ITEM 10 DRAFT

California Postsecondary Education Commission

How California's Postsecondary Education Systems Address Workforce Development

September 2007

This report on the nexus between postsecondary education and workforce development discusses the question of how California's colleges and universities address the state's need for a highly educated and skilled workforce. It includes a detailed review of the systems and their roles, and considers issues regarding how those roles are being carried out.

Contents

Introduction 1
Observations 2
Employer Concerns about Postsecondary Education 3
Research Questions and Organization of the Paper 4
California Community Colleges 5
The California State University 6
University of California 10
Independent and Private Colleges and Universities 13
Career Guidance and Planning 15
Conclusion 16
Appendices 17

The Commission advises the Governor and the Legislature on higher education policy and fiscal issues. Its primary focus is to ensure that the State's educational resources are used effectively to provide Californians with postsecondary education opportunities. More information about the Commission is available at www.cpec.ca.gov.

Draft Commission Report

Introduction

How are California's postsecondary public and non-public educational institutions meeting the state's need for highly skilled workers who can compete in a 21st century economy? Recent studies contend that California is falling behind in meeting the rising demand for workers with the skills and knowledge required in a knowledge-based economy. Some put the focus on K-12 education; the California Postsecondary Education Commission has been exploring the role that postsecondary systems can—and must—play in meeting workforce needs.

In an earlier report, the Commission found that employers are seriously concerned about what they see as gaps in how K-12 and postsecondary educational institutions are positioned to assure the state's workforce can be globally competitive. They are concerned about how many enter and succeed in higher education, the relevance of curriculum to a fast-changing economy, and the need for focus on general "employability" skills like critical thinking, problem solving, and teamwork. A June 2007 Commission Accountability Framework report, "Educational Attainment of Population," highlighted a declining rate of postsecondary degree attainment by Californians, especially disturbingly low degree attainment by its fastest-growing population—Latinos. Given postsecondary education's importance to the future workforce, the ability to meet the demands in numbers and quality is increasingly urgent.

This paper provides a summary of what California's postsecondary education systems are doing in workforce and economic development. It also provides observations for the Commission's review regarding the capacity for the state's postsecondary education community to more efficiently and effectively respond to workforce needs.

Observations

- Variation in system missions and goals and the lack of a coherent linkage between state needs and institutional responses makes it difficult to determine how successfully the systems actually meet the state's workforce needs and what improvements might be made. Each system has initiated a variety of activities that address workforce needs or that seek to stimulate or reinforce the state's economy. However, there is no systemic mechanism to ensure that what happens on campuses will reliably provide the educated workers that California needs.
- California colleges and universities generally believe that workforce development *is* part of their mission, but each system and the scores of independent institutions define their roles with varying degrees of specificity and pursue workforce goals in widely differing ways.
- Of the public systems, the California Community Colleges have the clearest workforce mission and the strongest system-level infrastructure to support it, including administrators specifically responsible for implementing workforce goals, and data collection on success measures. Such systemic infrastructure is harder to find in the University of California and California State University. Many campuses pursue strong workforce initiatives, but systemic coordination or oversight are not clearly focused in one office or individual and quantifiable data on overall success are limited.
- Among private and independent institutions, workforce goals and implementation tend to be unique to each institution, as there is no "system" *per se*. Many independent institutions do have strong workforce programs, but there is no centralized data collection by which their contributions can be systematically aggregated and analyzed to better measure their impact on statewide workforce needs.
- The governance structures and policies for public postsecondary education restrict the power of system offices and leaves most operational decisions about programs, partnerships, and curriculum to the campuses. System offices play a role in defining overall goals and coordinating state-level initiatives, but they limit direct intervention in individual campus decisions on how best to pursue state or campus workforce goals.
- Two factors seem to have a positive impact on supporting strong workforce programs on individual campuses: the availability of funding, including competitive grants; and the existence of well-established partnerships between universities and workforce stakeholders, including other educational institutions and economic development partners, in their region.
- Each system has many examples of local or regional initiatives targeted to workforce needs. All the public postsecondary education systems have some state-level initiatives to meet critical statewide needs for certain workers (for instance, nurses or math and science teachers) that are administered and funded through system offices, with activities centered at participating campuses. To the extent they have specific goals, many of the initiatives appear to be successful in addressing their targets, especially when those initiatives are structured as partnerships targeting economic and workforce needs on a regional basis. It is not necessarily clear what long-term impact these initiatives have on the state's workforce needs.
- California has no single "workforce and economic development plan" that aligns workforce systems with all levels of education and economic development entities. Required plans for federal funds under the Workforce Investment Act (WIA) and Perkins Career and Technical Education Improvement Act do not serve that function, although there are efforts to expand

both plans to serve broader, more visionary purposes. SB 293, passed in 2006 to update state workforce planning law, may provide a vehicle for the alignment of goals. But currently, postsecondary education institutions, except for public community colleges, do not closely coordinate with plans designed to address state workforce needs. Recognizing this limitation, the Commission has sponsored legislation (AB 365) that, if enacted, would create a task force charged with developing recommendations on appropriate measures of future state workforce needs and how to align those needs with future postsecondary education programs and capacity.

- No specific criteria have been embraced that define what constitutes a "best practice" or "exemplary program" for effective workforce development at a college or university. A review of a number of initiatives that are considered effective by their systems, however, suggest the following common characteristics: clear linkage with a growing economic sector or industry cluster in the region; good collaboration between the institution and the private sector to understand the economic needs; coordination with other stakeholders in the region to minimize competition and target the unique resources of each institution to meet common goals; institutional support that transcends the commitment of a single faculty member or administrator; a consistent strategic planning process that is informed by data; funding that may start with the institution but also includes other public and private sources; and flexibility to adjust program activities as needs change.
- Career development is an under-emphasized priority at all levels of education. Most postsecondary institutions make internet-based career planning tools available to students but often lack staffing to support them and strategies to encourage students to utilize them, limiting the effectiveness of these resources. Student demand drives many decisions about academic and career technical education program offerings, but many students are not well-informed about the connection between programs available to them and occupations they may wish to pursue.

Employer Concerns about Postsecondary Education

The Commission's December 2006 research paper on the nexus between postsecondary education and workforce development, "A Workforce and Employer Perspective," reported on employers' concerns that not enough skilled workers are being produced by the state's postsecondary education system. The paper showed that California's fastest growing new industries will require baccalaureate degrees or higher in a larger proportion than that in the current workforce, and that demand will exceed the current or planned number of graduates in the coming decades. It is expected that as many as two-thirds of the new jobs created in the coming decade will require some level of education above high school—if not a four-year or graduate degree, then an associate degree or career technical certification. There is a national concern about the ability to balance the supply and demand for skilled workers to sustain the economy. But this concern is of particular importance to California, which has already seen its standing in the world economic order drop from fifth largest economy to eighth over the past several years.

The Commission's previous reports also suggested that the issue for employers is not just production of specific degrees, although definite shortages can be seen in areas like teaching, nursing, and engineering. The greater concern of employers is that certain skills they believe virtually every employee needs such as problem solving, critical thinking, and the ability to work in teams are not evident among all college graduates. In contrast, postsecondary education institu-

tions believe they do provide their graduates with these skills. These divergent views have prompted many employers, particularly those reliant on a localized workforce, to work directly with postsecondary institutions within their region to build a shared understanding of regional economic needs and identify the types of education and training programs needed to better prepare students for jobs in current and emerging sectors. While these efforts have created some exemplary initiatives at institutions and in regions, they do not necessarily address the larger issues facing the state.

Research Questions and Organization of this Paper

California takes great pride in the strength of its economy and the capacity it provides for its citizens to enjoy a high quality of life, take advantage of opportunities for continuous personal growth and development, and provide for the health and welfare of its elderly and infirm. This is due in no small part to the quality and accessibility of California's public colleges and universities in which the state annually invests nearly $15 billion. The returns on this investment have been numerous, including producing one of the most skilled and productive workforces in the nation, generation of completely new economic sectors, and accompanying jobs, as a result of world-class research produced by its research universities, and the enviable status of having somewhere between the fifth and eighth largest economy in the world.

But California's economic successes have generated a new set of challenges resulting from more than a half-million people a year choosing to establish residence in the state and a rapid change in the workforce available to sustain California's economy into the future. With a substantial portion of California's most skilled workers entering, or preparing to enter retirement, state policymakers must address the challenge of ensuring that an ample supply of skilled workers is being developed now to replace those who are leaving the workforce and that they have the skills needed to adapt to emerging sectors of the economy for which jobs do not necessarily exist currently.

This paper is part of the Commission's continuing effort to provide information and sound advice to the Governor and legislators on ways the state's postsecondary education institutions can continue, and perhaps expand, the role they play in ensuring a strong economic foundation and an ample supply of skilled workers, particularly in areas of statewide need. It provides an overview of California's public and non-public postsecondary educational institutions, and how they have chosen to participate in addressing the state's economic and workforce development needs. Commission efforts to describe the workforce development roles of each sector of postsecondary education are guided by research questions presented in a June 2007 Commission update on this topic. These questions are included in Appendix D.

Research was based on both state and institutional documents, as well as interviews with administrators in the system offices and at various institutions. Preliminary research reports were provided to the systems in May 2007, allowing representatives to "fill in the blanks" and provide clarification or corrections. Several of the systems submitted additional documents and comments. What follows is not exhaustive, but does provide pertinent information on each system's workforce role. The findings and conclusions will serve as the basis for a final paper in December offering policy options.

California Community Colleges

Mission and Role

The role of the community colleges as it relates to workforce development is established in the 1960 *Master Plan for Higher Education in California*, and it is retained or strengthened in subsequent revisions to that plan. Moreover, the system's workforce and economic development role has been memorialized in state law and, more directly, in the system's governing documents and organizational structure. A Strategic Plan adopted by the Board of Governors in 2006 specifically includes as a mission of the system: "Economic and workforce development to meet the ever-increasing demands of career-oriented young people, adult learners and incumbent workers." The title of the plan itself—*Education and the Economy: Shaping California's Future Today*—makes that mission a priority.

Policy and Structure

The California Community Colleges Chancellor's Office coordinates implementation of the Strategic Plan and reports on progress to the Board of Governors and the public. The position of Vice-Chancellor for Economic Development and Workforce Preparation provides statewide leadership and coordination for workforce and economic development goals. The California Community College system is comprised of 72 autonomous college districts, each of which has its own governing board. This organizational structure mitigates strong control of district and campus operations by the Board of Governors and Chancellor's Office. Consequently, there is a reliance on statutory mandates and regulatory compliance as a means of focusing local attention on statewide goals and priorities. To promote collaboration, the Chancellor's Office relies on active consultation with community college organizations to promote cohesive and coherent approaches to address statewide needs. This has proven to be effective but is often time consuming. Nonetheless, the community colleges retain a greater degree of flexibility than their public university counterparts in responding to the needs of their students and the communities they serve—an organizational advantage, particularly at the regional level.

Gauging and Responding to Workforce Needs

The Chancellor's Office maintains a unit that gathers, analyzes, and reports data on workforce outcomes. For many years, the system's information management unit cross-matched student-specific college completion data with the Unemployment Insurance database maintained by the state Employment Development Department (EDD) and was able to see how many of those who left the colleges went on to employment. Recently, EDD terminated that cross-matching due to concerns regarding student privacy and costs. Only through such longitudinal data is it possible to determine the extent to which community college programs actually lead to employment in related areas.

EDD projects about 50,000 job openings each year for which a community college degree or career technical certification is specifically required. While the EDD says the largest percentage of new job openings will be in categories requiring only "on-the-job" training, many employers will want workers with more than a high school diploma, and advancement in many of those jobs will require education beyond high school, including career technical certification and associate degrees. Community colleges are working directly with many regional employers to provide training for their existing workforce, either to increase skills in their current positions or to assist them in qualifying for advancement.

Impact of Student Choices

In fall 2005, more than 1.6 million students were enrolled in credit and non-credit courses for associate degrees, transfer to four-year institutions, career technical certification, skills upgrading, and enrichment. Enrollment in Career Technical Education (CTE) as a proportion of courses taken has remained at 31% for a number of years. In 2006, 79,213 associate degrees and 42,135 pre-baccalaureate (mostly career technical) certificates were awarded. The system is the most affordable segment of postsecondary education and it has long maintained an open door to all Californians who wish to enroll, if they have a high school diploma or are capable of benefiting from the instruction offered. Because student demand for coursework reflects multiple interests that can change rapidly, it is necessary for community colleges to retain the capacity to rapidly modify their curricular offerings to reflect changing student demand. This flexibility has generated a heavy reliance on the use of part-time faculty, many of whom are attracted from industries located within the college service area.

Illustrative and Exemplary Programs

A partial picture of the range of community college activities is included in Table 1 on the next page.

Not reflected in Table 1, due to its recent enactment, is the Governor's Career Technical Education Initiative (CTE) (SB 70). In the past two fiscal years, $40 million has been allocated to enhance CTE pathways and programs in high schools and community colleges, resulting in the creation of more than 160 new courses and certificate programs in the first year. Another $52 million for the initiative is included in the current state budget.

The California State University

Mission and Role

The California State University (CSU) sees its primary role in providing postsecondary education as key to supporting California's workforce. According to the *CSU Impact Report: The California State University: Working for California (November 16, 2004)*, the CSU cites the 1960 Master Plan for Higher Education to note that the CSU is:

> *...largely responsible for California's well-educated workforce today. The CSU's primary mission in this master plan has been to provide access to baccalaureate, post-baccalaureate and master's level higher education. The success of the University in fulfilling this responsibility has been decisive in providing California's advanced industries with the skills they need.*

While the language of the report links a CSU education to the state's workforce, the CSU does not see its role primarily as "job training" focused on specific occupations, at least at the undergraduate level. Baccalaureate degrees are not designed to provide preparation for specific fields so much as they intend to provide highly transferable, flexible intellectual skills that serve students in a variety of careers. These degrees should nurture the skills on which employers place a high priority—critical thinking, problem solving, verbal expression, leadership and collaboration, and the ability to continue learning. The CSU Mission Statement, adopted by the Board of Trustees in 1985, further states that its mission includes providing "opportunities for individuals

Table 1 CCC Collaborative Workforce Support Efforts (Partial List)

Career Ladders Project	
California Gateway Project	• Targets out-of-school youth, transitioning foster youth, disadvantaged youth and adults; • Partners with Workforce Investment Boards, community colleges, social service agencies, community-based organizations, foundations; sponsored by the Walter S. Johnson Foundation; • Bridges to college leading to post-secondary training in high wage, high growth fields and/or degree programs.
Career Advancement Academies	• $5 million funding; • Established in the Northern, Southern and Central Valley regions; • Bridges to college and careers for disadvantaged and disconnected young adults.
California EDGE Campaign	• A broad-based, non-partisan coalition of California groups to make workforce development a priority on the state's public policy agenda; • Membership includes community colleges, workforce boards, unions, employers, and community based organizations.
Economic and Workforce Development Program	
Economic and Workforce Development Program	• Established in 1991; renamed the Economic and Workforce Development Program (EDWP) in 2003; • Aims to advance the state's economic growth and global competitiveness.
Economic and Workforce Development Coordination Network (ED>Net program)	• Includes 105 regional centers: a major state delivery system for economic and workforce development; • Created a network of service delivery programs, under which 11 initiatives were established: ➢ Advanced Transportation Technologies & Energy (ATT&E) ➢ Applied Biological Technologies (BIOTECH) ➢ Applied Competitive Technologies (CACT) ➢ Business & Workforce Performance Improvement (BWPI) ➢ Environment, Health, Safety and Homeland Security (REBRAC) ➢ Health Care (RHORC) ➢ International Trade Development (CITD) ➢ Multimedia & Entertainment (MEI) ➢ Small Business Development (SBDC) ➢ Workforce Development (WpLR) ➢ Emerging Technologies
Career Technical Education (CTE) Programs	
Apprenticeship	• 16,200 apprentices enrolled in more than 160 apprenticeship programs, typically three to five years in length; • Comprised of a total of 66 trades/crafts titles located on 39 campuses.
Associate Degree in Nursing (ADN)	• Career Technical Education/Economic Development Pathways, Health Occupation Preparation Education Program (HOPE) piloted through ADN.
Tech Prep	• Funded though the Carl D. Perkins Career and Technical Education Improvement Act of 2006; • An articulated, planned sequence of study beginning in high school and extending through at least two years of postsecondary education or an apprenticeship program; • Programs can continue up to the baccalaureate degree; • An important school-to-work transition strategy and significant innovation in U.S. education reform.
Career Technical Education Program	• Enables individuals to achieve academic and career technical knowledge and skills; • Provides incentives to promote collaboration with business and industry; • Helps colleges prepare students for careers in current, emerging and evolving industries.
Cooperative Work Experience Education	• A work-based learning technique; • Integrates classroom knowledge with productive work experience in a business or industry work setting; • Helps students clarify career goals; • Reinforces general or occupational academic or work skills; • Assists in school-to-work transitions.

to develop intellectually, personally, and professionally," preparing "significant numbers of educated, responsible people to contribute to California's schools, economy, culture, and future," offering "undergraduate and graduate instruction leading to bachelor's and higher degrees in the liberal arts and sciences, the applied fields, and the professions," and providing degree programs "that are responsive to the needs of the citizens of this state."

Policy and Structure

The CSU is composed of 23 campuses serving 417,000 students. The CSU provides primarily bachelor's and master's degrees in a large number of disciplines. An overview of enrollment and degree production, including a listing of the top 10 programs in each degree level in 2005 is provided in Appendix A.

The CSU is governed by a statewide Board of Trustees, which is charged with proper oversight, administration and fiduciary responsibility for all campuses within the system. It retains a chancellor and systemwide administrative staff to exercise this responsibility and represent the system before state policymakers. While each of the 23 campuses is delegated a substantial degree of autonomy in the conduct of its respective affairs, the state chancellor retains the authority to define systemwide priorities and require each campus to submit plans for addressing these priorities. The strong governance form embraced by the CSU positions it to be an effective vehicle for marshalling a statewide effort to address workforce and economic development needs of statewide priority. However, CSU is firmly committed to its broader mission of providing high-quality education at the undergraduate and graduate levels. It is resistant to pressures, real or perceived, to shift the balance of curricular offerings to place greater emphasis on "job training." Consequently, CSU contributions are likely to be more substantive in meeting state workforce needs in emerging fields where the value of applied research and lead time are more congruent with the system's mission.

Gauging and Responding to Workforce Needs

The 2004 *CSU Impact Report* is perhaps the clearest statement on how CSU views its workforce role and how it measures success. The CSU cites degree production, economic impact on the state, and the quality and effectiveness of ideas and innovations in its research endeavors to show its important social and economic impact on the state. The 2005 update to the report points to the CSU's contribution to the workforce of some of California's biggest industries: Business, Agricultural Business and Engineering, Communications, Other Engineering, Computer and Electronic Engineering, and Life Sciences. According to the report: "The CSU meets the needs of these industries for well-educated workers by graduating more people in fields related to these industries than the University of California and all of the private universities in the state combined." Beyond private sector jobs, the CSU also produces "workers for critical occupations in the public and non-profit sector, from education and social work to public administration and criminal justice." The report also points to Extended University programs that provide seminars, training programs, online courses, certificate programs, and some off-campus degree opportunities, often in close partnership with employers, to increase skills for current workers and provide lifelong education to the community. The report also notes that research is another major facet of CSU's mission. The university is involved in applied research that keeps educational programs current and relevant to the job market and offers new solutions to industry. In addition, it partners in technology institutes and centers; entrepreneurship and commercialization efforts; and technology parks.

Impact of Student Choices

The CSU selects its freshmen students from the top one-third of public high school graduates in the state. Additional students are attracted from other states and community colleges. Each campus is encouraged to develop a unique identity and core of academic excellence, which serve to attract students with compatible talents and interests. The State University has also sought to distinguish itself by maintaining a regional focus, in recognition that many of its students are geographically constrained in their choices of college attendance and subsequent employment pursuits. Thus the curricular strengths of each campus frequently reflect the workforce needs of local employers and emphasize practical application of knowledge and general learning skills.

Illustrative and Exemplary Programs

The CSU operates seven broad, multi-campus priority initiatives that build on the system's applied research and workforce training in significant economic areas, as seen on Table 2[1] below:

Table 2 CSU Systemwide Priority Projects for FY 2007-08

Initiatives	Area Supported	Funding	Participating Campuses	Partnership
Agricultural Research Initiative (ARI)	Agricultural, environment	Public funding with university and industry capital	The California Agricultural Technology Institute and four-campus consortium	Campus, university and professional research organization collaborations
Regional Biotechnology Workforce Training Facilities Project (CSUPERB)	Biotechnology	Federal funds, private foundation funding	Three non-profit training centers	Partnership with community colleges, industry and regional biotechnology industry cluster organizations
Center for Integrative Coastal Research (CICORE)	Coastal environments	NOAA-funded	Ten-campus consortium	Partnership with public and private entities at both state and national level
Strategic Language Initiative (SLI)	Major world languages	The Defense-wide O&M and federal funds	Southern California CSU campuses	Federal and academic effort collaborations
The Port and Intermodal Systems Center for Enhanced Security (PISCES)	Port, intermodal, and other transportation-related critical infrastructure	Federal funds	Six-campus consortium	Campus partnership
Multidisciplinary Perspectives on Civic Programs (MPCP)	Civic programs, community service learning	Public funding with non-federal funding sources from universities, state agencies and non-governmental organizations	Fifteen-campus consortium	Partnership with state agencies
Next Generation Media Accelerator	New digital media technologies and applications	Labor-HHS-Ed/FIPSE	Nine-campus consortium	Partnership with Silicon Valley, the Hollywood entertainment industry, and others.

[1] Source: CSU Office of Federal Relations.

In addition to the areas described in Table 2, other workforce initiatives in the CSU system are found at both the system level and, in many instances, at the campus level. At the system level, those initiatives are often a response to a legislative mandate to target a critical workforce need in California. For instance, the state faces a potential serious shortage in the ranks of K-12 teachers, and the need is particularly critical among mathematics and science teachers. In 2004, the CSU and the University of California began a joint effort to significantly increase the number of math and science teachers they prepare. For its part, the CSU—which produces the majority of the state's total teacher graduates each year—launched the California State University Mathematics and Science Teacher Initiative, which is working to double its annual production of math and science teachers from 750 to 1,500 by 2009-10. Increased credential candidates reported at the halfway point show that the CSU is on course to meet the goal.

Campus-level initiatives are often developed in regional partnerships with business, public agencies, and other educational institutions. For instance, CSU Advantage L.A. brings together CSU Los Angeles, the Los Angeles Chamber of Commerce, and UNITE-LA to promote employment opportunities through internships, full-time employment, and career counseling for students and alumni of the university. California State University, Fresno has initiated two partnership efforts to advance regional economic competitiveness: the Fresno Regional Jobs Initiative, which aims to create 30,000 net new jobs in the region over five years, and the California Partnership for the San Joaquin Valley, which brings together public and private resources around major strategies with measurable action to improve the valley's economic vitality and quality of life. The growth of these regional partnerships, and the involvement of CSU campuses in many of them, reflects an increasing sense that California's diverse needs are best met by collaboration that is closely tied to regional economic needs.

University of California

Mission and Role

The 1960 *Master Plan for Higher Education* provides the most comprehensive definition of the university's role as the state's premier public postsecondary education system:

> *The University shall provide instruction in the liberal arts and sciences, and in the professions, including teacher education, and shall have exclusive jurisdiction over training for the professions (including but not by way of limitation), dentistry, law, medicine, veterinary medicine, and graduate architecture. The University shall have the sole authority in public higher education to award the doctor's degree in all fields of learning, except that it may agree with the state colleges to award joint doctor's degrees in selected fields. The University shall be the primary state-supported academic agency for research…*

Because the University, among the publicly supported institutions in California, has the sole responsibility for the preparation for professions such as architecture, dentistry, law, librarianship (graduate), medicine, optometry, pharmacy, public health, and veterinary medicine, its role in workforce preparation is evident. Accordingly, periodic studies should be made of the relationship of supply to demand, particularly in fields where there seem likely to be shortages, such as medicine and pharmacy, for the purpose of determining what steps the University should take to meet its responsibilities in these professional fields.

The UC *Mission Statement* recognizes that the UC is vital to creating California's workforce:

> *Through our academic programs, UC helps create an educated workforce that keeps the California economy competitive. And, through University Extension, with a half-million enrollments annually, UC provides continuing education for Californians to improve their job skills and enhance the quality of their lives. Its basic research programs yield a multitude of benefits for California: billions of tax dollars, economic growth through the creation of new products, technologies, jobs, companies and even new industries, agricultural productivity, advances in health care, improvements in the quality of life. UC's research has been vital in the establishment of the Internet and the semiconductor, software and biotechnology industries in California, making substantial economic and social contributions. The University's active involvement in public-school partnerships and professional development institutes help strengthen the expertise of teachers and the academic achievement of students in communities throughout California.*

Policy and Structure

The University of California has traditionally been both autonomous from direct external controls and highly centralized. Its autonomy derives from Article IX, Section 9 of the State Constitution, which establishes the University as a public trust and vests governance responsibility with a Board of Regents. Administrative control for the system is concentrated at the statewide level rather than at individual campuses. This centralized structure has enabled the UC to resist pressures to expand its focus too widely from its primary functions of high quality instruction through the doctoral level, basic and applied research, and public service. Within this context, the UC seeks to exercise its responsibility to provide public service to the state as a land-grant college primarily through transferring new knowledge and spurring innovation from research, the latter of which has frequently contributed to economic growth of the state.

From a broader state perspective, the university's structure, autonomy, and strong administrative control over the system reduce its ability to quickly respond to changes in workforce demand. Its contributions are likely to be more significant in long-range efforts to alter characteristics of the state economy and the subsequent changes that would foster the skills required of California's future workforce.

Gauging and Responding to Workforce/Economic Development Needs

The UC views its contribution to workforce development primarily in terms of producing graduates with highly developed general and content knowledge skills, although its professional graduate programs are often viewed as tightly linked to specific careers. The UC also maintains a strong extension program that contributes to maintaining and enhancing the skills of professionals who require regular certification by their profession or the state. It cites the following as indicative of its responsiveness to California's workforce and economic development needs:

- Teaching: 40,862 baccalaureate degrees were awarded in 2005 – a 28% increase over 10 years – in addition to 14,357 advanced or professional degrees. (See Appendix B for detailed data.)
- Research: As the primary state-supported academic agency for research, the UC plays a significant role in workforce development, primarily through transferring new knowledge and spurring innovation. In the last decade, more than 2,600 inventions led to new technologies and products; more than 160 companies were founded on UC technology licensing agree-

ments; and more patents were developed over the past nine years than at any other university in the country.

- Public Service: The UC has responded to budgetary initiatives aimed at increasing engineering, nursing, and teaching graduates to respond to workforce needs. The university also cites dissemination of research results to people in the field, and programs to enhance the skills of current workers, such as the California Subject Matter Projects for teacher professional development, as other examples of public service contributions to the workforce.

In its 2003 Impact Study, *California's Future: It Starts Here—UC's Contributions to Economic Growth, Health, and Culture*, the UC measured its impact on the state's economic growth by spending impacts, education and workforce impacts, and technology impacts. The report also cited the UC's role in lifelong learning, and pointed to a number of programs, including programs in the health care professions, that directly address future workforce needs.

Impact of Student Choices

The UC selects its freshman students from the top one-eighth of public high school graduates throughout the state and from an influx of qualified, upper division community college transfer students. It also draws a significant number of students from other states and countries. More than 214,000 students were enrolled for the academic year 2006-07. Students enrolling in the university are some of the most talented available and are attracted to the university largely due to its reputation of providing high-quality educational programs and experiences.

The fact that the UC's admissions requirements are highly selective reduces the need for it to react to highly diverse student demands. Students are primarily attracted to the programs already being offered. They adapt more to the university's curricular offerings than the reverse. Nonetheless, there are numerous examples where faculty have recognized emerging student interests and introduced new courses and programs in response.

Illustrative and Exemplary Programs

The University of California is directly involved in many programs, activities and partnerships that seek to address workforce and economic development needs, either directly through academic programs and work-related partnerships, or indirectly through research and innovation. The following are illustrative examples from among many initiatives and programs operating on UC campuses:

UC's Industry-University Cooperative Research Program

The UC's Industry-University Cooperative Research program has invested more than $100 million in the past three years for new research, including the BioSTAR project and the Digital Media Innovation Program in order to keep California at the forefront of the highly competitive biotechnology and multimedia industries. All 10 UC campuses participate in the program, which has established links to partners in five fields identified as key to California's economic future: Biotechnology; Communications and Networking; Digital Media, Electronics Manufacturing, and New Materials; Information Technology for Life Sciences Microelectronics; and the Pilot Project for Multidisciplinary Research.

California Institutes for Science and Innovation

This initiative encompasses four institutes in areas considered "the backbone of today's 'New Economy.'" These partnerships between the university and leading-edge businesses are focusing resources and expertise on research areas critical to sustaining California's economic growth and global competitiveness. The institutes currently comprise the following:

- California Institute for Quantitative Biomedical Research (UC San Francisco, UC Berkeley, UC Santa Cruz)
- California Nanosystems Institute (UCLA, UC Santa Barbara)
- California Institute for Telecommunications and Information Technology (UC San Diego, UC Irvine)
- Center for Information Technology Research in the Interest of Society (UC Berkeley, UC Davis, UC Merced, UC Santa Cruz)

Independent and Private Colleges and Universities

California's non-public colleges and universities comprise a large and diverse group of institutions, and can be categorized based on their accreditation, their status as non-profit or proprietary, the level of state regulation, and other factors. This section primarily addresses those institutions that grant baccalaureate degrees and/or graduate and professional degrees, and that are accredited by the Western Association of Schools and Colleges (WASC)—institutions that are commonly referred to as "independent" to distinguish them from public and for-profit institutions. The majority of them affiliate with the Association of Independent California Colleges and Universities (AICCU), a voluntary association that seeks to provide a single voice for the independent institutions on policy issues.

Each of these institutions has its own unique identity, governance structure, and mission, and they vary in how they address workforce development. In total, AICCU-member institutions enrolled 251,496 students in 2005, and awarded 170 associate degrees, 31,178 bachelor's, 23,583 master's, 2,789 doctorates, and 5,181 professional degrees. A more detailed statistical picture of 2005 enrollment and degree production for all AICCU-member institutions is provided in Appendix C.

There is another group of more than 1,000 private institutions that are not represented by AICCU but have been regulated by the state—a group generally known as proprietary, for-profit schools that provide varying types of education and workforce training. With approximately 400,000 students and increasing shares of the targeted job training market, there is no doubt these schools play a role in postsecondary workforce development. However, the Bureau for Private Postsecondary and Vocational Education, which was assigned responsibility for regulating these schools, has closed, at least temporarily, and it is difficult to obtain solid data on these institutions or their student outcomes. In future research reports, the Commission may elect to more thoroughly examine the performance of these institutions and offer options on how they may best contribute to California's workforce development efforts. It is not possible to do more than acknowledge their existence at this time.

Mission and Role

The 1960 *Master Plan for Higher Education* and the California Education Code both consider the independent, regionally accredited colleges and universities to be an important segment of

California postsecondary education, and requires recognition of their contributions in meeting the state's goals (described in Education Code section 66014.5) of "access, quality, educational equity, economic development, and student aid." It is clearly assumed that the institutions will contribute, as public higher education institutions do, to California's workforce needs.

Policy and Structure

Determining just how the independent institutions affect workforce needs in California is difficult because each is a separate entity. All of the institutions are subject to legal requirements and restrictions, and they must meet the standards of the agency from which they receive accreditation, but they are otherwise free to determine their own academic programs. Each has its own governance structure, mission, vision and goals, and those are as diverse as the institutions themselves. The AICCU may be able to support workforce development policies and to encourage its member institutions to adopt such policies, but no entity exists that can mandate the implementation of workforce development policies for all the independent colleges throughout the state.

Gauging and Responding to Workforce/Economic Development Needs

While data are collected on enrollment, degrees awarded, and other characteristics of the independent institutions, there is no single place where data would show workforce goals or outcomes for all of them. Data collected by AICCU show that member institutions enroll about 69 percent of the professional students and award 65 percent of the professional degrees in California (see Appendix C for 2005-06 data). The Association has 11 member colleges and universities that specialize in various occupational areas. AICCU member institutions produce 39% of teaching credentials, 48% of education degrees, 37% of business degrees, 35% of nursing degrees, and 24% of engineering degrees in California. Workforce development is clearly an important mission for many of the state's independent institutions and is the predominant mission for some of them. Because these institutions receive no state funding, they must ensure that their programs are justifiable in the marketplace. They are often able to meet market demands more quickly than public institutions because they are independent. They clearly constitute a large and valuable component of the state's postsecondary support for workforce development.

Illustrative and Exemplary Programs

AICCU has identified a number of exemplary programs operated by independent colleges and universities in California. They include:

Samuel Merritt College School of Nursing BSN Partnership Program

This program aims to help address the state's critical shortage of registered nurses. It annually graduates the largest number of registered nurses in the state through partnerships with various other public and private colleges and universities. Participating students may enroll in the general education and science courses required to obtain a nursing degree from a high quality four-year college, and complete the BSN degree at Samuel Merritt College, an Oakland-based, multi-campus institution.

Systems Engineering and Leadership Program at Loyola Marymount University's Frank R. Seaver College of Science and Engineering

This initiative, created in 2003, prepares people for the future workforce by creating an interdisciplinary approach to science, technology and business. The mission is "… to educate working engineers and scientists in the engineering and business disciplines to make them leaders of highly complex technical endeavors within their sponsoring organizations." The

program is targeted at working engineers and scientists in local industry and government organizations, and develops the ability to execute systems engineering discipline, lead complex systems engineering activity and manage interdisciplinary teams, and gain expertise in business fundamentals.

Other targeted workforce-related programs are widespread among the independent institutions, and some focus very strongly on the high-demand fields of teaching and nursing. For instance, Loyola Marymount University also offers a teacher education program aimed at the needs of the schools in its region in both the Los Angeles Unified School District and the Archdiocese of Los Angeles. All credential candidates must complete student teaching in challenging K-12 schools, where they can build their skills in teaching a bilingual, bicultural population. The school also tries to survey graduates to see where they go and how well their education prepared them. Chapman University in Orange County consults with local school districts on projected teacher demand and tries to tailor programs to meet that need. It also has a matrix of small outreach campuses that can relocate as necessary to meet shifting needs.

In nursing, independent colleges and universities are involved in state-level efforts not only to increase the overall numbers of nurses, but to build capacity into the health system and into the nursing education system to meet future needs. In the past four years, the University of San Francisco (USF)—a private Jesuit institution—has nearly doubled its enrollment in the bachelor's of nursing program. It is also about to launch an innovative Doctor of Nursing Practice degree to serve nurse practitioners who want to go into specialty practice. USF is also working with other institutions in its region and the California Institute on Nursing and Health Care to increase nursing education in the state, believing that collaboration and program coordination—including advanced degree programs to generate more nursing educators—is critical to long-term success in meeting one of the state's most pressing workforce needs.

Career Guidance and Planning

An underlying issue that Commission staff found at all levels of postsecondary education (and one that also exists in K-12 education) was a relative lack of systematic career guidance and counseling that would assist students in planning their academic programs in ways that help them pursue careers with a high potential for economic success and a good quality of life. The ratio of counselors to students at all levels of education in California is extremely low. Counselors often experience high levels of stress from their workload and may have little time for or expertise in career guidance as a distinct aspect of counseling. While the availability of counselors with training in all domains—academic, personal, and career guidance—is a problem in itself, the shortage of people trained especially in career counseling is even greater. Sometimes only one or two career counselors serve campuses of many thousands of students.

Most postsecondary institutions in California do have career centers—places where students can go for information on the demand for certain careers or occupations, the academic programs and work skills necessary for those careers, and assistance with securing employment upon successful graduation. Career centers also provide access to other information that can help students make better choices as they enter school and proceed toward a degree with as few costly detours as possible. But career centers vary greatly in available resources, including counselors to help guide students to utilize them most effectively and efficiently. There seems to be widespread agreement that additional career counseling staff could be very beneficial to students. The fact is that large numbers of California's college graduates leave school as unsure of what they will do

"when they grow up" (except perhaps continue to go to school) as they were when they started. This suggests a need for colleges and universities to pay more attention to ways that could help students incorporate career planning and development into the skills and knowledge they gain while they are in school.

Conclusion

The assumption that California colleges and universities are not doing much to address workforce needs is certainly not accurate. Issues that need further study include how to improve the alignment of educational programs with the state's economic and workforce requirements; how institutional cultures can overcome the "academics vs. work" dichotomy and provide rigorous, high-quality learning that also prepares students for their economic futures; how to better address student demand and faculty preparation; how to strengthen collection of data to measure outcomes—and what outcomes to measure; and how to build the ongoing communication and collaboration that is essential to sustaining any successful initiatives. The goal should be to assure that the many positive efforts that currently exist become the underpinnings of a more coherent, systemic approach to workforce and economic development that Californians can rely on.

The Commission also notes several ongoing challenges that must be addressed by the State and all of its postsecondary education systems. These challenges include the following:

- *Resource Adequacy:* Building partnerships with industry; planning and coordinating workforce preparation programs across educational systems; developing strategies to inform and recruit students into training programs designed for emerging sectors of the economy; securing faculty with the expertise to teach particular workforce courses; and providing needed equipment and facilities all require resources that postsecondary administrators must find ways to secure.
- *Curricular Alignment:* Few, if any, of California's colleges and universities have developed mechanisms to effectively align their workforce programs and activities with statewide planning and collect data that enables an assessment of the extent to which degree and certificate awards are keeping up with workforce demands, and whether those awards are in the right regions and industries and equip the recipients with the right skills for success.
- *Status Alignment:* Each of California's postsecondary education systems struggle with a persistent dichotomy of assigning greater priority to "academics" or to "workforce preparation." In part, this tension stems from multiple mission components competing for limited resources available to the system. Ways must be found to reduce these tensions and view academic and workforce preparation as co-equal components of providing a high quality education to all students, producing graduates who know how to learn and how to apply their knowledge in the workforce.

To further discuss some of these issues and their implications for policy, a final report in this series of research papers will be presented to the Commission at its December 2007 meeting. The report will include recommendations related to policy options that policymakers should consider to strengthen the nexus between workforce development and postsecondary education in California.

Appendix A

California State University, 2005		
Total Enrollment – 405,282 **Total Bachelor's Degrees Awarded, 2005 – 66,768** **Top 10 Bachelor's Degrees**		
Discipline	***# of degrees***	***% of total awarded***
Business Administration, Management and Operations	14,255	21.4
Liberal Arts and Sciences, General Studies, and Humanities	7,301	10.9
Psychology, General	4,014	6.0
Fine and Studio Art	2,315	3.5
Criminal Justice and Corrections	2,058	3.1
Sociology	2,006	3.0
English Language and Literature, General	1,978	3.0
Communication and Media Studies	1,782	2.7
Teacher Education and Professional Development, Specific Levels and Methods	1,711	2.6
Nursing	1,559	2.3
TOTAL	**38,979**	**58.4**
Total Master's Degrees Awarded, 2005 – 17,167		
Top 10 Master's Degrees		
Discipline	***# of degrees***	***% of total awarded***
Education, General	3,358	19.6
Business Administration, Management and Operations	2,190	12.8
Social Work	961	6.0
Student Counseling and Personnel Services	709	4.1
English Language and Literature, General	618	3.6
Computer Science	586	3.4
Public Administration	586	3.4
Educational Administration and Supervision	510	3.0
Electrical, Electronics and Communications Engineering	473	2.8
Nursing	426	2.5
TOTAL	**10,417**	**60.7**

Appendix B

University of California, 2005		
Total Enrollment – 209,080 **Total Bachelor's Degrees Awarded, 2005 – 40,862** **Top 10 Bachelor's Degrees**		
Discipline	***# of degrees***	***% of total awarded***
Social Sciences	7,749	18.9
Multi/Interdisciplinary Studies	5,335	13.1
Biological and Biomedical Sciences	4,928	12.1
Psychology	3,608	8.8
Engineering	3,318	8.1
Business, Management, Marketing, and Related Support Services	2,425	5.9
Visual and Performing Arts	2,140	5.2
English Language and Literature/Letters	1,725	4.2
History	1,373	3.4
Computer and Information Sciences and Support Services	1,226	3.0
TOTAL	**33,827**	**82.8**
Total Master's Degrees Awarded, 2005 – 8,578		
Top 10 Master's Degrees		
Discipline	***# of degrees***	***% of total awarded***
Business, Management, Marketing, and Related Support Services	1,715	20.0
Engineering	1,315	15.3
Education	1,038	12.1
Health Services/Allied Health/Health Sciences, General	726	8.5
Computer and Information Sciences and Support Services	434	5.1
Social Sciences	412	4.8
Physical Sciences	377	4.4
Visual and Performing Arts	346	4.0
Human Services, General	295	3.4
Architecture and Related Services	287	3.3
TOTAL	**6,945**	**81.0**

Total Doctorates Awarded, 2005 – 3,001		
Top 10 Doctorates		
Discipline	***# of degrees***	***% of total awarded***
Engineering	515	17.2
Biological and Biomedical Sciences	513	17.1
Physical Sciences	397	13.2
Social Sciences	283	9.4
Education	165	5.5
Foreign Languages, Literatures, and Linguistics	142	4.7
Computer and Information Sciences and Support Services	127	4.2
Psychology	123	4.1
Mathematics and Statistics	106	3.5
English Language and Literature/Letters	92	3.1
TOTAL	**2,463**	**82.1**
Total Professional Degrees Awarded – 1,896 **Listed in order of preference**		
Discipline	***# of degrees***	***% of total awarded***
Law	775	41.0
Medicine	632	33.3
Dentistry	190	10.0
Veterinary Medicine	124	6.5
Pharmacy	120	6.3
Optometry	55	2.9
TOTAL	**1,896**	**100.0**
NOTE: Also in 2005, UC awarded 170 Further Professional Certificates; 572 Intermediate Degrees; and 140 Unknown Degrees.		

Appendix C

WASC-Accredited, Non-public, Four-Year Institutions, 2005 (AICCU Members)		
Total Enrollment – 250,496		
Total Bachelor's Degrees Awarded, 2005 –31,178		
Top 10 Bachelor's Degrees		
Discipline	***# of degrees***	***% of total awarded***
Business, Management, Marketing, and Related Support Services	7,124	22.6
Social Sciences	3,803	12.1
Visual and Performing Arts	3,058	9.7
Psychology	2,163	6.9
Liberal Arts and Sciences, General Studies, and Humanities	1,876	6.0
Communication, Journalism, and Related Programs	1,791	5.7
English Language and Literature/Letters	1,145	3.6
Biological and Biomedical Sciences	1,133	3.6
Health Services, Allied Health/Health Sciences, General	1,005	3.2
Engineering	948	3.0
TOTAL	**24,046**	**76.4**
Total Master's Degrees Awarded, 2005 – 23,583		
Top 10 Master's Degrees		
Discipline	***# of degrees***	***% of total awarded***
Education	7,001	29.7
Business, Management, Marketing, and Related Support Services	6,060	25.7
Psychology	1,758	7.5
Engineering	1,661	7.0
Health Services, Allied Health/Health Sciences, General	1,355	5.7
Computer and Information Sciences and Support Services	945	4.0
Visual and Performing Arts	935	4.0
Human Services, General	783	3.3
Social Sciences	587	2.5
TOTAL	**21,085**	**89.4**
Total Doctorates Awarded, 2005 – 2,789		
Top 10 Doctorates		
Discipline	***# of degrees***	***% of total awarded***
Psychology	560	20.1
Education	536	19.2
Engineering	348	12.5
Health Services, Allied Health/Health Sciences, General	314	11.3
Physical Sciences	212	7.6
Biological and Biomedical Sciences	151	5.4
Business, Management, Marketing, and Related Support Services	120	4.3
Social Sciences	89	3.2
Visual and Performing Arts	64	2.3
Computer and Information Sciences and Support Services	57	2.0
TOTAL	**2,451**	**87.9**

Total Professional Degrees Awarded – 5,822 **Listed in order of preference**		
Discipline	***# of degrees***	***% of total***
Law	3,297	64.4
Pharmacy	454	8.9
Dentistry	418	8.2
Medicine	380	7.4
Osteopathic Medicine	179	3.5
Theology	129	2.5
Chiropractic Medicine	126	2.4
Optometry	91	1.8
Podiatric Medicine	44	0.9
TOTAL	**5,118**	**100.0**
NOTE: Also in 2005, the AICCU institutions awarded 63 Further Professional Certificates, 4,899 Post-Baccalaureate Certificates, and 129 Post-Master's Certificates.		

Appendix D

Research Questions for this Paper

1. **Have the seminal policies that frame the system's mission in regard to preparing students for success in California's workforce been identified?**

2. **How are changes made to the system's policies and strategies?**

3. **How do the various levels of academic autonomy impact the policy setting and implementation process governing workforce policies and strategies?**

4. **What mechanism does the system use to gauge changes in workforce needs; devise appropriate policies to align programs with these changes; and measure how well these policies contribute to assuring the right nexus between the system or institution and California's workforce needs?**

5. **How do students' enrollment choices impact the system or institution's ability to respond to California's workforce needs, and what programs have been put in place to ensure students make well-informed enrollment decisions?**

6. **What are the exemplary programs?**

7. **What are the degrees that the system offers, how many students earn those degrees, and what proportion of the demand by California employers for graduates with those degrees does the system satisfy?**

8. **What are the drivers that determine how independent colleges and universities respond to changes in workforce needs?**