upgrades. The state also provides professional development support through its CTE Faculty Internship Grant program.

Career and Technical Student Organizations

The state uses federal Perkins funds from its secondary and postsecondary state leadership resources to support advisors for each career technical student organization (CTSO) and related student organization activities. For example, federal funds were used to enable CTSO advisors to attend conferences and workshops and to provide services to state chapters. Some institutions may also use their federal Basic Grant funds to support student organizations.

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Appendix E: Michigan

System Characteristics

As of 2006, Michigan's population was 10.1 million and the median age of residents was 37.3 years old. Twenty-five percent of Michigan residents were under 18 years old and 63 percent were between 18 and 64 years old. The state is predominantly White (78 percent) with African Americans making up the next largest racial or ethnic category (14 percent).

Michigan's high school completion rate is high, with 87 percent of residents age 25 years and older reporting they have a high school diploma or equivalent. Twenty-five percent of Michigan residents age 25 and older have earned a bachelor's degree or higher. The 2006 median income of Michigan households was $47,182. Approximately 14 percent of Michigan residents lived in poverty, and 10 percent of all families had incomes below the poverty level (U.S. Census Bureau, n.d.).

Service Providers

Michigan offers Career and Technical Education (CTE) services to secondary students through more than 350 local high schools, 60 CTE area centers where students attend for a half day, and 15 trade academies. The state's 28 community colleges, approximately 50 private colleges, 15 public colleges and universities, and more than 371 proprietary schools also offer career and technical training (table E-1) (Michigan Department of Education and Michigan Department of Labor and Economic Growth, 2007; Michigan Department of Labor and Economic Growth, n.d.-a.)

Table E-1. Characteristics of Michigan CTE System: 2006–07

Local Education Agencies	Number
Consortia (Secondary and Postsecondary)	25
Individiual Providers	
High Schools	380
Area Skill Centers	60
Trade Academies	15
Community Colleges	28
Tribal College	1
Public 4-year	15
Private 4-year	50
Private Career Schools	371

SOURCE: *Carl D. Perkins Consolidated Annual Report: Program Year July 1, 2006–June 30, 2007;* 2006–07 Perkins Enrollment and Core Indicator data—Unpublished; *Michigan Proprietary Schools*.

Student Characteristics

More than 165,000 secondary students enrolled in a state-approved CTE course in the 2006–07 academic year, and more than 220,000 community college students took a CTE course in both state-approved and non-state-approved CTE programs. One in five high school participants in 2006–07 met the standard to become a concentrator, while one in four community college participants achieved concentrator status (table E-2). Michigan's secondary concentrators are high school students enrolled in a state-approved CTE program who have completed at least 60 percent of the required program course work. Postsecondary concentrators are community college students who officially enrolled in an occupational program and who have earned at least 12 credits (excluding developmental course work) towards the completion of an award (U.S. Department of Education, 2007).

Table E-2. Michigan CTE Participants and Concentrators: 2006–07

	High Schools			
	Participants		Concentrators[1]	
	Number	Percent	Number	Percent
Total	**165,079**	**100.0**	**32,629**	**100.0**
Male	93,591	56.7	18,014	55.2
Female	71,488	43.3	14,615	44.8
Unknown	0	0.0	0	0.0

	Community Colleges			
	Participants		Concentrators[1]	
	Number	Percent	Number	Percent
Total	**224,383**	**100.0**	**63,233**	**100.0**
Male	107,530	47.9	26,562	42.0
Female	116,853	52.1	36,502	57.7
Unknown	0	0.0	169	0.3

[1] Based on the denominator of the Perkins Diploma/Completion for secondary and the Technical Attainment measure for postsecondary.

NOTE: Attainment measure for postsecondary. Detail may not sum to totals because of rounding.

SOURCE: 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

The state's concentrators are primarily White and approximately one-quarter of secondary concentrators and one-third of postsecondary concentrators are considered economically disadvantaged (table E-3). Economically disadvantaged students are high school CTE students who are low income and community college CTE students who are eligible for Pell Grants or are receiving assistance from the Bureau of Indian Affairs.

Table E-3. Characteristics of Michigan CTE Concentrators: 2006–07

	High Schools		Community Colleges	
	Number	Percent	Number	Percent
Race/Ethnicity	**32,701**	**100.0**	**63,233**	**100.0**
American Indian	335	1.0	677	1.1
Asian/Pacific Islander	584	1.8	964	1.5
Black	4,228	12.9	6,463	10.2
Hispanic	865	2.6	1,772	2.8
White	26,681	81.6	48,168	76.2
Other or Unknown	8	0.0	5,189	8.2
Special Populations[1]	**23,658**	**100.0**	**23,286**	**100.0**
Disabled	3,621	15.3	1,279	5.5
Economic Disadvantaged	5,665	23.9	7,246	31.1
Single Parent	97	0.4	999	4.3
Displaced Homemaker	3	0.0	382	1.6
Limited English Proficient	493	2.1	393	1.7
Nontraditional	2,321	9.8	1,231	5.3
Tech Prep	8,839	37.4	2,708	11.6
Other Barrier	2,619	11.1	9,048	38.9

[1] Special populations shows duplicated counts of students because some students have more than one barrier.
NOTE: Concentrators are based on the denominator of the Perkins Diploma/Completion for secondary and the Technical Attainment measure for postsecondary. Detail may not sum to totals because of rounding.
SOURCE: 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

Administrative Structures

The Michigan State Board of Education (SBE) is the eligible agency for Perkins funds and also serves as the State Board for Career and Technical Education. The Board has eight elected members as well as two ex-officio members: the Superintendent of Public Instruction and the Governor's education advisor. The SBE delegates Perkins secondary responsibilities to the Michigan Department of Education (MDE) and postsecondary responsibilities to the Michigan Department of Labor and Economic Growth (DLEG). The two agencies work together to deliver CTE services and policy guidance to secondary and postsecondary institutions and educators (Michigan Department of Education and Michigan Department of Labor and Economic Growth, 2007).

The state has placed a strong emphasis on career-related educational initiatives and is building partnerships and delivery systems that parallel the Workforce Investment Act's (WIA) Workforce Development Board (WDB) regions. The state feels that when key education programs are aligned geographically and organizationally with job training and workforce development activities, both the education and workforce systems benefit through collaboration, reduced competition, and increased influence. In order to support this effort, the Office of Career and Technical

Education, Michigan Department of Education, uses a single, unified plan and application process for local Perkins funds that includes both the Perkins basic grant and Tech Prep grant programs and utilizes the same regional structure the state employs uses for WIA. In addition, each workforce region has identified an Education Advisory Group (EAG), which is tasked with coordinating educational programs according to the needs of the region in collaboration with the regional Workforce Development Board (Michigan Department of Education and Michigan Department of Labor and Economic Growth, 2007).

State Agency Organization: Secondary

The Director of the Office of Career and Technical Education (OCTE) in the Michigan Department of Education provides oversight and coordination of all Perkins activities. The office also implements and monitors the secondary Perkins grants and provides technical assistance to secondary CTE programs.

In 2006, the Michigan Legislature enacted new and rigorous changes to high school curriculum content and high school graduation requirements. The language in the law allows for delivery of academic content using a variety of methods, through CTE coursework. These changes prompted a transition of the secondary Perkins program office from the Michigan Department of Labor and Economic Growth to the Michigan Department of Education. This move enables a closer working relationship between state level curriculum consultants for the specialty areas in CTE and the academic curriculum consultants who offer specialized support in mathematics, English/language arts, social studies, and science.

State Agency Organization: Postsecondary

The Michigan Department of Labor and Economic Growth (DLEG) is made up of several labor and economic development agencies and commissions that promote job creation and economic growth. The Office of Postsecondary Services, within the Bureau of Workforce Transformation, provides "policy interpretation and guidance, grant administration and oversight, audit resolution, and technical assistance to Michigan universities, community colleges, independent colleges, proprietary schools and licensed establishments" (Michigan Department of Labor and Economic Growth, n.d.-b).

In DLEG, the Director of the Bureau of Workforce Transformation is responsible for the Office of Postsecondary Services, the Office of Adult Education, and the administration of the community college Michigan Technical Education Centers (M-TECs), which provide on-demand training for Michigan's businesses. The Community College Services Unit (CCSU), in DLEG's Office of Postsecondary

Services (OPS), implements, oversees, and monitors Perkins grants to the community colleges within the state.

CTE System Partnerships

Michigan has formal and informal administrative partnerships between K–12 and community colleges at the state level. However, the administrative-level linkages to public and private colleges and universities and private career schools are very weak. The state reports that non-profit and for-profit private colleges are sometimes more open to accepting college credits students earn in high school than community colleges and public four-year schools. Administrators relate that this is more a function of the competition for students rather than a result of administrative collaboration.

Some high schools have articulated programs with their local public and private postsecondary institutions, and Davenport University recently agreed to enter into a statewide articulation agreement with Michigan secondary programs. Staff believe the disconnect among the public systems may lie in the lack of an education board for universities and community colleges. Because all public postsecondary institutions are independent with independent boards, and there is no education board to bring them together in a formal manner, it is more difficult to create joint policy.

Challenges and Benefits of State Administrative System

According to some state staff, there is a disconnect in the Perkins system in Michigan because the secondary and postsecondary components are housed separately within departments that have different goals and philosophies. The DLEG has a stronger focus on workforce development while MDE emphasizes curriculum and Programs of Study. The differences can sometimes make it difficult to work together, and the State Director related her belief that having all of Perkins together is the key to success in Michigan. The Director feels the opportunity was missed to combine all of Perkins when the secondary piece of Perkins was moved out of DLEG into MDE and the postsecondary piece was left behind. However, the state has no plans to make any further changes to the administrative structure for Perkins in the near future.

Delivery Models

Michigan students have access to CTE in middle schools, high schools, community colleges, universities, and private career schools.

Secondary

The Michigan secondary system has 25 regional planning areas and the state provides CTE programs through local school districts in rural and urban areas, char-

ter/magnet schools, intermediate school districts (ISDs), area career and technical education centers, and trade academies. Michigan also has 53 Career Education Planning Districts (CEPDs), which correspond to the ISD boundaries in many cases. CEPDs facilitate regional planning and assist in the delivery of CTE services in high schools.

Michigan students begin learning about career opportunities through a comprehensive career development process starting with an Educational Development Plan (EDP) in 7th grade. Students learn about high-demand occupations, the importance of high skills, and how wages correspond to both through career exploration, assessments, and other career development activities. Michigan provides students with a variety of resources, including an electronic EDP called *My Dream Explorer*, and an online career course titled *Career Forward*, both of which are available free of charge.

The secondary system also delivers some adult-level career and technical education programs and services. The programs are intended for students who are younger than 20 years old and who have not yet completed high school (Michigan Department of Education and Michigan Department of Labor and Economic Growth, 2007).

Postsecondary

Community colleges, public and private four-year institutions, and private career schools offer CTE in Michigan. The 28 community colleges offer certificate and associate degree programs and courses as well as customized training for specific occupational skills. Local community college boards determine which programs and courses to offer. The Office of Postsecondary Services, Community College Services Unit (CCSU), within DLEG approves courses and programs that can be included in federal programs. Four of the state's public universities and approximately 50 private colleges and universities provide education and training for many high-skill CTE areas as well.

The state also offers on-demand customized training for employers through Michigan Technical Education Centers (M-TECs). The state invested $60 million in 18 M-TECs constructed within the community college system. The M-TECs offer on-demand training, ranging from standard entry level to highly customized packages; learning and meeting spaces; and worker and job skills assessments. M-TEC services are available to private businesses, non-profit organizations, government agencies, and individuals (Michigan Economic Development Corporation, 2007).

Career Clusters and Pathways

Michigan's Career Preparation System (CPS) is designed to give all students the necessary academic, technical, and professional knowledge and skills needed to succeed in their lives and careers. CPS is made up of several programs and initiatives that promote this goal, including Career Pathways. In Michigan, Career Pathways are
defined as "broad groupings of careers that share similar characteristics" (Michigan Department of Education, n.d.-a). The state's Career Pathways framework helps students and educators make meaningful connections to the workforce. The state has designated 6 Career Pathways, based on the 16 national Career Clusters, to cover all career opportunities regardless of educational requirements. The six Career Pathways are:

- Arts and Communications,
- Business, Management, Marketing, and Technology,
- Engineering/Manufacturing and Industrial Technology,
- Health Sciences,
- Human Services, and
- Natural Resources and Agriscience (Michigan Department of Education, n.d.-a).

The state convened Cluster Task Forces in 2006–07 to lead the development of curriculum and resource guides for Career Pathways. The task forces used input from CTE teachers, administrators, counselors, academic teachers, state administrators, employers, and Career and Technical Student Organization directors to develop the materials, which are web-based and linked to the new Michigan academic standards, Michigan Career and Employability Skills, and Michigan Technology Standards. During the same period of time, Michigan also identified statewide standards for high school CTE programs (Michigan Department of Education and Michigan Department of Labor and Economic Growth, 2007).

Michigan postsecondary institutions have been slower in adopting Career Pathways than high schools. With the exception of Ferris State University, most four-year postsecondary institutions have not yet integrated Career Pathways into their operations (P. Cantu, personal communication, May 20, 2008).

Content Standards and Curriculum

Michigan's secondary content standards support schools and teachers in the development of local district curricula. The content standards are made up of a set of learning expectations that were identified by parents, educators, business leaders,

and university professors and are part of the Michigan Curriculum Framework. Michigan also recently developed Grade Level Content Expectations (GLCEs), which give kindergarten through 8th-grade teachers resources to align curriculum and assessments (Michigan Department of Education, n.d.-b).

All of Michigan's CTE secondary content standards were based on the 16 States' Career Cluster "foundation skills."[9] The state has developed Pathway level standards, career and employability standards, and specific technical standards. Michigan wanted to see greater consistency among its secondary programs because in many cases, the curriculum and assessments were different depending on where and when a student took a course. Michigan does not have statewide content standards for postsecondary.

Statewide CTE Assessments

Michigan is currently developing a secondary statewide assessment system for CTE. The state is wrestling with a number of questions, including whether there should be assessments for each program (40 or more) or one test for each of the 16 Career Cluster areas. The state is also considering assessments and working through similar issues for the postsecondary system. Currently, assessments are generally made in the classroom through a variety of methods, including instructor-developed assessments, student projects, and grades.

Future Plans for CTE in Michigan

The state plans to use Perkins funds to strengthen the academic and technical skills of CTE students by encouraging the integration of academics into CTE programs. Michigan will also direct Perkins funds toward evaluations and assessments, including state-approved secondary CTE programs, and will offer professional development for CTE teachers to help them update curriculum, implement CTE statewide technical standards, and mentor new CTE educators. Faculty will have opportunities for work-based learning to increase their experience with current practices and new technologies. Funds will also be directed to updating equipment and instructional resources.

Challenges and Benefits of CTE Delivery

Michigan's State Director for CTE related that there are several challenges associated with area technical centers. Because they are totally devoted to CTE, students cannot get academic instruction on these campuses. They have to leave their home high schools, often in the middle of the day, and travel to get CTE instruction. All the travel time results in students missing out on home school activities such as sports

[9] For more information on the States' Career Clusters initiative, visit the website at http://www.careerclusters.org/index.php.

and clubs. However, the area technical schools offer some of the strongest CTE programs in the state due to their narrow focus. Staff also relate CTE is still not fully integrated into counseling and guidance information, which means students sometimes receive too little information about what CTE opportunities really exist.

Funding Models and Formulas

Michigan Career and Technical Education (CTE) programs are publicly funded through state general funds and federal Perkins funds. High schools and community colleges also receive some additional funding through local bonds and property taxes. Postsecondary institutions have private support from student tuition and fees.

In the late 60s and early 70s, Michigan had access to federal grants that helped with program building for CTE. The Michigan legislature matched over 40 of those grants through line items, acknowledging that CTE was more expensive than some other types of programs. When the federal grants went away over time, the CTE funding remained, along with other line items for other programs.

Perkins Funding

Michigan distributes its Perkins funds so that 60 percent goes to secondary and 40 percent goes to postsecondary. Michigan awards Perkins grants to eligible secondary fiscal agents according to regions. Funding recipients are public educational agencies that offer state-approved CTE programs and services to Michigan students. Applicants are required to submit annual regional plans that show how their services align with the Perkins legislation and address long-term regional CTE goals. Seventy percent of Perkins funds are allocated according to poverty levels in each area as a percentage of the state total. The remaining 30 percent of the funds are allocated in proportion to the census count of individuals aged 5–17 years old in each local education agency as a percentage of the state total (Michigan Department of Education, 2005).

State Secondary Funding

The Michigan State Legislature sets aside categorical State Aid funds to support secondary CTE programs. The funds are known as State Aid Added Cost, and the purpose of the funds is to acknowledge the additional cost of providing CTE programs, and to provide school districts with partial reimbursement for these costs. Each CTE program has an added cost reimbursement rate, which is the difference between the median cost per student hour of the CTE program, based on three years of CTE program expenditures, and the median cost per student hour of the school founda-

tion allowance.[10] Non-vocational program costs are subtracted from CTE program costs.

Services that can be reimbursed include counseling, curriculum development, technology and equipment, supplies and materials, work-based learning, evaluation, career placement services, student leadership organizations, and up to 10 percent of the costs of planning and coordination. Added Cost reimbursement is limited to 75 percent of the added cost of the program, so school districts are required to provide at least 25 percent of total added cost funds (Michigan Department of Labor and Economic Growth, 2005).

State Postsecondary Funding

Michigan utilizes the Gast-Mathieu Fairness in Funding Formula to distribute state aid to community colleges. The Gast-Mathieu formula determines each colleges "need" in dollars based on instructional and non-instructional costs, local funding responsibility, student contributions, tax equalization grants, and all other sources of revenue for each college. The formula uses statewide average cost factors, which it applies to activity measures that are specific to each college. The result is an estimate of the total expenditures expected for each institution, called "Gross Need." The formula is designed to account for the differences in costs faced by the 28 community colleges in Michigan. Each college is independently governed and located in different areas of the state, and therefore may have differences in salary structures, building and construction costs, availability of staff and supplies, student population, and college size (Summers-Coty, 1998).

Support Services, Equipment, and Facility Construction

Secondary and community college institutions use their federal Perkins funds to provide student support services. According to the State Director, approximately 50 percent of Perkins awards are dedicated to support services each year. Michigan does not have a system to provide support services at state level (P. Cantu, personal communication, July 28, 2008).

Community colleges frequently use Perkins funds to support the purchase of equipment, although secondary programs rarely use their federal funds for that purpose. Perkins funds are used by all secondary and community college institutions to purchase supplies and materials. Institutions do not use Perkins or state funds to support capital expenditures (P. Cantu, personal communication, July 28, 2008).

[10] A student hour is defined as one student, enrolled 1 hour per day, 5 days per week, for 36 weeks.

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Appendix F: Nebraska

System Characteristics

Nebraska's population of 1.8 million residents was distributed across 76,872 square miles in 2006. According to U.S. Census data, Nebraska had a population density of just over 22 persons per square mile in 2000, which is just over one-quarter of the national average of 80 persons, ranking it eighth out of the eight states included in this study (U.S. Census Bureau, n.d.). The state population is concentrated in two geographic areas: around Omaha and along interstate 80 (Nebraska Department of Education, 1999).

The median age of Nebraska residents was roughly similar to that of the U.S. population in 2006 (36.0 vs. 36.4 years, respectively) (U.S. Census Bureau, 2006), with federal projections suggesting that the state will add less than 100,000 residents over the next quarter century. In keeping with national statistics, the state population is projected to age during this period, with the median age projected to increase to 37.9 years in 2020, compared to a nationwide average of 38.0 years over the same period (U.S. Census Bureau, 2005).

The state population is primarily White (over 88 percent), with a very small immigrant population (approximately 5 percent born outside of the United States). Almost 90 percent of state residents age 25 years and older have obtained a high school diploma and about a third have a bachelor's degree or higher. The state's median family income was $56,940 in 2006, which is just below the national figure ($58,526). Approximately 11 percent of the state's population resides below the national poverty level (U.S. Census Bureau, 2006).

Service Providers

All secondary Career and Technical Education (CTE) services are provided through 283 school districts in Nebraska. Of the districts offering secondary CTE, only 27 receive funding on their own under the federal Perkins funding formula. The other 256 districts qualify for funding as part of a consortium, which are typically formed around the state's 16 existing educational service units. At the postsecondary level, federally funded CTE programs are offered in 6 community colleges (at 17 campuses). CTE services for adults are also administered through the community college system (table F-1).

Table F-1. Characteristics of Nebraska CTE System: 2006–07

Local Education Agencies	Number
Offering CTE Services	283
Consortia	256
Individiual Providers	27
Community Colleges	6

SOURCE: *Nebraska State Plan for Career and Technical Education,* 2009–2013; *Nebraska Consolidated Annual Report: 2006–07*; 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

Student Characteristics

Nebraska reported serving 110,3302 secondary and 51,861 postsecondary students in CTE programs during the 2006–07 program year. At the secondary level, males were slightly more likely to participate in CTE than females, as compared to relatively equal percentages of each sex participating at the postsecondary level.

During the 2006–07 program year, the last under the 1998 Perkins legislation, Nebraska defined a CTE concentrator at the secondary level as a student who completed at least three courses in one vocational program or area, or all of the courses offered in a specific area. The definition was slightly broader at the postsecondary level, encompassing all students enrolled in a vocational-technical program leading to a certificate and/or associate degree.

A relatively modest number of CTE participants attained concentrator status at either the secondary (9,214 of 110,378 participants) or postsecondary (15,285 of 51,423 participants) levels. At the secondary level, males were more likely to be classified as CTE concentrators than females, compared to the postsecondary level, where females were more likely to be classified as CTE concentrators (table F-2).

In keeping with state demographics, CTE concentrators in Nebraska are primarily White (approximately 87 percent of secondary and postsecondary concentrators). Approximately 40 percent of postsecondary concentrators are reported to be from economically disadvantaged backgrounds, versus 23 percent of secondary concentrators (table F-3).

Table F-2. Nebraska CTE Participants and Concentrators: 2006–07

	Secondary			
	Participants		Concentrators[1]	
	Number	Percent	Number	Percent
Sex	**110,513**	**100.0**	**9,248**	**100.0**
Male	59,532	53.9	5,292	57.2
Female	50,770	45.9	3,956	42.8
Unknown	211	0.2	0	0.0

	Postecondary			
	Participants		Concentrators[1]	
	Number	Percent	Number	Percent
Sex	**51,423**	**100.0**	**15,285**	**100.0**
Male	25,327	49.3	6,902	45.2
Female	26,096	50.7	8,382	54.8
Unknown	0	0.0	1	0.0

[1] Based on the denominator of the Perkins Technical Attainment measure.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

Table F-3. Characteristics of Nebraska CTE Concentrators:[1] 2006–07

	Secondary		Postsecondary	
	Number	Percent	Number	Percent
Race/Ethnicity	**9,214**	**100.0**	**15,285**	**100.0**
American Indian	111	1.2	90	0.6
Asian/Pacific Islander	118	1.3	266	1.7
Black	328	3.6	611	4.0
Hispanic	608	6.6	667	4.4
White	8,046	87.3	13,327	87.2
Other or Unknown	3	0.0	324	2.1
Special Populations[2]	**9,060**	**100.0**	**9,627**	**100.0**
Disabled	909	10.0	466	4.8
Economic Disadvantaged	2,085	23.0	3,860	40.1
Single Parent	169	1.9	702	7.3
Displaced Homemaker	7	0.1	32	0.3
Limited English Proficient	119	1.3	79	0.8
Nontraditional	1,363	15.0	839	8.7
Tech Prep	4,276	47.2	1,358	14.1
Other Barrier	132	1.5	2,291	23.8

[1] Based on the denominator of the Perkins Technical Attainment measure.

[2] Special populations shows duplicated counts of students because some students have more than one barrier.

NOTE: Detail may not sum to totals because of rounding.

Source: 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

Administrative Structures

The Nebraska Department of Education (NDE) serves as the lead state agency for administering Carl D. Perkins funding, with legislative oversight from the Nebraska State Board of Education, which also acts as the State Board for Career and Technical Education. NDE oversees CTE services at both the secondary and postsecondary levels, both of which are governed locally.

State Agency Organization: Secondary

Within NDE, CTE staff in the Curriculum and Instruction division oversee implementation of the Perkins Act and monitor CTE service delivery statewide. CTE staff—comprised of a State Director, Assistant State Director, Equity/nontraditional Coordinator, and 10 career education specialists—work closely with other employees in the Curriculum and Instruction division to facilitate alignment between CTE and other secondary education initiatives, including standards-based education and professional development. CTE staff perform monitoring, technical assistance, internal auditing and fiscal management, and data and accountability responsibilities for the state agency.

State Agency Organization: Postsecondary

In the absence of a state community college system office, NDE also oversees the implementation of the Perkins Act at the postsecondary level. According to state administrators, the state's community colleges function as six independent institutions, with limited central oversight from a state coordinating commission appointed by the governor. Additionally, NDE collaborates with the statewide community college association and the council for the institutions' chief instructional officers to administer CTE at the postsecondary level.

Challenges and Benefits of State Administrative System

According to the CTE State Director, NDE plays less of a regulatory role than perhaps educational agencies in other states, and prefers instead to maintain a local control system. As a result, the agency spends considerable time working with local administrators and instructors to understand and implement state policy through technical assistance visits, professional development summits, and state task forces. State leadership recognizes that this model demands a significant time commitment on the part of state staff to ensure local program quality and consistency.

Additionally, state administrators describe NDE's working relationship with the state's community colleges as "collaborative." The secondary CTE unit's proximity to other divisions at NDE has enabled the postsecondary institutions to participate in agency discussions about improving student achievement and defining college-readiness. Moreover, the positioning of CTE within the larger Curriculum and In-

struction division sends the message to local programs that CTE and academic courses should be similarly integrated.

Delivery Models

Given the rural nature of the state, CTE services are offered only in secondary school districts and at community colleges. Nebraska has no separate regional or area technical schools, adult schools, or technical colleges. In 2001, the state developed the Nebraska Career Education Model in collaboration with secondary and postsecondary institutions and the state workforce and economic development agency to streamline statewide delivery of CTE services. The state intends for the model to be applied similarly at the high school and community college levels and at the state's One-Stop centers. The goal is to increase articulation and minimize system redundancy by establishing a "common language" for CTE across the state through the consistent application of the Nebraska Career Model.

Student Support Services

The state provides the following unique programs that may be worthy of consideration in other states:

- **Nebraska Career Connections (http://www.nebraskacareerconnections.org)**—An online career resources warehouse designed for students and jobseekers and maintained through a partnership of several state agencies, including the Departments of Labor, Education, and Economic Development. The site offers career education and training materials, such as skills assessments and career interest inventories.
- **Think Nebraska! (http://www.futureforcenebraska.org/think.html)**—Part of a national initiative to encourage middle and high school students to pursue a rigorous course of study in preparation for higher education and employment by taking "scholars" courses, as designated by the state. Students who successfully complete the scholars course sequence and maintain minimum GPA requirements are designated as Nebraska Scholars upon their graduation from high school. Program contains an advising component to help increase academic achievement and prepare students for careers.

Career Clusters and Pathways

Nebraska shifted to a statewide career clusters model in 2001, which aims to increase access to career and technical education, move towards a more rigorous curriculum, and develop career pathways. The model centers on 16 career clusters, grouped into the following 6 career fields: Environmental and Agricultural Systems; Communication and Information Systems; Industrials, Manufacturing, and Engi-

neering Systems; Health Sciences; Human Services and Resources; and Business, Marketing, and Management.[11] Local programs will be required to implement and report on curriculum aligned with this model in the 2008–09 school year.

According to the CTE State Director, Nebraska's new approach to CTE has strengthened ties between secondary and postsecondary institutions and serves as a framework for developing statewide articulation agreements within the career clusters. Since introducing the model six years ago, state administrators have spent considerable time marketing the model and working with school leaders to implement it. NDE staff developed materials to support the model, presented at state conferences, and conducted in-service training for teachers.

During the 2008–09 school year, all CTE students in Nebraska will be required to complete annual Personal Learning Plans with their parents and guidance counselors. In their plans, students must select a career pathway and consider the academic and CTE courses that they might take to fulfill their secondary and postsecondary requirements. The state also hopes to increase dual enrollment opportunities and participation with the model.

Content Standards and Curriculum

NDE is currently revising the "Essentials for Learning" standards for CTE programs to align with the new career education model and the state's existing content standards for mathematics, science, reading, and writing. The state's Links to Standards website describes how the Nebraska Standards and Essential Learnings align and will be updated to reflect the revised CTE standards. NDE also plans to develop curricular resources to help teachers implement them (Nebraska Department of Education, 2008).

Statewide CTE Assessments

Nebraska does not currently have a statewide CTE assessment or standard definition of technical skill attainment. At the secondary level, students' technical skills are measured on "locally developed assessments or criterion referenced tests in Career and Technical Education courses or earning a grade of B or higher in the concentration program sequence of career and technical courses" (Nebraska Department of Education, 2008). At the postsecondary level, technical skill attainment is defined as "concentrators that have an accumulative aggregate GPA of 2.0 in all vocational courses with a 1.5 and 2.0 weighting in the state aid funding formula calculations" (Nebraska Department of Education, 2008).

[11] See http://www.nde.state.ne.us/NCE/images/NCEModelOnly.pdf.

Delivery System Alignment

Nebraska has put in place a number of policies to support the alignment of CTE services among secondary and postsecondary institutions, and with business and industry. These policies include:

- **Partnerships for Innovation (PFI) Consortium**—a new statewide initiative to focus on developing articulation agreements between secondary and postsecondary CTE courses through Programs of Study for local Perkins recipients. The consortium's work will include developing statewide agreements, transitioning to a new technical skill assessment, strengthening data and accountability systems, and identifying professional development opportunities (Nebraska Department of Education, 2008).
- **FutureForce Nebraska**—coordinates partnerships among "schools, employers, and workforce resources" to expand CTE offerings and provide career exploration opportunities for students and adults. Created in 2004 as a neutral forum to convene private industry, government agencies, and educational institutions around developing a highly skilled workforce for Nebraska, FutureForce works with the Departments of Economic Development and Labor to develop career pathways ("talent pipelines") for high growth industries, as well as creating curricula and training materials for teachers and career awareness resources for students. FutureForce also contributes to and supports the efforts and activities of Think Nebraska!, Nebraska Career Connections, and Partnerships for Innovation (FutureForce Nebraska, n.d.).

Funding Models and Formulas

Funding for CTE in Nebraska comes primarily from federal Perkins dollars and the state's required matching funds. Some additional state resources are allocated for CTE, but these funds represent only a small portion of total funding for CTE.

Fiscal Allocation Method: Federal Perkins Funding

Nebraska received a total of $7,042,650 in Title I Basic Grant and $708,987 in Title II Tech Prep funding for allocation in the 2007–08 program year, which they've merged into one funding stream. Nebraska state policy legislates that 55 percent of funds will be allocated to secondary schools and 45 percent to community colleges (table F-4). The state cites "historical trends and appropriations" as the rationale for this split.

In the past, Tech Prep funds were distributed to postsecondary institutions to create regional consortiums. The merging of Title I and Title II funds creates a single source of basic grant resources and increases the focus of secondary and postsecond-

ary transition for all schools on a statewide basis. A change from 40 percent to 45 percent for postsecondary institutions represents a consistent overall transition of the separate Title II funds to the postsecondary level to enhance and integrate the efforts of transition from secondary to postsecondary education and from two-year post to four-year Programs of Study at the postsecondary level (Nebraska Department of Education, 2008).

Table F-4. Nebraska Federal Perkins Allocations: 2007–08 Program Year

	Dollars	Percent
Total Federal Funding	**$7,751,637**	**100.0**
Title I Basic Grant	7,042,650	90.9
Title II Tech Prep	708,987	10.1
Perkins Basic Grant Formula Distribution	6,588,891	93.6
Reserve Funds	550,000	†
Secondary	3,321,390	55.0
Postsecondary	2,717,501	45.0
State Leadership (10 percent)	775,164	11.8
Corrections/Institutions	150,000	19.4
Nontraditional	60,000	7.7
State Administration (5 percent)	387,582	5.5
State Match	387,582	5.5

† Not applicable.
Source: *Nebraska State Plan for Career Technical Education: FY 2009–2013* .

Similar to other states, federal funds are allocated according to legislative formulas, with 85 percent of funds distributed among local providers, 10 percent set aside for state leadership activities, and 5 percent for state administration. Of the 85 percent earmarked for local distribution, the state has established a reserve fund of 10 percent. CTE for secondary schools is funded out of local education agencies' Basic Grant allocations, which are based on the number of individuals age 5–17 years old who reside in the district (30 percent) and on the number of individuals age 5–17 years old in the district who come from families that live below the poverty line (70 percent). Postsecondary programs receive funding through community colleges full-time equivalent (FTE) enrollment formulas.

Secondary schools that do not qualify for the $15,000 minimum are required to join a regional consortium in order to receive Perkins IV funds. Postsecondary institutions must qualify for $50,000 minimum in order to receive funds. State legislation also permits community colleges to form consortia, if needed, to be eligible for federal funds.

Fiscal Allocation Method: State Resources

Nebraska does not provide categorical funding for CTE programs offered at the secondary level, though the state has invested resources to promote system development. In 2007, the State Legislature authorized the Career Education Partnership Act Grants program, which supports schools and colleges in their efforts to continue and enhance CTE programs. Under the terms of the Act, the state distributes roughly $500,000 annually through a competitive grant process. Funds are used to assist collaborative projects of two or more public schools with an educational service unit, or a public postsecondary institution and an advisory group in (1) developing academic competencies, technical competencies, and basic work-skill foundations for students; (2) developing curriculum; (3) employing certificated teachers; and (4) providing professional development for certificated teachers to provide course instruction. Collaborative projects can apply for up to $75,000 (Nebraska Department of Education, 2007).

At the postsecondary level, Nebraska provides supplemental funding for postsecondary CTE programs. Resources are allocated through an enrollment-driven formula that weights courses in relation to their cost. Academic transfer courses are assigned a 1.0 weight, "light" CTE courses are assigned a 1.5 weight, and "heavy" CTE courses a 2.0 weight. A light program is one that requires the use of equipment, facilities, or instructional methods easily adapted for use in a general academic transfer program, while a heavy program is one that requires the use of specialized equipment, facilities, or instructional methods not easily adaptable.

According to state staff, the origins of the state funding formula date back to the 1980s, when the state gave community colleges the opportunity to grant academic transfer credits. Before that, Nebraska community colleges emphasized applied technology and occupational education, with the goal of preparing students for immediate employment. Concerns that the introduction of academic transfer would lead colleges to drift from their original mission led the State Legislature to introduce a CTE formula weight. The application of the CTE weight to promote CTE instruction appears to be working. Although academic transfers have increased, roughly 85 percent of Nebraska community college students currently participate in CTE programs. However, the state does not calculate the actual amount of resources allocated in support of CTE versus academic transfer credit instruction.

Equipment and Program Start-up Funding

The state reserves some Perkins funds for program start-up, though it is not clear from the state plan how much funding can be used for this purpose. The plan does highlight criteria for developing and implementing new programs at both the secondary and postsecondary levels, which include alignment with business and labor

market needs and preparation for high-skill, high-wage, or high-demand occupations. According to the plan, "Perkins funds will be used to support the initial implementation of new courses that meet the above-mentioned criteria. This support may be for the development of the technical and academic curriculum content, needed technology for course implementation, professional development, and alignment to postsecondary education" (Nebraska Department of Education, 2008).

Career and Technical Student Organizations

According to the Nebraska State Director, career and technical student organizations are particularly strong in the state and provide positive leadership opportunities for students. Part-time staff at NDE serve as the organizations' executive directors, which ensures that student activities are aligned with the state agency. Funding for these staff and other student organization activities comes primarily from Perkins leadership dollars, in addition to other funds raised by the individual groups.

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Appendix G: Utah

System Characteristics

As of 2006, Utah's population stood at 2.55 million residents, the vast majority of whom lived in urban settings and identified themselves as White in the last census. More than 11 percent of Utah residents are Latino. Unlike many other western states with smaller populations, most of Utah's residents live in urban areas. Only about 12 percent of the state's population lives in areas defined as "rural" by the Census Bureau. Nearly 10 percent of Utah residents age 25 years and older do not have a high school diploma or equivalent, and 19 percent have earned a bachelor's degree or higher (U.S. Census Bureau, n.d.).

Utah's economy is driven by management, service, and sales sector jobs. The greatest job growth in the state is in the field of construction, followed by the professional and business sector (Thredgold, 2006).

Service Providers

Utah offers Career and Technical Education (CTE) courses to students in grades 7–12 in all 40 school districts statewide. All school districts in the state include grades K–12, some of which have middle schools (grades 6–8 or 7 and 8) while others have junior high schools (grades 7–9). The state's comprehensive high schools are either grades 7–12 (in rural parts of the state) or include grades 9–12 or 10–12. CTE is offered in all 141 middle schools/junior high schools and all 109 comprehensive high schools (table G-1) (Utah State Office of Education, n.d.-b; Mary Shumway, personal communication, March 28, 2008).

Several partnership academies and magnet schools across the state emphasize CTE instruction for K–12 students. These schools include National Academy Foundation programs in 20 high schools in the Salt Lake City area, 5 Bill and Melinda Gates Early College High Schools, and 3 district-wide technical schools (Jordan School District Applied Technology School, Granite School District Technical Institute, and the Salt City School District Technical Center) (Shumway, personal communication, 2008).

At the postsecondary level, a variety of service providers exist. Utah's College of Applied Technology (UCAT), with eight campuses across the state, focuses on noncredit, open-entry/open-exit, and competency-based instruction. More than 11,500 high school and 42,000 adult students attend this institution. Five community col-

Table G-1. Characteristics of Utah CTE System: 2006–07

Local Education Agencies	Number
Consortia (Secondary and Postsecondary)	9
Individiual Providers	†
School Districts	40
Comprehensive High Schools	109
Partnership Academies/Magnet Schools	28
District Technical Schools	3
Early College High Schools	5
Community Colleges	5
Public 4-year	4
Private 4-year	2
Private Career Schools	†

† Not applicable.
SOURCE: *Utah Five-Year State Plan: FY 2009–FY 2013; Utah Consolidated Annual Report: 2006–07;* Shumway, personal communication, 2008.

leges in different parts of the state also offer CTE courses (Salt Lake City Community College, College of Eastern Utah, Dixie State College of Utah, Snow College, and Utah Valley State College). Three public and two private four-year universities and colleges in Utah also offer students the opportunity to take CTE courses, including the Utah State University, Weber State University, Southern Utah University, Westminster College, and Brigham Young University. For-profit trade schools such as ITT Tech, Mountain West College, Stephens-Henagar College, and Eagle Gate College also include CTE courses in their instructional offerings (Utah System of Higher Education, 2008; Shumway, personal communication, 2008). Additionally, the FY 2008 CTE funding allocates $20,000 of the Perkins Leadership and Development resources to support statewide initiatives around CTE instruction for providers working in correctional institutions (Shumway, personal communication, 2008).

Student Characteristics

In Utah, more than 250,000 secondary and postsecondary students were engaged in CTE courses in 2006–07 (table G-2). In the 7th grade, all students are required to take a yearlong CTE introduction course. In grades 9–12, all students are required to take a 0.5 credit computer technology course, as well as 1.0 additional credit in any CTE course offering. At the last data collection, CTE students earned more than 57,000 concurrent enrollment credit hours. Or, put another way, half of the credit hours earned in concurrent enrollment were in CTE courses in Utah (Utah State Office of Education, n.d.-a; National Association of State Directors of Career Technical Education Consortium, 2008; Shumway, personal communication, 2008).

Table G-2. Utah CTE Participants and Concentrators: 2006–07

	High Schools			
	Participants		Concentrators[1]	
	Number	Percent	Number	Percent
Total	**183,867**	**100.0**	**28,006**	**100.0**
Male	97,693	53.1	13,851	49.5
Female	86,174	46.9	14,155	50.5
Unknown	0	0.0	0	0.0
	Community Colleges			
	Participants		Concentrators[1]	
	Number	Percent	Number	Percent
Total	**44,783**	**100.0**	**18,065**	**100.0**
Male	23,733	53.0	9,912	54.9
Female	20,600	46.0	8,033	44.5
Unknown	450	1.0	120	0.7
	Adults			
	Participants		Concentrators[1]	
	Number	Percent	Number	Percent
Total	**22,008**	**49.1**	**5,895**	**32.6**
Male	11,346	25.3	2,290	12.7
Female	10,475	23.4	3,594	19.9
Unknown	187	0.4	11	0.1

[1] Based on the denominator of the Perkins Completion measure.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

At the secondary level, CTE concentrators in Utah are students who complete at least one-half of the credits in a single CTE Program of Study, including at least one of the required foundation courses, during grades 9–12. Data collected during 2007 indicates that more than 22,000 students in grades 9–12 were CTE concentrators (Utah State Office of Education, 2008; Shumway, personal communication, 2008).

At the postsecondary level, CTE concentrators are defined as students who (1) complete at least 12 academic or CTE credits within a single program area that is comprised of 12 or more academic and technical credits, which culminates in the award of an industry-recognized credential, certificate, or degree; or (2) complete a 360+ membership hour Program of Study that culminates in an industry-recognized credential, or state-approved certificate or degree; or (3) complete a short-term CTE program sequence of less than 12 credits or 360+ membership hours that culminates in an industry-recognized credential approved by the state. Utah's State Office of Education reports more than 24,000 postsecondary concentrators throughout the state at the most recent count (Shumway, personal communication, 2008). Addi-

tionally, the Utah State Office of Education reports more than 76,000 students earned a CTE skill certificate by passing a skill test at 80 percent or above.

More than three-quarters of CTE students are White in Utah high schools (83 percent), community colleges (78 percent), and adult programs (77 percent). More than 40 percent of high school students participate in Tech Prep programs, but only 8 percent of community college students and 9 percent of adults are in Tech Prep programs (table G-3).

Table G-3. Characteristics of Utah CTE Concentrators:[1] 2006–07

	High Schools		Community Colleges		Adults	
	Number	Percent	Number	Percent	Number	Percent
Race/Ethnicity	**28,006**	**100.0**	**18,065**	**100.0**	**5,895**	**100.0**
American Indian	499	1.8	340	1.9	122	2.1
Asian/Pacific Islander	862	3.1	566	3.1	152	2.6
Black	342	1.2	238	1.3	90	1.5
Hispanic	2,930	10.5	903	5.0	588	10.0
White	23,274	83.1	14,000	77.5	4,562	77.4
Other or Unknown	99	0.4	2,018	11.2	381	6.5
Special Populations[2]	**33,813**	**100.0**	**9,872**	**100.0**	**2,555**	**100.0**
Disabled	2,907	8.6	520	5.3	476	18.6
Economic Disadvantaged	5,713	16.9	5,713	57.9	796	31.2
Single Parent	0	0.0	199	2.0	307	12.0
Displaced Homemaker	0	0.0	160	1.6	57	2.2
Limited English Proficient	2,118	6.3	886	9.0	82	3.2
Nontraditional	3,630	10.7	1,560	15.8	386	15.1
Tech Prep	13,797	40.8	834	8.4	230	9.0
Other Barrier	5,648	16.7	0	0.0	221	8.6

[1] Based on the denominator of the Perkins Completion measure.

[2] Special populations shows duplicated counts of students because some students have more than one barrier.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

Administrative Structures

The Utah State Board of Education is the eligible state agency to receive and allocate federal Perkins funds to legal recipients. The State Board meets at least four times annually to carry out these responsibilities. The state has formed an Executive Planning Committee, including the State Director of Career and Technical Education, Perkins Coordinator, Higher Education Liaison, Information Specialist, and State Tech Prep Coordinator, to review Perkins legislation, obtain information from the Office of Vocational and Adult Education regarding the implementation of Perkins legislation, identify the mission and objectives of the administration of Perkins in the state, and develop the state's Perkins five-year plan.

Under Utah's State Superintendent of Public Instruction, three Associate Superintendents head up three divisions in the State Office of Education. The Career and Technical Education (CTE) Department falls under one of these divisions, and has a Director, two coordinators, and 15 professional staff. The CTE department is responsible for the State's administration of CTE programs, curriculum, pathways, CTE skills testing and accountability, data collection, guidance counselor and teacher professional development, and public relations.

At the postsecondary level, Utah's State Board of Regents is vested with the management and supervision of public institutions of higher education, including two- and four-year universities and colleges. However, the Board of Regents' authority over institutions of higher learning does not impede the State Board of Education's authority to establish and maintain CTE programs at the postsecondary level.

Utah is divided into nine planning regions, each of which coordinates CTE programs at the local level to prevent unnecessary duplication of effort. Regional CTE Directors for the postsecondary institutions and school districts in each region regularly meet to review and coordinate federally funded CTE programs. In addition, representatives from each region comprise a CTE Consortium that reviews state CTE policies and procedures and makes recommendations on a host of implementation issues to the state CTE Director. Each region receives resources from Perkins Reserve funds for one half-time Regional Pathway Coordinator.

The state also has a K–16 Alliance, which has a Workforce Development Committee and a Workforce, Education, Economic Development Alliance that brings all the agencies that provide CTE services together. These groups are not required in statute, but have a long history of working together and reporting to the two boards for education in the state. The state has interagency agreements between the Board of Regents, Department of Workforce Services, Rehabilitation, and the Governor's Office of Economic Development to support CTE in Utah. The state has very strong and mature regional partnerships. There is collaboration among K–12, the Department of Workforce Services, and the Economic Development Department, which, according to state staff, result in some of the strongest regional partnerships in the nation.

Overall, the CTE staff at the State Office of Education report that collaboration among the entities responsible for overseeing and administering CTE at the secondary and postsecondary levels has been very good. The Director of CTE for the state, Mary Shumway, describes frequent, regularly held meetings and sharing of decision-making responsibilities. She also reports that the Perkins Executive Planning Committee has been an effective vehicle for developing plans and making decisions. In addition, the state CTE Director cites that the bi-monthly meetings of Regional

CTE Directors have been executed regularly and have also been effective. Ms. Shumway believes that the approach to Regional Pathways coordination in Utah is noteworthy and merits the attention of Oregon CTE planners. At this time, the State Office does not report any proposed or desired changes to the structure of the existing state CTE system (Utah State Office of Education, n.d.-b; Utah State Office of Education, 2008; Utah State Office of Education, n.d.-a; Shumway, personal communication, 2008).

Delivery Models

Utah delivers CTE services through a variety of providers. The system includes 40 K–12 school districts and charter schools. Some of the larger school districts have technology centers offering high-cost specialized programs. At the postsecondary level, seven technical colleges and eight universities, four-year colleges, and community colleges deliver CTE instruction. The Utah College of Applied Technology (UCAT) has eight campuses across the state, and also partners with urban and smaller, rural K–12 school districts to offer programs not available at the high school level.

As previously described, secondary and postsecondary CTE providers are divided into nine planning regions across the state. These planning consortia coordinate local planning and implementation efforts. Additionally, the Utah System of Higher Education, a partner in the Workforce, Education and Economic Development Alliance (WEEDA), works to increase the links between CTE program delivery entities and the business community interested in a prepared, skilled workforce.

Adult learners usually access CTE programs through UCAT, community colleges, or four-year universities. UCAT and the Salt Lake City Community College Skill Center provide open-entry/open-exit and short-term training programs for adult learners (Utah State Office of Education, 2008; Shumway, personal communication, 2008).

Student Support Services

Utah uses Perkins funds to support several strategies at the secondary level to help students stay in school. The approaches used include mentoring, tutoring, individualized instruction, academies, small learning communities, alternative programs, internships, and job shadowing.

Utah's Director of CTE highlighted the state's Comprehensive Counseling and Guidance program as a fundamental element in the preparation of secondary students for high school graduation and beyond. Comprehensive counseling and guidance includes a Career Information Data System (CIDS) and the Student Education

Occupation Planning (SEOP) process, through which students learn about interests, careers, and pathway options.

Utah has dramatically re-imagined its school counseling and guidance services, implementing a Comprehensive Counseling and Guidance Program that emphasizes:

- serving the entire student population,
- providing a programmatic approach to guidance,
- ensuring accountability,
- removing non-guidance activities,
- developing student competencies to address student needs, and
- redefining the role of the school counselor within the Comprehensive Counseling and Guidance Program Model.

Comprehensive Counseling and Guidance Programs vary to some extent at the local level, but tend to include program goals that will accomplish the following:

- Impact all students in a powerful and effective way as to the importance of career decision-making and planning for life after high school.
- Encourage and assist each student in developing a Student Education Plan (SEP) or a Student Education Occupation Plan (SEOP).
- Provide opportunities for student growth in the areas of self-knowledge, educational and occupational exploration, and career development.
- Involve the school, the home, and the community in implementing a Comprehensive Counseling and Guidance Program.

While largely funded by the State, the Comprehensive Counseling and Guidance Programs also use Perkins resources through the CTE Pathways initiative (Utah State Office of Education, 2008; Utah State Office of Education, n.d.-a; Shumway, personal communication, 2008).

Clusters and Pathways

Perkins funds support the development and implementation of Programs of Study or CTE Pathways in Utah. Similar activities previously fell under the auspices of the Tech Prep program in Utah, before the State consolidated Tech Prep with the Basic Grant. CTE Programs of Study are State-recognized coherent groupings of courses within CTE Areas of Study at the secondary or postsecondary level that give students:

- rigorous content aligned with challenging academic standards;
- relevant technical knowledge; and
- skills needed to prepare for postsecondary education and careers in current or emerging fields.

At the secondary level, the State has developed 62 Programs of Study, each consisting of groupings of courses that prepare students for further study at the postsecondary level and entry into the workforce. The Programs of Study fall within eight areas:

- Agricultural Education
- Business Education
- Family and Consumer Sciences Education
- Health Science and Technology Education
- Information Technology Education
- Marketing Education
- Technology and Engineering Education
- Skilled and Technical Sciences

State specialists in CTE instruction and teacher committees, with input from district-level CTE Directors, have been responsible for developing the Programs of Study. Regional Pathway Coordinators, funded as a half-time staff member per region, are supported through Perkins Reserve funds and State Leadership funds to help implement this initiative throughout the state. These Regional Coordinators work with CTE Directors at eligible recipient institutions to develop articulation agreements, concurrent enrollment, professional development, and technical assistance for site staff. Eligible recipient institutions also receive specific training in regional quarterly meetings, technical assistance, and on-site visits by state specialists to ensure agreements are in place and that they meet state and federal requirements.

At the postsecondary level, colleges and training centers work with secondary partners to identify and publish career pathway maps for all 62 Programs of Study. These maps provide students with detailed information that enables them to plan secondary courses leading to postsecondary certificates and degrees.

To disseminate information about the Programs of Study, the State has developed the Career Information Delivery System (CIDS). This data system contains extensive information about CTE Pathways, including the groupings of courses for each

Program of Study that will help students navigate course selection during high school as a means to guide them to graduation and transition to college and career. The system gives students a record of their decision-making process as they select courses consistent with their chosen Pathway, as well as postsecondary education and training plans. CIDS is accessible to CTE program staff at the regional, district, and school site level so that individual programs can be marketed to local students and to students beyond the immediate geographic area. Teachers can also use the data system to customize their own course listings to attract potential students to their particular programs.

Utah's Career and Technical Education model includes a progression of career exploration, planning, and preparation:

- Grade 7: Introduction to CTE—required for all 7th-grade students.
- Grades 7–8: Career Awareness and Exploration—understanding the relationship between work and learning.
- Grades 9–10: Career Planning and Workforce Readiness—comprehending the relationship between educational achievement and career planning.
- Grades 11–12: Career Preparation and Work-Site Learning—understanding how work relates to the needs and functions of the economy and society. Classroom learning is connected with work.
- Grades 13+: Advanced Career Preparation/Specialization—having the skills to make an effective transition to work, to further education or training, and to continue life-long learning.

State secondary CTE curricular specialists work with program advisory committees to develop new courses and improve existing courses. This recently updated CTE course-approval process ensures that courses have high standards and meet the educational and employment needs of the students. These committees include representation from secondary education, postsecondary education, and community partners.

Postsecondary CTE course development and improvement follows the existing Utah System of Higher Education (USHE) policies and procedures. Institutional staff and program advisory committees provide input and direction to the development of rigorous and challenging academic and skill achievement courses that prepare students for high-skill, high-wage, or high-demand occupations (Utah State Office of Education, 2008; Utah State Office of Education, n.d.-a; Shumway, personal communication, 2008).

Content Standards and Curriculum

In August 2006, the Utah State Board of Education boosted academic requirements in mathematics, language arts, and science. The new requirements recognize some CTE courses for credit in these subjects. The Board also added a requirement that all students must complete a minimum of 1.5 CTE credits for high school graduation (Utah State Office of Education, 2008; Utah State Office of Education, n.d.-a).

The Utah Department of Education has also recently defined state curriculum standards for each of the following CTE program areas: Agricultural Education; Business Education; Economics and Entrepreneurship; Family and Consumer Sciences Education; Health Science and Technology Education; Information Technology Education; Keyboarding Education; Marketing Education; Pre-Engineering and Technology Education; Trade and Technical Education; and CTE Introduction. These content standards are course-specific, and emphasize work readiness skills and occupationally specific skills (Association for Career and Technical Education, n.d.).

Schools must submit to a program approval process in order for courses to receive additional state CTE funds. Utah has defined state standards by course. Program standards are comprised of the sum of the individual course standards for courses designated for each Program of Study. Additionally, the CTE Skill Certificate program, which assesses students at the end of each course, has put additional emphasis on the content and quality of course standards.

A committee of State Office of Education staff, teachers, and employers develop, review, and update state course standards. The committees review national standards where available, examine standards from other sources, and work together to keep the standards current. State staff are encouraged to review the standards every three years. In reality, because the CTE Skill Certificate program's assessment items are reviewed annually, state CTE course standards are also scrutinized to some degree every year. Of course, the need to revise course standards varies by course, as some business sectors and industries are changing more quickly and more dramatically than others (Shumway, personal communication, 2008).

Statewide CTE Assessment

Utah has had a CTE Skill Certificate Assessment program for 12 years. The assessments were developed for each course over time using teams of teachers who have been trained to write and review test items. Each assessment has 10 pilot questions that are analyzed prior to being placed in the assessment test item bank. These teachers also review test items after the testing period. Utah's assessments are mostly online now, and will be entirely online in the 2008–09 academic year. A recent infusion of $400,000 from the Utah state legislature will help the State Office of Educa-

tion complete the process of validation and testing of the online assessment system. Students earn a certificate for the assessment if they achieve a score of 80 percent or above (Shumway, personal communication, 2008). Utah does not have standard, statewide CTE assessment for programs at the postsecondary level. The state uses grades, course completion, certification, state licensure, and degree attainment to assess student performance.

The State Office of Education is also dedicated to continuing its annual Data Quality Process, in which it provides Perkins fund recipients with information on assessment results with adequate time to review and resubmit any data that was incorrect. Data Quality workshops are conducted with recipient CTE Directors and Data Technicians to analyze the data and develop continuous improvement plans. Data reports are available on the Web while local CTE programs are preparing their local plans, which provide more direct access to data analysis and enable data driven decision-making (Utah State Office of Education, n.d.-b).

Funding Models and Formulas

Like many other states, Utah funds CTE programs with both federal Perkins funds and state resources. Somewhat more unusually, and potentially significant in explaining the state of CTE in Utah today, is the state Legislature's practice of annually earmarking funds for CTE at the secondary level and for technical colleges.

Federal Funding

Utah received a total of $12,656,383 in Title I funding for the 2007–08 year. The state has consolidated its Title II Tech Prep funds, $1,196,451, with the Title I Basic Grant Allocation, meaning Utah will distribute $13,852,834 in total (table G-4).

The State of Utah also earmarked 2006–07 funds for CTE in the following manner:

- $92,363,526 in Maintenance of Effort at the secondary level, and
- $86,003,850 in Maintenance of Effort at the postsecondary level.

Table G-4. Utah Federal Perkins Allocations: 2007–08 Program Year

A. Total Title I Allocation to the State	$12, 656,383
B. Title II Tech Prep Funds to be Consolidated with Title I Funds	1,196,451
C. *Sum of Lines A and B*	**13,852,834**
D. Local Formula Distribution (*not less than 85% of the Sum of Line C*)	11,774,909
1. Reserve (*not more than 10% of Line D*)	400,000
2. Available for formula allocations (*Line D minus Line D1*)	11,374,909
a. Secondary Programs (60% of Line D2)	6,824,945
b. Postsecondary Programs (40% of Line D2)	4,549,964
E. Leadership (*not more 10% of Line C*)	1,385,283
1. Nontraditional Training and Employment	60,000
2. Corrections or Institutions	40,000
F. State Administration (*not more than 5% of Line C*)	692,642
G. State match (*from non-federal funds*)	1,547,583

SOURCE: *Utah Five-Year State Plan: FY 2009–FY 2013.*

Utah Office of Education staff suggest that the earmarking of State funds for CTE by the legislature contributes significantly to the success of CTE programs in the state (Utah State Office of Education, 2008; Shumway, personal communication, 2008). Utah has used reserve funds to fund regional High School to College and Careers PATHWAY activities. Each region must hire a coordinator for pathway development, providing technical assistance and training.

The leadership and development funds are used for the Utah Career Resource Network, staff development in all program areas, career development and guidance, articulation of courses, programs, and pathways, curriculum development, setting state curriculum standards, skills assessments, leadership for CTSOs, staffing for CTE program improvement and approval, corrections education, and non-traditional projects and resources.

The split of Perkins funds in Utah is 60 percent secondary, 40 percent postsecondary, as continued from Perkins III. The split is based on the greater number of eligible recipients at the secondary level (40 districts plus charter schools, compared to 10 colleges and universities). Because many secondary students participate in CTE courses at the postsecondary level, school districts are required to develop agreements with colleges to allow Perkins funding to follow the students attending those institutions. Some of the additional amount allocated to secondary schools is intended to flow back to postsecondary institutions in this manner. State Office of Education officials estimate that this exchange of funds between secondary and postsecondary institutions ultimately yields a roughly 50-50 split of Perkins funds (Utah State Office of Education, 2008; Shumway, personal communication, 2008).

State Funding

Utah bases funding for CTE on the regular Weighted Pupil Unit (WPU) model, including incentives to provide CTE services in all 40 districts at the secondary level. CTE add-on funding is based on school membership numbers, high school CTE programs, CTE administration and Tech Centers, plus required expenditures from regular WPU to match CTE add-on. Funding is allocated for salaries, equipment, teacher training, comprehensive guidance, work-based learning, CTE high school courses, and accountability reporting (Utah State Office of Education, 2008; Shumway, personal communication, 2008).

Secondary funding is dependent on the program approval process, which provides specific standards and outcomes for all CTE secondary programs. The state has implemented a stronger focus on program approval and its tie to funding, and the process has created more accountable programs. The incentives include hiring qualified teachers, having up to date equipment and facilities, skill attainment, and participation in CTSOs. State staff appreciate the model, and believe that it is successful due to buy-in from local education agencies and that on-site visits provide valuable technical assistance and accountability support. The state also provides an incentive to school districts that have a CTE Director.

In Utah, the funding for CTE programs in community colleges is generated and distributed the same way any other FTE is generated; there is no weighting for CTE. State staff report they wish there was a weighting for postsecondary CTE programs because they are higher- cost programs and it is difficult to compete for limited resources with other college programs.

The Utah College of Applied Technology has its own line item funding. They have been very successful in having business and industry lobby for funding and facilities. Since these programs are competency based and not credit based their funding is generated on a membership hour formula. The technical colleges receive 90 percent of their funding from the State, whereas the community colleges and universities receive only about 60 percent of their funds from the State and the rest of the revenue comes from tuition.

Equipment and Software Maintenance

Utah funds equipment replacement and repair and software updates at the secondary level from an annual appropriation of $3 million and occasional one-time appropriations. Postsecondary institutions receive funding to support equipment and software upgrades in response to legislative appropriation requests. Postsecondary technical colleges receive regular appropriations for equipment.

With the advent of the new Perkins law, Utah is attempting to restrict equipment purchases to equipment that ties directly to a Pathway or Program of Study. Local education agencies must also justify the equipment purchase based on their negotiated program improvement targets. The state is seeing a change in equipment requests: there is more thought given to pathways and outcomes under the new process.

Student Organizations

Utah receives dedicated funding for secondary CTE programs in addition to the regular Weighted Pupil Unit (WPU). Of these funds, a portion (currently $500,000) is collected from the school districts to fund the statewide management of the Career and Technical Student Organizations (CTSOs). These funds support a state advisor, cover some of the organizations' expenses, and offset some national travel costs for students. No similar funding structure exists for the postsecondary CTSOs. The LEA typically uses local funds for CTSO activities. At the state level, Perkins Leadership and Development Funds are used for the management of the postsecondary CTSO advisors. LEAs may use Perkins to support some CTSO activities, but the state encourages the use of local funds.

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Appendix H: Washington

System Characteristics

Washington's population exceeds 6.4 million people, and the median age is 36.7 years. More than 76 percent of Washington residents are White and 9 percent are Hispanic. Washington has a high rate of high school completion, with nearly 90 percent of people age 25 years and older holding a high school diploma or equivalent and more than 30 percent of people over age 25 having a bachelor's degree or higher. Among those older than age 16 who are employed, the leading industries they are working in are educational services, health care, and social assistance, as well as manufacturing. The median income of households in Washington is $52,583 and 12 percent of people are living below the poverty level (U.S. Census Bureau, n.d.).

By 2030, the Washington Office of Financial Management anticipates the population will grow by 2.5 million people. Most of that growth will be concentrated among people ages 25–35 and over 50, and among people of color. The state is already experiencing shortages in skilled occupations, and this is expected to increase as baby boomers retire in the next 10 years (Washington State Higher Education Coordinating Board, 2007).

Service Providers

Secondary students have access to Career and Technical Education (CTE) through more than 330 high schools in 174 school districts throughout the state (table H-1) (Workforce Training and Education Coordinating Board, 2008; Workforce Training and Education Coordinating Board, Office of the Superintendent for Public Instruction, and State Board for Community and Technical Colleges, 2007). The state also has 10 area skills centers that "provide extended, industry-defined technical education preferred for its high quality, flexibility and advantages for work force placement and advancement" (Washington State Skills Centers, n.d.).

The state's 34 community and technical colleges provide workforce training and professional/technical education to adult residents of Washington. Washington recently implemented pilot programs at four colleges to offer applied baccalaureate degrees, and three more programs started this year. The state's 6 public and 33 independent four-year institutions also offer career and technical training, particularly for high-demand, high-skill occupations such as nursing, information technology, engineering, and jobs in science-related fields (Washington State Higher Education Coordinating Board, n.d.; W. Wong and T. Colbert, personal communication, April 3, 2008).

Table H-1. Characteristics of Washington CTE System: 2006–07

Local Education Agencies	Number
Consortia (Secondary and Postsecondary)	22
Individiual Providers	
High Schools	334
Area Skill Centers	10
Community and Technical Colleges	34
Public 4-year	6
Private 4-year	33
Private Career Schools	250

SOURCE: *Carl D. Perkins Career and Technical Education Act of 2006: Draft State Plan, 2006–2013; 2006–07 Consolidated Annual Report (CAR): Washington State;* 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

Student Characteristics

Washington's requirement that all students must take a CTE course to graduate from high school resulted in more than 333,000 secondary CTE participants in the 2006–07 academic year. The state's strong emphasis on workforce training is also exhibited in the more than 206,000 postsecondary participants taking CTE courses that year. It may appear the state is not particularly successful in converting participants to concentrators: in 2006–07, the secondary rate was only 5 percent and the postsecondary rate was 18 percent (table H-2). However, that is at least partly due to Washington's relatively narrow definition of secondary and postsecondary concentrators for its measures, requiring completion of a high school diploma for secondary and completion of a degree or other award for postsecondary.

Tech Prep is thriving as part of Washington's secondary CTE system, with over 50 percent of concentrators participating in Tech Prep programs. Male and female participation in CTE appears to remain approximately the same as students move from being participants to concentrators. One-third of Washington community college students are considered economically disadvantaged, as are more than one-quarter of secondary students (table H-3).

Table H-2. Washington CTE Participants and Concentrators: 2006–07

	High Schools			
	Participants		Concentrators	
	Number	Percent	Number	Percent
Total	**333,670**	**100.0**	**15,469**	**100.0**
Male	177,503	53.2	8,170	52.8
Female	156,167	46.8	7,299	47.2
Unknown	0	0.0	0	0.0

	Community and Technical Colleges			
	Participants		Concentrators	
	Number	Percent	Number	Percent
Total	**206,641**	**100.0**	**36,655**	**100.0**
Male	87,802	42.5	16,176	44.1
Female	112,903	54.6	20,081	54.8
Unknown	5,936	2.9	398	1.1

NOTE: Detail may not sum to totals because of rounding.

SOURCE: 2006–07 Basic Grant Secondary and Postsecondary Student Enrollment Forms—Unpublished; 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

Table H-3. Characteristics of Washington CTE Concentrators: 2006–07

	High Schools		Community and Technical Colleges	
	Number	Percent	Number	Percent
Race/Ethnicity	**15,469**	**100.0**	**36,655**	**100.0**
American Indian	293	1.9	671	1.8
Asian/Pacific Islander	1,071	6.9	2,327	6.3
Black	583	3.8	2,305	6.3
Hispanic	1,607	10.4	2,385	6.5
White	11,842	76.6	24,964	68.1
Other or Unknown	73	0.5	4,003	10.9
Special Populations[1]	**15,486**	**100.0**	**32,236**	**100.0**
Disabled	1,381	8.9	1,988	6.2
Economic Disadvantaged	4,189	27.1	10,686	33.1
Single Parent	0	0.0	4,861	15.1
Displaced Homemaker	0	0.0	265	0.8
Limited English Proficient	465	3.0	1,613	5.0
Nontraditional	1,589	10.3	6,082	18.9
Tech Prep	7,862	50.8	300	0.9
Other Barrier	0	0.0	6,441	20.0

[1] Special populations shows duplicated counts of students because some students have more than one barrier.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: 2006–07 Perkins Enrollment and Core Indicator data—Unpublished.

Administrative Structures

Washington's Workforce Training and Education Coordinating Board (WTECB) oversees career and technical training in the state. The WTECB is responsible for coordinating a large workforce system that has 18 programs totaling nearly $1 billion in resources annually. The two largest programs are the postsecondary workforce program and the secondary CTE program. In addition, the system includes apprenticeship; Workforce Investment Act (WIA) adult, youth, and dislocated workers; WIA adult education; proprietary career schools; and vocational rehabilitation. The WTECB functions primarily at a policy and coordination level, ensuring alignment among the various programs and identifying opportunities to collaborate and leverage resources. The Board's membership includes representatives from targeted populations, the Superintendent of Public Instruction, the Executive Director of the State Board for Community and Technical Colleges, the Commissioner of Employment Security, members of local government, and the Secretary of the State Department of Social and Health Services. The Governor appoints the Chair of the Board.

One of the WTECB's many responsibilities includes acting as the State Board for Vocational Education in Washington. As such, the WTECB is also the fiscal agent responsible for the state's Perkins funds. The WTECB works closely with the Office of Superintendent of Public Instruction (OSPI) and the State Board for Community and Technical Colleges (SBCTC), delegating to them, through Interagency Agreements, the day-to-day management of Perkins funds. The WTECB retains primary responsibility for ensuring compliance with statutory and regulatory requirements; program monitoring, reporting, and accountability; plan approval; coordination and policy guidance; and the distribution of funds.

The WTECB is organized into three primary areas: Program Management, Partnership, and Policy and Research. Each area has between 5 and 10 staff members, and the WTECB Executive Director also serves as the State Director for Career and Technical Education.

State Agency Organization: Secondary

The Office of Superintendent of Public Instruction is charged with overseeing secondary education in Washington. OSPI collaborates with schools, families, government, and business and labor to lead education reform and ensure success for students. OSPI is also responsible for administering secondary CTE programs, which are organized into five areas: Business and Marketing; Technology and Industry; Health and Human Services; Agriculture/Science; and Science, Technology, Engineering, and Mathematics. Washington secondary institutions offer more than

220 programs in these areas in 174 school districts, 334 high schools, and 10 vocational skills centers.

OSPI's Career and College Readiness division is made up of a dozen staff members and is lead by the Assistant Superintendent for Career and College Readiness and the Director for Career and Technical Education. The division includes both administrative and program staff, and each of the five program staff are responsible for one of the program areas: Business and Marketing; Technology and Industry; Health and Human Services; Agriculture/Science; and Science, Technology, Engineering, and Mathematics.

The Washington State Board of Education governs OSPI. As the K–12 policymaking body, the Board facilitates communication between state and local education partners and other government agencies to promote student success. The State Board has 16 statutory members.

State Agency Organization: Postsecondary

The State Board of Community and Technical Colleges is lead by an Executive Director and is responsible for administering the state's Community and Technical College Act and providing leadership and coordination for Washington's 34 community and technical colleges. The SBCTC has three primary divisions: Administrative Services, Educational Services, and Financial Services. Within the Educational Services Division, the Workforce Education Team has primary responsibility for CTE programs at the colleges.

The Governor appoints nine members to the SBCTC for four-year terms. Members must include representatives of labor and business, and must represent a geographic balance as well as women and racial and ethnic minorities.

Challenges and Benefits of State Administrative System

Washington administrators report that overall, they feel their administrative structure works well for the state. They are proud of the highly integrated workforce development system that allows them to leverage resources, collaborate on programs and initiatives, and respond quickly to change. The inclusion of representatives from labor, business, and government on each of the three boards ensures the system is aware of and responsive to state and local workforce needs and trends. While the structure of the three state organizations occasionally causes difficulties in determining which is responsible for an issue, and staff acknowledge that room still exists to perfect collaboration, state administrators feel they have experienced real successes under this structure.

Administrators also report their strong accountability system is a distinct advantage when discussing workforce education needs and funding with policymakers. The WTECB was required to develop an accountability system for all workforce education, and the result is a set of state performance measures that tell the story of workforce education in the state. Washington also received a U.S. Department of Labor Integrated Performance Activity grant to develop a number of state-level measures that would address what government wants to know. The outcomes will be used to impress upon federal agencies the importance of consistent measures across state lines.

Delivery Models

Secondary

In 2006–07, 174 school districts and 10 vocational skills centers applied for and received Perkins funding. Secondary schools offer more than 220 secondary CTE courses and programs in five program areas: Business and Marketing; Technology and Industry, Health and Human Services; Agriculture/Science; and Science, Technology, Engineering, and Mathematics (STEM) (Workforce Training and Education Coordinating Board, et al., 2007).

Washington's skills centers are not a separate educational entity from the K–12 system; as an extension of local high schools they offer job preparation and job skills in programs that would otherwise be too expensive to offer at every high school in the state. Eighty-five school districts participate in 1 of 10 regional skills center consortia, serving approximately 7,000 students each year. An administrative council, made up of superintendents of the participating school districts, governs each skills center. Local districts are responsible for providing the skills center facility and equipment (Washington State Skills Centers, n.d.).

Postsecondary

In Washington, CTE is offered through community colleges, public and private four-year institutions, and private career schools. The state's 34 community and technical colleges all receive Perkins funding. In the last few years, the community and technical college system has established 12 Centers of Excellence in an effort to build and sustain leadership for education and training related to particular industries. The industries are chosen because they are drivers of the state's economy, and the flagship colleges are selected based on demonstrated leadership in training in that industry. Other colleges look to the Centers as the leaders and innovators in the particular industry, and each Center works in partnership with local industry to coordinate and sustain statewide training efforts. Centers are required to

1. maintain an institutional reputation for innovation and responsive education and training delivery to their targeted industry;

2. act as a broker of information and resources related to their targeted industry for industry representatives, community-based organizations, economic development organizations, community and technical colleges, secondary education institutions, and four-year colleges and universities;

3. translate industry research into best practices;

4. provide system coordination, coaching, and mentoring to assist in building seamless educational and work-related systems; and

5. build a competitive workforce for driver industries in Washington State (Workforce Training and Education Coordinating Board et al., 2007).

Career Clusters and Pathways

The 5 program areas—Business and Marketing; Technology and Industry; Health and Human Services; Agriculture/Science; and Science, Technology, Engineering, and Mathematics—serve as Washington's 5 primary "pathways" for secondary students, and each of the 16 national career clusters fits into one of the program areas. Washington's community and technical college system is part of the *Bridges to Opportunity* initiative through the Community College Leadership Program and the Ford Foundation.

In addition, there are several well-established programs linking high school students to postsecondary education while students are still in secondary institutions. They include Running Start, College in the High School, Advanced Placement, and Tech Prep. Traditionally, Running Start students have been those who want to begin earning their college degree while in high school, but few students in workforce training utilized the program. Governor Gregoire's signature on a 2006 bill changed that, providing outreach and education in middle and high schools to students interested in apprenticeship. The Apprenticeship Council oversees direct-entry apprenticeship programs, including awarding incentive grants to school districts to help them connect with local apprenticeships.

Applied Baccalaureate Degrees

In 2005, the Washington State Legislature authorized a pilot program for applied baccalaureate degrees at community and technical colleges. The legislation directed the SBCTC to select four colleges to offer programs of study leading to an applied baccalaureate degree. At least one of the four pilot programs had to lead to a bacca-

laureate of applied science degree that was built on an associate of applied science degree (Washington State Legislature, n.d.). In 2008, the Legislature expanded the pilot to three more institutions, one of which must be a technical college (Washington State Legislature, 2008b).

The Legislature's mandate was based, in part, on a study conducted by the SBCTC in June 2004 that found that approximately 10 percent of technical associate degree graduates transferred to a four-year degree program. These graduates included technicians moving from their specialty into management and those planning to work at a more advanced level in their professional or technical specialty. The study identified several fields with a demand for an applied baccalaureate degree: nursing; accounting; engineering, radiologic, and information technology; and management of technology, public safety, and food services (Washington State Senate Committee on Early Learning, K–12 & Higher Education, 2005).

Content Standards and Curriculum

The state's Career and Technical Education Program Standards are designed to "empower students to live, learn and work as productive citizens in a global society" (Washington State Office of Superintendent of Public Instruction, n.d.-a). The Office of Superintendent of Public Instruction (OSPI) establishes standards all CTE programs must meet, and the standards are designed to ensure students have access to high quality, consistent, and relevant CTE programs and one element of educational and career pathways. The standards assist schools and districts as they develop and improve career and technical education programs.

The State Learning Goals provide the framework for K–12 education.

1. Read with comprehension, write effectively, and communicate successfully in a variety of ways and settings and with a variety of audiences;

2. Know and apply the core concepts and principles of mathematics; social, physical, and life sciences; civics and history, including different cultures and participation in representative government; geography; arts; and health and fitness;

3. Think analytically, logically, and creatively, and to integrate different experiences and knowledge to form reasoned judgments and solve problems; and

4. Understand the importance of work and finance and how performance, effort, and decisions directly affect future career and educational opportunities (Washington State Office of Superintendent of Public Instruction, n.d.-d).

The State learning Goals laid the foundation for developing the Essential Academic Learning Requirements (EALRs). EALRs outline what students should know and be able to do in grades K–10 (Washington State Office of Superintendent of Public Instruction, n.d.-c). OSPI began developing the EALRs for each content area in response to the Basic Education Act of 1993.

An example of an EALR for reading is: *The student understands and uses different skills and strategies to read*. To meet this standard, the student will:

1.1 Use word recognition and word meaning skills to read and comprehend text.

1.2. Use vocabulary (word meaning) strategies to comprehend text.

1.3. Build vocabulary through wide reading.

1.4. Apply word recognition skills and strategies to read fluently (Washington State Office of Superintendent of Public Instruction, n.d.-b).

The EARLs are supported by the relatively new Grade Level Expectations (GLEs), which provide details about the skills and knowledge students should acquire in grades K–10. Several GLEs are still under development. A GRE for Grades 9–10 for the example above is: *Component 1.2 Use vocabulary (word meaning) strategies to comprehend text.*

1.2.2. Apply strategies to comprehend words and ideas.

1. Use vocabulary strategies to understand new words and concepts in informational/expository text and literary/narrative text.

2. Use graphic features to clarify and extend meaning (Washington State Office of Superintendent of Public Instruction, 2004).

Statewide CTE Assessments

Washington does not have a statewide CTE assessment framework. At the secondary level, skill assessment happens in the classroom through grades, demonstration of proficiency, and project work. Some programs at the postsecondary level lead to careers requiring industry certification or licensure, and those programs encourage and support students as they apply for the credentials. The remaining programs rely primarily on classroom assessment, grades, and skill demonstrations to determine technical skill attainment.

Delivery System Alignment

Washington has several programs to help students transition between secondary and postsecondary education.

- **Tech Prep**—Students have access to a coordinated sequence of applied educational experiences supported by partnerships among secondary and post-secondary education, business, labor, government, and communities. Courses are taught at the high school by high school instructors who collaborate with local colleges to ensure curriculum meets postsecondary standards and that credit will articulate to the college program. The courses are competency based and emphasize both academic and technical skills as well as problem solving and critical thinking. Students leave the program with a validation of their technical skills that is recognized and accepted by postsecondary institutions and businesses.

- **Running Start** and **Running Start for the Trades**—For more than 15 years, Running Start has provided opportunities for high school students to take credit classes at community and technical colleges and earn both a high school diploma and two-year transfer degree simultaneously. Running Start for the Trades is an expansion of the original, with a specific technical and applied focus that assists high school students in entering into apprenticeships in the building and construction trades. In addition, students are not required to pay college tuition to take the courses in either of the Running Start programs.

- **College in the High School**—Local districts and community and technical colleges partner to offer high school students the opportunity to earn college credit for work they do in advanced secondary courses. Qualifying high school instructors teach the classes at the secondary institution, and work with college faculty to ensure the curriculum and student performance meet postsecondary standards.

- **Navigation 101**—Provides students in grades 6 through 12 with life skills and assistance with planning for the future. The intent is to help students create plans for life beyond high school. The program began in the Franklin Pierce school district, and due to its success, was replicated widely around the state. In 2006, the legislature provided funding to ensure any district could implement Navigation 101 if interested. The program aims to

    - build relationships between the student and an adult in their secondary institution to help students stay engaged and decrease the risk they will drop out;

    - assist students to recognize their skills and achievements, make successful transitions, challenge themselves academically, and connect life in school with life after graduation;

- actively involve families in decisions about the student's future plans and progress; and
- offer students relevant and substantive opportunities for service-learning and leadership in order to strengthen community ties within schools and in local neighborhoods (Workforce Training and Education Coordinating Board et al., 2007).

Challenges and Benefits of CTE Delivery

Washington administrators report they continue to see limitations in CTE's full integration into mainstream secondary curriculum. Among some teachers and faculty, CTE is not viewed as an important and equal component of secondary education. On the postsecondary side, administrators believe that hurdle is largely overcome; a strong workforce training philosophy keeps CTE in the forefront of postsecondary education. Staff believe new opportunities for marketing and awareness campaigns will assist educators and the public to see the value and relevance of CTE programs.

Some staff members see an opportunity for increased portability of skills and credits from secondary to postsecondary education. As in many states, Washington high schools and districts typically articulate programs with their local postsecondary institutions. However, if a student leaves the area, his or her credits may not be accepted by other colleges and universities.

Funding Models and Formulas

Funding for CTE programs in high schools and community colleges comes primarily from the state and federal Perkins funds, with some supplemental support from local bonds and property taxes.

Perkins Funding

Washington distributes its Perkins funds so that 44 percent is allocated for secondary education and 56 percent is allocated for postsecondary education. In the early 1990s, Perkins funds were split equally between secondary and postsecondary. At that time, the state's technical institutes—now technical colleges—were part of the K–12 system and overseen by OSPI. In 1992, the legislature changed the institutes to technical colleges, and incorporated them into the community and technical college system. At that point, the state looked at the number of students served by the secondary and postsecondary systems and determined that with the change in governance for technical colleges, the postsecondary system needed a larger proportion of the Perkins funds. Washington looks at the number of students served by each sector every time it makes an update to its Perkins State Plan, generally annually. The 44/56 split has been stable for many years, but if at any time the state sees a

swing in the proportion of students served, it would evaluate whether the split of Perkins funds should be altered.

Washington received $24,667,861 in Perkins Tech Prep and Basic Grant funds for the July 1, 2006, through June 30, 2007, program year. WTECB retained $631,886 for administration, SBCTC received $13,951,172 for postsecondary programs, OSPI received $9,858,508 for secondary programs, and Offenders Employment Services received $226,295 to serve incarcerated individuals (Workforce Training and Education Coordinating Board, 2006).

Washington has no plans to merge its Tech Prep funding with the Basic Grant. The state has a very strong Tech Prep structure, with programs that have been a clear link between secondary and postsecondary. As the state began to develop Programs of Study, it determined that Tech Prep was a natural link that could ensure the success of the initiative. If the state were to merge Tech Prep and Basic Grant funds, it feels that the drive to extend strong dual credit and articulation would diminish.

The state supports initiatives and new programs every year using its Perkins funds, and hopes to include the following new initiatives:

- Improvements to CTE service in rural communities, for example, providing mobile labs to get CTE services to rural areas, and
- Increasing services to the growing population of unemployed 18–24 year olds, for which the unemployment rate is twice that of the general unemployment rate.

State Secondary Funding

Washington's Constitution requires legislators and the state to fully fund basic public education for all school-aged children. In order to fulfill its constitutional obligation, Washington allocates nearly half of the state's General Fund resources to public schools (Washington State Office of Superintendent of Public Instruction, 2006). Washington's current formula is the result of a series of court decisions, culminating in the Basic Education Act, which defines the state's obligation to basic education and outlines a general apportionment formula (Freund, 2005). School districts receive general apportionment funding, which represents the state's largest basic education program. The formula to allocate these funds considers the number of enrolled students, staffing ratios, average salaries, and district size. School districts and their elected boards determine how the funds will be spent. According to Washington's 2006–07 Perkins Consolidated Annual Report, the districts spend, in aggregate, about 69 percent for teaching, 13 percent for administration, 9 percent for school facilities and operations, and the remainder for pupil transportation and food services (Washington State Office of Financial Management, n.d.).

The basic education formula is founded on student enrollment. Districts report their full-time equivalent (FTE) students each month, and those results are averaged to obtain an annual average FTE enrollment. This number is then adjusted using ratios for instructional, administrative, and classified staff units. The formula has numerous factors, which include

- varying staff/student ratios for different grade levels;
- separate staff unit allocations for administrative, instructional, and classified staff;
- weightings for the education and experience of staff (mix factors);
- allocations for benefits and nonemployee related costs (NERC);
- allocations for substitute teachers;
- enhanced funding for small schools;
- enhanced funding for vocational programs; and
- separate rates for Running Start students (Washington State Office of Superintendent of Public Instruction, 2006).

The basic education formula includes adjustment factors for approved secondary CTE programs. Districts do have control over how all funds are spent. However, districts are limited to spending 15 percent of allocations based on CTE enrollment on administration.

- FTE enrollment for vocational-secondary and skills centers is determined by dividing approved vocational-secondary enrollment hours by 900 (versus 1000 for non-vocational students).
- Vocational-secondary enrollment generates 0.92 of a certificated instructional staff (CIS) unit and .08 of a certificated administrative staff (CAS) unit per 19.5 FTE students in approved vocational classes (versus 21.2 FTE students in non-vocational programs).
- Skills center enrollment generates 0.92 of a certificated instructional staff unit and 0.08 of a certificated administrative staff unit per 16.67 FTE enrollment in approved vocational classes (compared to 21.2 FTE students not served by a skills center and 19.5 FTE for CTE students) (Washington State Office of Superintendent of Public Instruction, 2006).

State Postsecondary Funding

In Washington, community college funding follows the student. The SBCTC allocates state funds to the 34 community and technical colleges through a "base-plus"

formula, where colleges retain their base state funding from the prior year. The SBCTC distributes any new funds through the college system using a three step process: (1) new funds are allocated based on enrollment growth and salaries; (2) funds are allocated for specific initiatives or programs through a competitive process; and (3) if funds are available, lower funded colleges receive a funding adjustment (Washington State House of Representatives, 2008). The state pays for FTE, and has an incentive to support high-demand FTE, but no state funds are specifically allocated for CTE. Local colleges and their boards determine how their state allocations are spent.

2008 CTE Bill

In March 2008, Governor Gregoire signed into law SB 6377, otherwise known as the "Washington CTE Bill." The bill was the product of collaboration among educators, government, and business in response to the impending worker shortage caused by baby boomers retiring. In addition, the state has a strong focus on academic attainment and CTE was not always an equal partner in education conversations, causing frustration and a desire for change among CTE educators. The CTE bill represented the group's consensus on issues it would like to address, and was crafted to enhance partnerships between high schools and community and technical colleges, improve accountability, and support education and training for high-demand occupations.

The CTE bill expands and enhances CTE's role in current programs, establishes new initiatives, and directs OSPI to lead several program initiatives. The legislation includes the following elements:

- OSPI must create a re-approval schedule for all CTE programs.
- OSPI must establish performance measures and targets for CTE programs in specified areas; schools must meet targets or have improvement plans.
- OSPI, WTECB, the Washington State Apprenticeship and Training Council, and SBCTC must develop a list of statewide high-demand secondary CTE programs and administer the in-demand scholars program to attract high school students into high-demand fields. (Funded at $1,700,000)
- OSPI must develop model CTE programs of study for construction, health care, and information technology in 2008–09, and additional programs of study must be developed in future years, with a priority on high-demand programs. (Funded at $350,000)
- OSPI must provide professional development and technical assistance to support school districts adopt academic course equivalencies for CTE courses and allocate

grants to school districts to increase the integration and rigor of academic instruction in CTE courses. (Funded at $400,000)

- OSPI must distribute one-time grants to middle and high schools and skill centers to improve CTE curriculum, create a pre-apprenticeship program, upgrade technology and equipment, and improve rigor and quality, with priority given to high-cost and high-demand programs.
- High schools or districts must issue a course completion certificate when a student successfully completes a CTE course needed for industry certification, college credit, or pre-apprenticeship.
- Skills centers and districts may agree to allow skills centers to grant a high school diploma, enabling students to attend the skills center full time without co-enrolling at the district high school. Programs must be designed to prevent drop-outs and retain at-risk and credit-deficient students or fifth-year seniors.
- Pilot the I-BEST program in high schools to integrate CTE instruction, core academic and basic skills, and ESL. SBCTC must designate one or more community and technical colleges as mentors for the project. (Funded at $250,000)
- OSPI guidelines addressing the CTE Collection of Evidence are tailored to at least 10 different CTE programs and must be completed by September 1, 2008. Guidelines for 10 additional programs must be developed by June 1, 2009. (Funded at $25,000)
- OSPI directed to design and administer a CTE campaign to increase awareness among teachers, counselors, students, parents, principals, school administrators, and the general public about CTE and its benefits. (Funded at $150,000)
- Navigation 101 curriculum expanded to include the exploration of CTE, including emerging and high-demand programs.
- Skills centers, in partnership with a community or technical college, may provide CTE courses to complete an industry certificate or credential for high school graduates if the skills center has the facilities or the college does not offer the courses. OSPI directed to give grants to offset testing costs or fees related to obtaining state or industry certification. To be eligible, students must have a family income at or below 200 percent of the federal poverty level. (Funded at $50,000)
- CTE teacher candidates are eligible for Future Teacher's Conditional Scholarships and priority will be given to them for certification in high-demand programs.
- OSPI must conduct a study to determine the feasibility of creating technical high schools by September 2009. (Funded at $75,000)
- OSPI must ensure that all funds generated by skills center students under Initiative 728 are returned to the skills centers.

- The Joint Select Committee on Basic Education Finance is directed to consider the CTE staffing and funding needs when developing the new funding structure for basic education (Washington State Legislature, 2008a).

Support Services

K–12 districts receive very little support for student leadership activities from the state. However, a small grant this year was made for a robotics program to travel and compete.

K–12 districts are expected to fund guidance and counseling out of their basic grant. The state also has Navigation 101—student led guidance and counseling—where the student is the advocate. The idea is to help students determine, "who am I, what can I do, what do I have to do to get there?" (T. Colbert, personal communication, May 19, 2008).

Program Start-Up

Washington hasn't provided state resources for program startup recently. Districts and colleges are experiencing problems reintroducing programs lost during the last recession and most programs are not able to upgrade their equipment. The CTE Bill does have funds for high-demand occupations, partly in response to this problem.

Equipment, Material, and Supply Purchases

The K–12 allocation includes a component for equipment, and departments work together to share funds locally. Community and technical colleges do not receive funds for equipment, but may use their state funds to support equipment purchases and upgrades.

Facility Construction

High school construction and maintenance is supported through state allocations and local bonding. Upkeep and minor improvements made at skills centers are fully funded 100 percent by the state. Skills centers received $76 million in 2007–08 and are expected to receive $100 million in 2008–09. Community and technical college facility construction is funded 100 percent by the state. According to state administrators, the legislature recently indicated it wants to see a 10 percent local contribution for state-funded college facility construction.

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