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ABSTRACT

This document argues that regions that sustain economic growth or recover rapidly from economic slumps are often the same communities that have aggressively developed and continue to strengthen collaborations with business and industry, universities, community colleges, high schools, and other key public and private sector entities. In San Diego and Imperial counties in California there are 6 community college districts, serving a total of more than 200,000 students each semester. These community colleges have developed a multi-faceted approach to ensuring that they are matching job-training programs to the workforce needs of the 21st century. The districts have developed the San Diego-Imperial Counties Community College Association, which aims to collaborate on training programs. The Association includes university administrators in its meetings, and intends to expand to include business and industry at the leadership level. This document describes the collaboration between the community colleges and the bioscience industry in the San Diego region. The colleges work with a bioscience association, as well as with individual companies, to plan for future and current workforce needs. Also describes regional economic development centers funded by the state of California, which include the Center for Applied Competitive Technologies at San Diego and Workplace Learning Resource Centers. (NB)

COMMUNITY COLLEGES AND ECONOMIC DEVELOPMENT

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SAN DIEGO COMMUNITY COLLEGE DISTRICT

ECONOMIC DEVELOPMENT AND COMMUNITY COLLEGES

Introduction

Regions that seem to have a knack for sustaining economic growth or recovering more rapidly from economic slumps are often the same communities that have aggressively developed and continue to strengthen collaborations with business and industry, universities, community colleges, high schools, and other key public and private sector entities. Community colleges can play an important role in these collaborations by working with industry clusters, individual companies, trade associations and government agencies to prepare the skilled technicians needed by current and emerging industries in a region. The colleges can also play an important role in expanding access to higher education for an increasingly diverse workforce by offering strong university transfer programs for the future scientists, engineers, business and technical professionals who will shape a region's economic future.

The community colleges in the two-county region of San Diego and Imperial counties in California have developed a multi-faceted approach to ensuring that they are matching training to the workforce needed in the 21st century. The State of California has contributed significantly to best-practices training for industry clusters throughout the state with support for community college economic development initiatives. Community college leaders in the San Diego region serve on the boards of directors of business and industry trade associations and regional planning commissions and tasks forces at the highest levels. This collaborative and inclusive approach to economic development in the region has assisted the colleges in providing an array of training options for local employers to meet their workforce needs and to plan for future growth. This paper presents examples of some of the elements that contribute to community colleges performing a vital role in the economic development of a region and a state.

Collaboration Among Community Colleges

In San Diego and Imperial counties there are six community college districts, each with locally elected governing boards, serving a total of more than 200,000 students each semester through nine colleges and various adult education and workforce centers. The college districts have developed an association that is considered a model for regional workforce planning and collaboration. Through the organization, San Diego-Imperial Counties Community College Association, the college CEOs and other key staff members meet at least monthly to discuss regional issues and to collaborate on training programs to avoid unnecessary duplication of effort. Four-year university administrators are also included in the meetings, including those from San Diego State University, University of California San Diego, and California State University San Marcos. The association is also expanding a structure of involvement with business and industry at the leadership level.

Bioscience

Bioscience is an area where community colleges in the San Diego region have been particularly effective in collaborating with industry. San Diego has the third highest concentration of bioscience firms in the nation. San Diego Community College District Chancellor Augie Gallego serves on the board of directors of the bioscience industry association,

which is called BIOCOM San Diego. Even before he served on the BIOCOM board, however, that industry cluster association was working as hard as the community colleges to ensure that the two-year colleges have the appropriate curricula and resources to train bioscience technicians for an industry that is critical to the region.

In addition to the bioscience association, the colleges work with individual companies to plan for their current and future workforce needs. An example of that kind of relationship is IDEC Pharmaceuticals Corporation. In February 2002, IDEC received FDA approval to market a first-of-its-kind cancer treatment drug. While the company recently received FDA approval, the colleges have been working with IDEC and the BIOCOM association for about a year to plan for the training of as many as 650 new employees IDEC will need over the next few years. They are building a new manufacturing facility for the new cancer drug and for another cancer treatment drug that is already on the market.

The bioscience jobs community colleges will provide training for are:

- Manufacturing
  –operations support technicians
  –operators
- Quality
  –document control technicians
  –environmental quality control specialists
- Maintenance
  –calibration technicians
  –equipment maintenance technicians
- Materials Control
  –materials handling technicians

IDEC, like most of the bioscience firms the colleges work with, recognizes the importance of recruiting and retaining a skilled workforce. Built into IDEC's plan for expansion is a career ladder for the community college graduates who will work for the company.

The two-year degree students with no work experience will start at IDEC as a Technician One. These technicians will sterilize glassware and prepare equipment for operation. They will then have six additional career positions to move up as they grow with the company. The top position in the career path is a Lead Operator. The Lead Operator (six years experience) will have technical or production responsibility, troubleshooting, shift scheduling and lead processing and equipment changes.

IDEC has met with individual community colleges in the region and with the regional community college association to develop the training programs that will prepare the 650 technicians the biopharmaceutical company will need over the next few years. During the summer 2002 community college bioscience faculty will be interning at IDEC with support from a National Science Foundation grant and in collaboration with the bioscience program at City College of San Francisco, which is located in the second largest biotechnology region in the United States.

In the San Diego Community College District there are three colleges and each college has a particular strength in preparing bioscience technicians for industry. San Diego Miramar

College's bioscience program concentrates primarily on preparing technicians for jobs in research and development. San Diego Mesa College offers a chemistry technician training program for the industry. San Diego City College, which is a regional bioscience center that acts as a resource for all community colleges in the two counties, has equally strong programs in training technicians for jobs in bioscience research and development and manufacturing.

The University of California, San Diego has played the most significant role in attracting and growing bioscience research and development firms in the region. But the community colleges are a critical component to provide the technicians for R&D and to ensure that the manufacturing of biopharmaceutical products stays in the region.

State Support for Industry Clusters Through Regional Economic Development Centers

The California Legislature and Governor have supported community colleges' role in economic development, first by establishing in 1991 the Economic Development Program to create regional centers on community college campuses to support specific industry clusters. In 1996, economic development was added as one of the primary missions of California community colleges.

Community colleges throughout the state compete for state grants to operate regional centers, with each center focusing on a particular industry cluster or specific services to business and industry. The center specialties have been selected to cover businesses and industries that demonstrate the most promise for employment and business opportunities for community college students. As indicated in the Economic Development Program rationale for the centers, the clusters are also natural extensions of existing programs, such as health, transportation, bioscience, environmental technology, and multimedia, where technologies are moving so fast that existing college curricula can all too easily fall behind industry standards. In these cases, the centers are designed to "jump-start" the innovation-to-curriculum continuum, and to assist the colleges to stay on top of change.

Statewide, the centers leverage state support with funds from various public and private sector grants and contracts. During fiscal year 2000-01, the centers leveraged $17 million in competitive state grant funds to obtain $67 million, with $23 million coming from business and industry matching funds, $37 million in fees and contracts from industry and $7 million in federal funding. The centers throughout California in 2000-01 provided training and services for more than 86,000 workers, 28,000 students and 15,000 community college faculty and staff.

In San Diego County, the following economic development centers exist:

- Biotechnology
- Centers for Applied Competitive Technologies
- Environmental Technology
- Workplace Learning Resource Center
- Regional Occupational Health Center
- Advanced Transportation Technology
- Small Business Development Center
- New Media/Multimedia Center
- International Trade Development Center

The San Diego Community College District (SDCCD), with its three colleges and network of six Centers for Education and Technology, operate five of the state-supported initiatives. The SDCCD received in 2000-01 a total of almost $1 million of state funds to operate the five centers. The centers provide the infrastructure to develop programs and services that the SDCCD does not have the resources to develop on its own.

During the past three years, the centers statewide have demonstrated a cost-benefit ratio in excess of $9 in benefits for every dollar of state funds invested. The centers, known as Educational Network or ED>Net centers, are vital to the community colleges and California because they provide critical assistance to the colleges in preparing students for high-wage jobs, direct training and retraining of the incumbent workforce, and services to business and industry that accelerate the state's economic growth.

Centers for Applied Competitive Technologies

The Center for Applied Competitive Technologies at San Diego (CACT-SD), established in 1991, is one of 12 regional advanced technology centers designated by the State of California to assist manufacturers in modernizing their management of manufacturing and production technologies, thus enhancing their competitiveness in the global economy, using work-site consultation, education, training and technology transfer/deployment services.

This state-sponsored center, which is housed at San Diego City College and administered by the San Diego Community College District, has a service area of more than 4,000 manufacturers and other technology-based companies in San Diego and Imperial counties. The Center was designed primarily to serve firms involved in the manufacture/fabrication of metal parts and structures, industrial machinery, telecommunications equipment and systems, electronic components and instruments, chemical, biological, and allied products (e.g., biomedical, biotech, pharmaceuticals), plastics, paper and printed materials, and food products.

The CACT-SD has become an employee source for local companies seeking technicians trained in the latest manufacturing technologies.

Workplace Learning Resource Centers

Workplace Learning Resource Centers (WpLRCs) are part of the state-supported regional ED>Net centers. The WpLRCs specialize in improving employee basic skills through an array of services that includes organizational needs analysis and assessment, customized curriculum development, performance-based training, computer-based training, and ongoing support services. The San Diego Workplace Learning Resource Center operates today under the Employee Training Institute (ETi), an auxiliary organization of the San Diego Community College District. The goal of both ETi and the Center is to provide high quality affordable training and support services to business, industry and government agencies.

The statewide network of Workplace Learning Resource Centers collaborate on best practices and in providing training for companies with offices located in more than one region of the state. An example of community colleges collaborating statewide to serve a company with many workplace locations is a contract between ARCO Products Company and the San Diego Community College District's Employee Training Institute. The contract called for ETi to provide customer service training for employees of ARCO's 1,720 retail sites located in five Western states (Arizona, California, Oregon, Washington and Nevada). Six community colleges in California with Workplace Learning Resource Centers worked in conjunction with the San

Diego Employee Training Institute to provide customer service training in their regions to a total of 3,400 ARCO employees over seven months.

Responding Rapidly to Changing Workforce Needs

Educational institutions are sometimes criticized for being inflexible and slow to meet changing workforce needs. The San Diego Community College District has worked to respond as rapidly as possible to the needs of business and industry by providing several options for employers. Companies that require customized training specific to their employees can contract with SDCCD to design the training, collaborate with the company to develop the curriculum or use curriculum pre-designed by the company. Curriculum developed for contract education programs do not have to go through the sometimes extensive, lengthy process of approvals required for college credit courses and programs. However, The SDCCD has developed an online system of curriculum development for the colleges that has greatly streamlined the curriculum development and approval process. The online system developed by SDCCD has been so successful that other community colleges in California and other states are purchasing the software, called CurricUNET. Faculty, business and industry representatives can review and make changes on proposed curriculum via the Internet, thus dramatically reducing the numbers of face-to-face meetings required in the traditional curriculum development process. College curriculum that used to take six months or longer to develop can be completed in about three month, and even quicker for contract education curriculum.

Partnerships to Increase Math, Engineering and Science Majors

Community colleges in California have been partnering locally and statewide to increase math, science and technology majors in higher education who prepare for high technology jobs.

San Diego City College is a partner with High Tech High School, an innovative charter school in San Diego that integrates technical and academic education to prepare students for post-secondary education and for employment in high technology fields. The high school attempts to increase the number of educationally disadvantaged students in math and engineering who succeed in high school and post-secondary education and who will go on to work in San Diego's high technology industries. City College has developed an articulation agreement with High Tech High School where graduates can earn an associate degree in a math or science field in one year then transfer to a four-year university, thus accelerating the time to baccalaureate degree for students whose skills are needed in the workforce.

San Diego City College and many other community colleges throughout California are partners in a program created by the University of California and titled Mathematics Engineering Science Achievement (MESA). MESA partners with educators and industry representatives to serve almost 32,000 educationally disadvantaged students, mostly African American, Latino and American Indian. The goal of MESA is to increase the number of disadvantaged students at pre-college, community college and university levels who excel in math, science and engineering and ultimately attain baccalaureate degrees in math-based majors.

MESA has had remarkable success. Among the high school students who participated in MESA activities, 85 percent of the high school graduates go on to college, compared to approximately 50 percent of all California high school graduates. During the last three years, 100 percent of MESA community college students who transferred to four-year institutions entered a math-based field. MESA was recently named among the five most innovative programs in the

nation by Innovations in American Government, an initiative of the Ford Foundation, the John F. Kennedy School of Government at Harvard University, and the Council for Excellence in Government.

High School, Community College and University Data Sharing, Connecting Curricula

The San Diego-Imperial Counties Community College Association has initiated a data sharing and curricula articulation project to follow students in specific majors from high school to community college and public university levels in an effort to improve articulation and student progress. The project has resulted in faculty from English, math and some career training fields in the region's high schools, community colleges and public universities to begin working together to coordinate curricula and to measure the results from high school through university courses. The project is in the early stages, yet other counties in Southern California are already adopting it as a model to improve course articulation and to measure student success.

It is in the interest of community colleges and the universities to expand such efforts with elementary and secondary schools to increase the numbers of high school graduates who are prepared for college-level work and ultimately to meet the need for higher skills in the workplace.

Conclusion

Community colleges can and should play a vital role in the economic development of their regions. To be successful, community colleges must aggressively build and strengthen collaborations with business and industry, universities, high schools and other key public and private sector entities. The bottom line for community colleges will be productivity. Can community colleges prepare people for an economy that depends upon an increasingly productive workforce to compete in the global marketplace? For community colleges in regions with strong research universities that drive economic expansion, the colleges must work with the universities and new and expanding industries to prepare the technicians that aid in research and development as well as the manufacturing of products. For community colleges in rural areas that may have economies built around one or two industries, the colleges can and do play important roles in improving productivity and services, whether it's considered old economy industries such as fishing and tourism or new economy communications and other high tech industries. Community colleges-rural or urban, coastal or inland--must offer strong university transfer programs for future scientists, engineers and business and technical leaders to gain foundations in higher learning that will help them, their companies and their communities to be successful in any economy. State government can help build the infrastructure community colleges need in order to play a significant role in economic development, as California has with the regional ED>Net centers.

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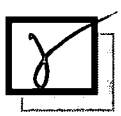

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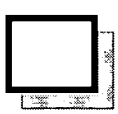

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