

Kern Community College District

Workforce Development Plan 2023-2028

Prepared by:

Dr. Trudy Gerald, Vice Chancellor

Dr. Bonita Steele, Director of Programs and Program Development



January 12, 2024

Table of Contents

Kern Community College District	3
Kern CCD’s Mission and Goals.....	3
Kern CCD’s Service Area.....	3
Service Area Economic Overview.....	4
Kern CCD Workforce & Economic Development Division.....	6
Workforce & Economic Development Assets, Strategies & Execution.....	9
Kern Community College District’s Priority Sectors	16
Healthcare Industry Sector.....	18
Energy Sector Industries.....	25
Manufacturing / Advancing Technologies.....	30
Agriculture.....	37
Business, Business Services, and Entrepreneurship.....	46
Transportation & Logistics.....	52
Defense and Aerospace Industry.....	56
Education.....	60
Workforce and Economic Development Roadmap	68
Healthcare Industry Sector Roadmap.....	68
Energy Industry Sector Roadmap.....	70
Manufacturing / Advancing Technologies Industry Sector Roadmap.....	72
Agriculture & Natural Resources Industry Sector Roadmap.....	74
Business, Business Services & Entrepreneurship Industry Sector Roadmap.....	76
Transportation & Logistics Industry Sector Roadmap.....	78
Aerospace & Defense Industry Sector Roadmap.....	80
Education Roadmap.....	82

Kern Community College District

Kern CCD's Mission and Goals

The Kern Community College District (Kern CCD, District) mission is to provide outstanding educational programs and services that are responsive to our diverse students and communities.

Chancellor's & Board of Trustees' Goals

Advance Student Success & Equity
Workforce and Economic Development
Develop districtwide collaboration and cooperation
Resource Development
Develop Technology Infrastructure to support the colleges.

Kern Community College District Strategic Plan

Goal #1: Maximize Student Success
Goal #2: Ensure Student Access
Goal #3: Provide Workforce & Economic Development Programs that Respond to Local Industry
Goal #4: Reduce Equity Gaps
Goal #5: Strengthen Organizational Effectiveness

Kern CCD's Service Area

Kern Community College District (Kern CCD) serves communities over 24,800 square miles in parts of Kern, Tulare, Inyo, Mono, and San Bernardino counties through the programs of [Bakersfield College](#), [Cerro Coso College](#), and [Porterville College](#). Governed by a locally elected Board of Trustees, the district's colleges offer programs and services that develop student potential and create opportunities for our citizens.

Kern CCD is geographically one of the largest community college districts in the United States, serving more than 30,000 students. Our students represent a diversity of religions, economic backgrounds, sexual orientations, abilities, and ethnicities.

The Kern Community College District was established as a separate entity in 1968 to respond to the changing needs of our communities, providing educational services to residents for many years: at Bakersfield College since 1913; at Porterville College since 1927; and in the Ridgecrest area since 1951 by what is now Cerro Coso College. All three colleges are proud members of the [California Community College System](#) and are accredited by the [Accrediting Commission for Community and Junior Colleges \(Western Association of Schools and Colleges\)](#). Today, education centers are located at sites in Delano, downtown Bakersfield, the Mammoth/ Bishop area, Edwards Air Force, and the Kern River Valley, offering additional convenient, localized instruction for thousands of residents. Kern CCD's commitment to distance learning and other technological advances is creating increasing opportunities for education through the internet, satellite, and cable television to individuals across our broad service area and beyond.

Service Area Economic Overview

The Kern CCD service area includes all or part of Kern, Tulare, Inyo, and Mono counties. An estimated total of 1.4 million people live in and are served by the district (US Census Bureau, 2022). There are several microeconomies within the region. Agriculture is the dominant industry in the San Joaquin Valley basin portions of Kern and Tulare counties. Oil and gas construction and service industries are the largest business in western Kern County. In eastern Kern County the aerospace industry and military facilities are the primary economic drivers. In Inyo and Mono counties, hospitality and tourism are the dominant industries. This section provides more detailed information regarding each of these sub-regions within the Kern CCD service area.

Kern County

Kern County is the third largest California county (8,132.2 sq. mi.), and home to 916,108 people (US Census 2022 population estimate). The majority, 56.8% of the county population, are Hispanic, 30.4% are White, 6.3% Black, 5.8% Asian, and 3.4% identified as two or more races. The 2022 per capita income in the past 12 months was \$27,975, household median income was \$63,883, and 17.8% of persons were living in poverty in Kern County (US Census).

The Kern County 2020 real GDP was \$48,674,498, a slight decline of -1.1% from the prior year (U.S. Bureau of Economic Analysis). Out of 58 California counties, Kern County ranks 21 in real GDP for 2020 (B3K Market Assessment). UC Merced (2022) finds that while Kern County's workforce grew by 51 percent between 2000 and 2019, which continues to increase the overall GDP for the area, per capita GDP has been highly volatile. Between 2000 and 2009, per capita GDP grew more than any other California county at 34.9 percent; however, it has declined by 4.4 percent since 2009, which is the third-worst rate in the state.

There is a recognized need to diversify the County's industry and employment base; strengthen existing and emerging industry clusters; ensure social equity in economic development measures through targeted training and geographic areas of focus; provide greater resiliency and adaptation for the oil and gas and agricultural sectors as a result of the current policies affecting environmental, water management, and the general business climate; and leverage the range of benefits associated with the major industries, economic shifts, challenges & opportunities in the region, including opportunities for remote work, spurred by the COVID-19 pandemic (Bakersfield EDSP, Kern CEDS).

Kern County's sub-regional economies are distinct. East Kern is dominated by government and military installations, commercial scale solar and wind, and aerospace. In West Kern, fossil fuels are the primary industry and is the area that holds the most promise for carbon management and storage solutions. The North, Central, and South Kern subregions the leading industry sectors are agriculture, food manufacturing, business services, healthcare, retail, and logistics.

In West Kern, the fossil fuel industry is facing significant climate change related shifts toward carbon management and storage. In East Kern, wind and solar renewable energy generation facilities dominate the landscape. The Mojave Air and Space Port infrastructure is a critical component to growing area research, scientific, and technical industries, despite the relocation of a few aerospace companies outside California. The North, Central and South Kern subregions are facing significant drought, extreme heat, increases in energy prices, and reduced grid stability affecting its Agriculture, food manufacturing, healthcare, logistics, and retail industries.

Economic development opportunities such as carbon management, transportation electrification, expansion of solar and wind commercial energy production, implementation of microgrid technology to offload energy demand from the grid, and other innovative energy solutions - all make sense to develop, test, and implement in Kern County.

Tulare County

Tulare County's 2022 population is estimated to be 477,544 (US Census Bureau, 2022 estimate). Of the total population approximately 67.07% identified as Hispanic, 26% White, 2.3% Black / African American, 4.2% Asian, 2.8% American Indian / Alaskan Native, and 2.8% two or more races (US Census Bureau, 2023). The leading industry sectors in Tulare County are agriculture, dairy / animal husbandry, food manufacturing, business services, healthcare, retail, and logistics.

Inyo & Mono Counties

Inyo County's 2022 population is estimated to be 18,718 people and Mono County's population is estimated to be 12,978 people (US Census Bureau, 2022 estimates). Of the total population of Inyo County, approximately 24.5% identified as Hispanic, 61.7% White 1.2% Black / African American, 1.8% Asian, 14.1% American Indian / Alaskan Native, and 3.8% two or more races (US Census Bureau, 2023). Of the total population of Mono County, approximately 27.2% identified as Hispanic, 1.1% Black / African American, 2.3% Asian, and 3.0% American Indian / Alaskan Native (US Census Bureau, 2022). Inyo and Mono Counties features pristine wilderness, lakes, and geothermal resources making hospitality and tourism a primary industry.

Kern CCD Workforce & Economic Development Division

The Workforce and Economic Development Division is committed to equity, improved student success, and increased social and economic mobility. Through the leadership of Vice Chancellor Gerald, its mission is to: *actualize equity in education and the workplace, improve student success outcomes, and increase economic and social mobility for local citizenry.*

The Kern Community College District acknowledges the challenges and opportunities resulting from the rapid evolution of industries and the workforce. The Kern CCD is committed to delivering education and workforce opportunities that result in positive economic and social transformations for the families residing in the communities within its service area. The integration of technology such as virtual reality into industry practices and the need for critical workforce digital skills and the integration of high-quality workplace norms offer great promise toward building a stronger workforce, families, and communities. The Kern CCD's Workforce and Economic Development Team continues to execute strategically significant efforts resulting in high-performing educational systems that increase equity, student outcomes, and increased social and economic mobility for partners and participants.

Kern CCD's Commitment to California Community College Systemwide Goals

California Vision 2030

Goal 1: Equity in Success - Ensure the academic and career success of all Californians who are current and prospective California community college students.

- **Outcome 1: Completion** - Increase with equity the number of California community college students who complete a meaningful educational outcome.
- **Outcome 2: Baccalaureate attainment** - Increase with equity the number of California community college students attaining a baccalaureate degree.
- **Outcome 3: Workforce Outcome** - Increase with equity the number of California community college students who earn a living wage.

Goal 2: Equity in Access - Broaden the opportunities for all Californians to participate in higher education by starting or continuing their higher education at a California community college.

- **Outcome 4: Student Participation** - Increase, with equity, the number of students attending a California community college, with particular emphasis on the number of underserved Californians.

Goal 3: Equity in Support - Partner with other systems, agencies, institutions, and community-based organizations to provide students the academic, financial, and social supports necessary to thrive by taking education opportunities and the accompanying support to Californians.

- **Outcome 5: Maximizing Financial Aid** - Increase with equity the number of California community college students receiving state and federal aid for which they are eligible to better support their educational journey.
- **Outcome 6: Reduce Units to Completion** - Decrease with equity the number of units in excess of 60 units for an Associate Degree for Transfer (ADT).

Governor's California Community College Roadmap

Establish a baseline for and increase credit for prior learning (CPL) offerings annually.
Increase access and enrollment in competency-based education (CBE) programs by 15%

Improve systemwide graduation rates, transfer rates, and time to completion among underrepresented Pell Grant recipients and disabled students to meet average of all students by 2026.

Increase percentage of completing students who earn a living wage by 15%,

Increase the percentage of students earning degrees, certificates, and specific skill sets for in-demand jobs by 20% by 2026.

Close equity gaps in access to dual enrollment

Increase the percentage of TK-12 students who graduate with 12 or more college units earned through dual enrollment by 15%.

Focus on establishing or expanding programs that address workforce needs in healthcare, climate action, education, and early education.

Alignment with State Goals

Kern CCD, Bakersfield College, Cerro Coso Community College, and Porterville College programs support the CCCCO Vision 2030 goals and the Governor's California Community College Roadmap outcome objectives:

Goal #1: Equitable Baccalaureate Attainment

1. All actions, policies, and procedures will be enacted centering equity and inclusion and dismantling prejudice and racism.
2. Increase equitable access, success and support for:
 - a. Dual Enrollment in degree pathway.
 - b. Justice-involved and justice-impacted Californians' enrollment in degree pathways including the community college baccalaureate.
 - c. Foster youth in degree pathways.
 - d. Veterans in degree pathways including the Military Articulation Program.
 - e. Increase and improve access, success and support to quality online programs of study.
3. Increase and improve access, success and support to quality online programs of study.
4. Increase the number of eligible students who apply for, and receive federal, state, and local financial aid grants, including the federal Pell Grant, the state Cal Grant, and the California College Promise Grant, among others.
5. Increase flexible term structures, flexible schedules and credit for prior learning opportunities to support working adult learners increase their full-time course intensity.
6. Increase credit mobility and transfer opportunities within the California Community Colleges and to the California State University (CSU), University of California (UC) and Association of Independent California Colleges and Universities (AICCU) institutions.

Goal #2: Equitable Workforce and Economic Development

7. Increase educational access for prospective low-income learners to enhance their socio-economic mobility by developing a high-tech/high-touch system, to take customized educational and training opportunities to them, including apprenticeships, work-based learning and incorporating Learning-Aligned Employment Programs.
8. Health care: Expand access to health care pathway programs with particular attention to nursing, mental and behavioral health.
9. Climate action: Advance community college engagement with the four fields of climate practice — facilities, workforce and curriculum, community engagements and benefits, resource development.
10. STEM: Expand success, access and support in science, technology, engineering, and math disciplines for historically underrepresented students.
11. Education: Increase system capacity to decrease faculty shortages in key sectors including nursing, early childhood pathways and education.

Goal #3: The Future of Learning

12. Actively engage with the impacts of generative AI on the future of teaching and learning:
 - a. Improve the student experience with the use of generative AI as well as smart analytics applied to the “big data” systems (e.g. Student Information System, Learning Management System)
 - b. Modernize system technology infrastructure to support online education delivery and faculty. Develop an analysis of the impact of generative AI technology and its potential implications for teaching and learning and take the necessary action in policy reform, systems development, and practices to advance success, access and support for our students.
 - c. Develop an analysis of the impact of generative AI technology and its potential implications for teaching and learning and take the necessary action in policy reform, systems development, and practices to advance success, access, and support for our students.

Workforce & Economic Development Assets, Strategies & Execution

The Workforce and Economic Development Division's assets include the Central Valley Mother Lode Regional Consortium, the Kern Adult Education Consortium, the 21st Century Energy Center and the California Compliance School. The Vice Chancellor works with college faculty and administrators to achieve state Vision 2030, districtwide, and college goals.

The [Central Valley Mother Lode Regional Consortium](#) (CVML) members include 8 community college districts, 15 colleges, 230 public school districts, and 150 charter schools serving over 100,000 students. The region covers Kern County in the south to Stockton and eastward to the California state border. The CVML Chair, hosted at the Kern CCD, provides technical, logistical, and fiscal support for the 16 college members and their respective districts to address statewide system goals including student success, diversity, equity, inclusion, and access to education and assisting industry to reduce and meet regional labor market supply gaps. The Central Valley Mother Lode Regional Consortium Current Projects are:

Strong Workforce Program: Since the closeout of SWP 5 in November of 2022, the CVML has invested in \$12M of its SWP 6 (2021-2023) funding in 11 regional projects in high priority industry sectors, including across all CTE areas (53%), Agriculture, Water, and Environmental Technologies, AWET (11%), Healthcare & Public Safety (8%), and Advanced Manufacturing (6%). For SWP 7 funding (2022-2024), the CVML has invested \$12.4 million in 13 regional projects, with funds allocated to support all CTE programs (58%), AWET (10%), and ADVM (2%). Looking ahead to SWP 8 funding (2023-2025), CVML has committed \$12.1 million to 10 regional projects. Funds allocated to support all CTE programs (43%), AWET (12%), Health Care Sector (9%), and ADVM (5%). Projects spanning all three funding years on a region wide scale encompassed various initiatives. This involved supporting work-based learning platforms like LinkedIn Learning, Jobspeaker, and Geographic Solutions. Additionally, there was support for labor market research with a specific emphasis on disaggregating data to address equity gaps related to race and gender. Other efforts included assistance for local post-pandemic marketing initiatives tailored for local colleges. Support was extended to Lightcast, previously known as EMSI, for the development of a district-wide economic impact study covering the eight community college districts. Moreover, the region supported a "Jumpstart Program," where colleges organized a four-week training session covering electrical, OSHA, and industrial technology careers, featuring industry tours at local manufacturers. An apprentice program named LAUNCH was also supported, offering colleges within the region a structured and cost-effective approach to initiating apprenticeship pathways for students and the community. Further support encompassed smaller projects, such as membership in NACCE, and a comprehensive website redesign/update.

Talent Pipeline Management Academy, TPM/A: The CVML, in alignment with Strong Workforce Program goals to increase work-based learning opportunities that lead to quality jobs, voted to invest region wide funds in support of developing a clearer employer engagement model via the Talent Pipeline Management Academy. The CVML contracted with the US Chamber of Commerce Foundation, which developed the TPMA to redesign advisory committees as employer collaboratives where a neutral convener, such as a chamber of commerce, brings together employers from a specific industry sector and those involved in the talent pipeline, (i.e., colleges, WIOA partners, temporary agencies, CBOs,

and other stakeholders). Together the CVML reviews local demand/supply gaps annually. The CVML approved 6-month training for a cohort of 45 people with the goal of developing a plan for starting industry specific employer Collaboratives.

K12 Strong Workforce Program: With support from the 2023-2024 K12 Strong Workforce funding totaling \$20,632,608, the Central Valley Mother Lode Region (CVML) selection committee funded 30 Local Education Agency (LEA) applications based on the requirements established by the California Community College Chancellor's Office. This funding goes directly to our partner LEAs who have been established to drive the development, advancement, and expansion of career technical education (CTE) courses, course sequences, programs of study, and pathways for students transitioning from secondary education to postsecondary education to living-wage employment. The LEAs must use the CVML's Strategic Regional Plan and Labor Market Indicators data to ensure that K12 Strong Workforce dollars serve underrepresented students.

CERF: The [Kern County Community Economic Resilience Fund](#) (Kern CERF): The Kern Community College District Economic and Workforce Development Division serves as fiscal agent and is one of five regional Kern Coalition co-convenors that include: Better Bakersfield and Boundless Kern (B3K), a City of Bakersfield County of Kern led public-private partnership; Community Action Partnership of Kern (CAPK); the Kern Inyo Mono Central Labor Council (KIM CLC); and Building Healthy Communities (BHC). The Kern Coalition recognizes that despite years of extraordinary job growth and economic mobility for residents, Kern County is falling behind its peers and the nation in economic performance, opportunity, and inclusion. Market pressures, policy changes and an influx of lower quality jobs are some of the challenges. Currently only 30% of available jobs meet quality job metrics. Half of Kern residents struggle to cover basic expenses, and Hispanic or Black workers are 80% and 60% more likely to struggle. Driven by community aspirations, leadership, and data, Kern CERF will set a shared investment agenda and metrics to create more quality jobs and ensure access to them for all residents – focused on eliminating disparities while promoting durable economic growth and diversification alongside social and environmental resiliency. Momentum has been building to maximize emerging economic opportunities in the region. CERF will further this work by bridging the gaps among disinvested communities and traditional economic actors, ensuring representation, shared decision-making, and equitable distribution of resources to maximize shared regional prosperity.

The **21st Century Energy Center** is working to transform Kern County into a clean energy innovation hub by convening multi-stakeholder high-road workforce development partnerships, engaging with the community, and involving industry in the development of innovative workforce development courses and programs. Kern Community College District's 21st Century Energy Center has been providing training since 2010, offering Construction Skills, Safety, Solar installation, Solar Sales, Industrial Maintenance Mechanic / Wind Energy Technician job skills training. The 21st Century Energy Center's current projects include:

The Energy Innovation Workforce Coalition The 21st Century Energy Center convenes the Energy Innovation Workforce Coalition of innovators, industry leaders, community-based organizations, and local governments. The coalition seeks to support economic and workforce development through integrated energy pathways - grid modernization and clean transportation growth. The coalition is committed to ensuring the maximum benefit from the emerging clean energy economy accrues to Kern County and its residents, especially those from underrepresented and underserved communities, are positioned with the workforce education

and training necessary to realize those benefits. The 21st Century Energy Center also convenes two bi-monthly Coalition working groups: the Clean Transportation Sub-committee and Microgrid sub-committee.

New EV & Solar Energy Courses: The 21st Century Energy Center has been training individuals and first responders to work with alternative fuel vehicles since 2012. The coalition members' input led the 21st Century Energy Center to develop the Introduction to Zero Emission Vehicles and Careers class and established a partnership with the Kern County Electrical Apprenticeship program to provide Electric Vehicle Charging Installation pre-apprenticeship training. The Center is also developing an Electric Vehicle Charging Station Operations and Maintenance Technician training course, a hydrogen fueling infrastructure training course, a Solar Business Development course, a Solar Entrepreneurship course, and a Microgrid Basics course. The 21st Century Energy Center has secured funding to provide paid work experience for Zero Emission Vehicle and Solar training participants.

The Customized and Corporate Training program works with regional employers and other workforce development stakeholders to develop customized workforce training solutions. The Kern CCD's Customized and Corporate Training program conducts training needs assessments to develop innovative, flexible training solutions customized to meet customer needs. The types of training developed vary from technical skills, medical skills, and computer software skills to leadership skills, customer service and communications. Over 25 regional employers utilize state Employment Training Panel (ETP) funds via a Customized and Corporate Training program contract to offset some of the costs of customized training. The Customized and Corporate Training Department has three current Employment Training Panel Projects: Core Funding, Workplace Literacy, and Healthcare Workforce Advancement Fund. ETP Core dollars fund for-profit employers' upskilling and skills training for their employees. ETP Workplace Literacy funds support literacy skills training, including digital literacy training, delivered at the workplace. The Healthcare Workforce Advancement Funds support medical skills training, medical case management training, and professional development for employees of not-for-profit medical and social services employers.

Customized and Corporate Training Projects include:

Utility Line Clearance Arborist Program: The Customized and Corporate Training program currently offers a Utility Line Clearance Arborist class in partnership with Pacific Gas & Electric (PGE) and Butte College.

Utility Vegetation Management Pre-Inspector Program: In partnership with Butte College and the Foundation for California Community Colleges, this training program trains students to identify trees which pose a risk to power lines.

Frontline Leadership Training: Providing the high impact skills and knowledge needed to prepare newly promoted supervisors and high-potential employees for success in leadership.

Contextualized ESL Digital Literacy Training: Scalable, industry-contextualized English language training that helps employers build stronger career pathways for their employees' advancement.

Personal Finance Training: Foundational skills in creating and managing a budget, while understanding savings, credit, and predatory lending.

Customized and Corporate Training program staff are developing an Intro to Forestry training course in partnership with the Fresno Regional Workforce Development Board. Program staff work with all three district colleges to ensure that the customized training is appropriate for development into credit or noncredit courses and certificates.

California Compliance School is a joint effort between the California Department of Toxic Substances Control, the California Highway Patrol, and the California Compliance School to provide Hazardous Waste Manifest Training for businesses that generate hazardous wastes. The course meets the U.S. Department of Transportation's requirements and prepares a trainee to become certified as a DOT Hazardous Materials Employee that can sign and certify shipments as safe for transportation. Instructors are experienced trainers in EPA 40 CFR and DOT 49 CFR regulations covering transportation, inspection, and emergency first responders.

Kern Adult Education Consortium

Adult schools and community colleges in Kern County are working together to expand access to adult education and develop programs that align with workforce needs. The Kern Adult Education Consortium works closely with the Kern Inyo Mono Workforce Development Board and the Kern CCD Workforce Development Division to identify certifications and training programs linked to higher wage jobs tied associated with fiscal mobility and stability. Students can earn a high school diploma or prepare for GED/HiSet exams at local adult schools with no out-of-pocket expense. Committed educators help guide students through the programs, which also include ESL and citizenship. With assistance from the consortium, students have access to affordable associate degree and certificate programs in areas that have a strong workforce demand. Kern Adult Education Consortium current projects include an improved website and the addition of a career exploration course through the Get Focused, Stay Focused curriculum.

The Kern Adult Education Consortium website was redesigned to be more student-centered. Now, any adult in our district can obtain information about course offerings, careers in the region, and program maps leading them toward their careers of interest. This project is spearheaded with our partner, GoEducate, which has worked with many community colleges and universities in the country on developing similar platforms for students to find potential career opportunities. After students have identified career pathways of interest, they can find certificate and degree programs at their regional Adult Schools and Community Colleges to begin their career journey. Currently, students will need to navigate enrollment with the assistance of a counselor at one of our sites, but the plan going forward is to align all adult school and college enrollments to this online platform so that students can finish the application steps after choosing their career pathway.

Get Focused Stay Focused Career Exploration: Kern CCD was awarded a Perkins Reserve Innovation Grant of \$300,000 to provide Career Choices and Changes Curriculum for our adult education students in the 2022/2023 academic year, and the plan was approved for an additional \$300,000 to continue into the 2023/2024 academic year. The Get Focused, Stay Focused courses have taken place in distance learning cohorts and self-paced individual distance learning for adult students in our district, and in-person classes at Delano Adult School, Porterville Adult School, and Mono County Office of Education. This project has helped our adult education students understand the career pathways available to them at our adult schools, community colleges, and industry partners here in their area. This project has helped to increase access for our rural adult education students and provide opportunities for students who may not be able to

attend traditional classroom environments due to time, distance, and other barriers. The course has been approved for dual enrollment through Porterville College, and we are currently working with Porterville College and Porterville Adult School to find the approved teacher for dual enrollment. In addition, we will use the model with Porterville Adult and Porterville College to develop dual enrollment opportunities through this course to offer career exploration courses for our adult education students to earn college credits and help prepare for the pathway to college and their career.

Strategies & Execution

The Kern CCD’s Workforce and Economic Development Division executes a variety of strategies to accomplish our mission to increase student success outcomes, normalize equity in education and the workplace, and increase economic and social mobility for the region. The following high-level approaches are intertwined and strategically aligned to move us toward our goals.

Resource Development	CTE Programs & Guided Pathways	Coalition Building	K-16 Pathways & Partnerships
<p>CERF (\$5M) CREL (\$50M) Strong Workforce (\$8M) Perkins / VTEA (\$1.8M) CWDB HRTP (\$4.5M) CA Division of Apprenticeship Standards (\$4M) K16 Initiative (\$3.9M) RERP Regional Equity & Recovery Program (\$400k) LAEP/WEX Internships (\$6.5M)</p> <p>Key Partnerships & Resource Sharing:</p> <p>Kern Inyo Mono WDB / Employer’s Training Resource (KIM WDB / ETR)</p> <p>National Renewable Energy Laboratory (NREL)</p>	<p>Committed to equity, improved student success, and increased social and economic mobility.</p> <ul style="list-style-type: none"> • Non-credit, not-for-credit CTE programming development & support • Apprenticeships • Employer Engagement • Baccalaureate Degree Programming • Legislative / policy advisement, strategic planning • CTE student outcome monitoring and reporting • Research and resource development • Crucial stakeholder convenings. • Sustained CTE program funding. <p>Regulatory compliance, tracking and reporting.</p>	<p>Utilizing industry-based coalitions to activate evidence-based workforce and economic development solutions that address immediate, emerging, and systemic issues impacting economic growth in the area.</p> <p>Kern CCD Current Coalitions</p> <ul style="list-style-type: none"> • Defense/Aerospace • Energy • Healthcare • Manufacturing (KEDC) <p>Kern CCD Priority Sectors</p> <ul style="list-style-type: none"> • Healthcare • Energy • Manufacturing/Advancing Technologies • Transportation/Logistics • Agriculture • Business/Business Services/Entrepreneurship • Defense/Aerospace 	<p>K-16 Kern Regional Collaborative Steering Committee</p> <p>Addressing equity in education and matriculation to post-secondary leading to increased numbers of qualified local applicants to fill skilled jobs in Kern County and improve median income and educational attainment.</p> <p>KEDC Board of Directors</p> <p>K-16 Pathway development and alignment.</p> <p>K-14 Technical Assistance Providers</p> <p>Coordination and collaboration with K-12 CTE Local Education Agencies (LEA) to strengthen communication and alignment of secondary to post-secondary transfer.</p>

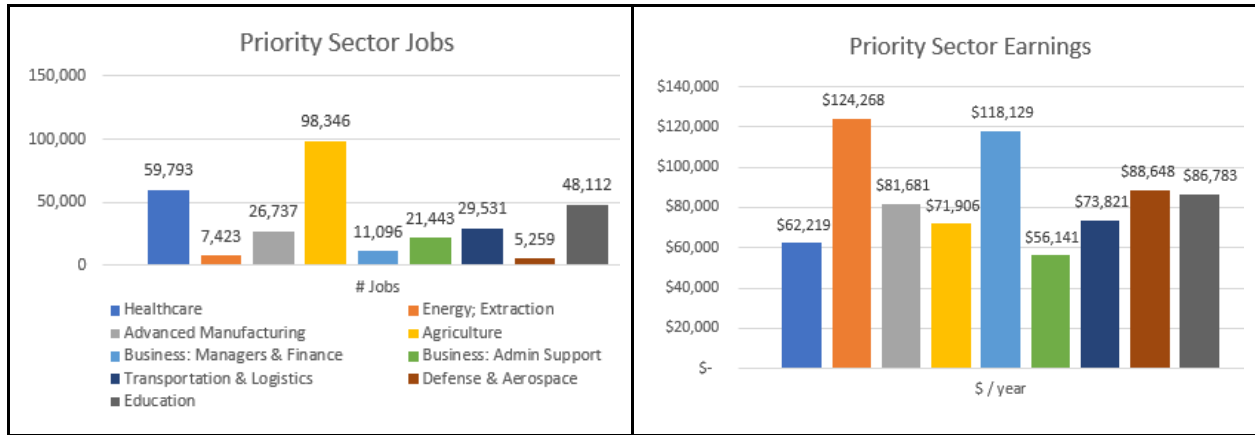
Workforce & Economic Mobility	Adult Education	Central Valley Motherlode Regional Consortium (CVMLRC)	Community Economic Resilience Fund (CERF)
<p>Adult Learners</p> <p>Approximately five million adults in California with no college degree have expressed interest in pursuing one. In response, the WED team is:</p> <ul style="list-style-type: none"> • Conducting local research, discovery, and mapping. • Engaging in responsive outreach, bridge building and workforce strategies. • Advancing regional partnerships in support of high-wage jobs. • Boosting small businesses. <p>Customized & Corporate Training</p> <p>21st Century Energy Center California Compliance School</p> <ul style="list-style-type: none"> • Building industry relations/Employer engagement • Incumbent Worker Training • State Employer Training Panel Resource Provider • Non-Credit & Not-for-Credit course/program development • Continuing Education • Industry Certifications 	<p>Kern Adult Ed Consortium</p> <p>The 14-member consortium works in partnership with the Kern, Inyo, Mono WDB and the Kern CCD Workforce Development Division to increase access to education through the identification and development of certifications and training programs linked to educational and career pathways associated with fiscal mobility and stability.</p> <p>The California Community Colleges (CCCCO) and the Department of Education (CDE) are an equity focused partnership supporting expanded access to adult and higher education and the development of programs that align with workforce needs.</p> <ul style="list-style-type: none"> • High School Completion • ESL • Citizenship • Workforce Development • Dual Enrollment • Non-Credit & Credit on-ramps and ladders to School & Career 	<p>Regional Chair / Fiscal Agent</p> <p>CVMLRC represents 8 community college districts, 15 colleges, 230 public school districts, and 150 charter schools dedicated to educating over 100,000 students pursuing career education programs that lead to economic mobility.</p> <ul style="list-style-type: none"> • Approved 69 priority industry sector certificates and degrees. • Exceeded the state average for students who earned 9+ CE units in virtually all priority sectors. • Launched a regional apprenticeship intermediary project providing technical support to increase the capacity for registered apprenticeships. • Regional Enrollment Growth and Pathways training • Regional Competency Based Education training. • Professional development for CTE faculty. • Work-based learning support 	<p>Fiscal Agent</p> <p>The Kern Community College District Workforce & Economic Development Division serves as fiscal agent and is one of five regional Kern Coalition co-convenors that include: Better Bakersfield and Boundless Kern (B3K), a City of Bakersfield County of Kern led public-private partnership; Community Action Partnership of Kern (CAPK); the Kern Inyo Mono Central Labor Council (KIM CLC); and Building Healthy Communities (BHC).</p> <p>Driven by community aspirations, leadership, and data, Kern CERF is setting a shared investment agenda and metrics to create more quality jobs and ensure access to them for all residents – focused on eliminating disparities while promoting durable economic growth and diversification alongside social and environmental resiliency.</p>

Kern Community College District’s Priority Sectors

Based on the economic jobs and wage data, local economic analyses, regional industry analyses, and program advisory board member input, the Kern Community College District has identified the following industry sectors of focus:

- | | |
|---|--|
| <ul style="list-style-type: none"> Healthcare Energy Advanced Manufacturing Agriculture | <ul style="list-style-type: none"> Business Services & Entrepreneurship Transportation & Logistics Defense & Aerospace Education |
|---|--|

Several factors were considered in selecting these industry sectors. The industry footprint, the workforce supply gap, especially in industries that offer quality jobs, entry level jobs and career advancement opportunities was also considered. The following illustrations show the number of jobs in the Kern CCD service area (Kern, Inyo, Mono, & Tulare Counties) for each of the priority sectors in 2022, and average industry and occupational earnings (Lightcast, 2024).



The Healthcare industry employs 59,793 workers (averaging \$62,219 / year). Local starting wages average \$51,521 for LVNs to \$73,580 for RNs per year. Mining/extraction industries employ 7,423 people with average annual wages of \$124,268. Manufacturing employs 26,737 people earning on average \$81,681 per year. Agriculture employs 98,346 people (\$46,571 / year) while precision agriculture (IT / data management) employees earn on average \$71,906 per year. Business and entrepreneurs employ 32,539 people with average annual earnings in finance of \$94,890, management \$141,367, and administrative support positions \$56,141. Back-office services may present a growth opportunity (B3K Prosperity, 2021). Transportation / Logistics industries employ 29,531 people with average annual wages of \$73,821 and is predicted to add 7,441 jobs (25%) by 2027. The Defense / Aerospace industry employs 5,259 military personnel (average wages of \$58,838 / year) and more than 17,000 civilians, contractors, and family members. The median wage for pilots and engineers is \$158,203 per year and for technicians and analysts its \$88,648 per year. Education institutions employ 48,112 people with average annual wages of \$86,588. Subsequent sections examine each industry sector’s labor market supply and demand as well as future industry challenges and opportunities.

Why are these the Priority Industry Sectors?

The City of Bakersfield, the County of Kern, the Kern EDC, and other local agencies and organizations regularly conduct economic development and workforce development needs assessments and analyses which support the selection of KCCD priority industry sectors.

Priority Sector	Economic / Workforce Development Needs Assessments
Healthcare	CEDS 2012-13; Economic Road Map (2015); East Kern Diversification Strategy (2017); SJV Regional Workforce Plan (2021-24); Kern Inyo Mono WDB Workforce Plan (2017-20); Kern County Incentives Policy (2020).
Energy	SJV Regional Workforce Plan (2021-24); and Kern County Incentives Policy (2020), B3K Prosperity, Market Assessment Data Book and Findings (2021).
Advanced Manufacturing	SJV Regional Workforce Plan (2021-24); and Kern County Incentives Policy (2020), B3K Prosperity, Market Assessment Data Book and Findings (2021).
Agriculture	CEDS 2012-13; Economic Road Map (2015); SJV Regional Workforce Plan (2021-24); Kern Inyo Mono WDB Workforce Plan (2017-20); and Kern County Incentives Policy (2020), B3K Prosperity, Market Assessment Data Book and Findings (2021). East Kern Diversification Strategy (2017).
Business Services & Entrepreneurship	CEDS 2012-13; Economic Road Map (2015); East Kern Diversification Strategy (2017); SJV Regional Workforce Plan (2021-24); Kern Inyo Mono WDB Workforce Plan (2017-20); Kern County Incentives Policy (2020), B3K Prosperity, Market Assessment Data Book and Findings (2021).
Transportation & Logistics	CEDS 2012-13; Economic Road Map (2015); East Kern Diversification Strategy (2017); SJV Regional Workforce Plan (2021-24); Kern Inyo Mono WDB Workforce Plan (2017-20); Kern County Incentives Policy (2020).
Defense & Aerospace	CEDS 2012-13; Economic Road Map (2015); East Kern Diversification Strategy (2017); SJV Regional Workforce Plan (2021-24); Kern Inyo Mono WDB Workforce Plan (2017-20); Kern County Incentives Policy (2020), B3K Prosperity, Market Assessment Data Book and Findings (2021).
Education	SJV Regional Workforce Plan (2021-24); California Commission on Teacher Credentialing (2023, April); COECCC (2022, Dec.); Patrick, Darling-Hammond, & Kini (2023).

Healthcare Industry Sector

The San Joaquin Valley (SJV) is one of the poorest, least healthy, and fastest growing areas of California (Public Policy Institute of California (PPIC), 2022; US Census Bureau, 2022). The Kern Community College District 28,000 square mile service area includes parts of Kern, Tulare, Inyo, and Mono counties. In Kern and Tulare counties, the percentage of persons living in poverty is 18.3% and 17.1% respectively; comparatively greater than the state (11.5%) or the US (11.4%) poverty rates. One third (33%) of the region's population are eligible for Medi-Cal. The region has historically suffered from a shortage of medical health professionals (Bogucki, Brantley, & Salsberg, 2022). The five SJV counties' residents have poor health outcomes ranking 37th and worse. Kern and Tulare counties ranked 50th and 53rd of 58 counties.

Current Healthcare Workforce Projects

The Kern Community College District is engaged in the following current projects, pending grant applications, and high priority resource development objectives.

Medical Professional Education Pipeline

Bakersfield College (BC) and the Kern CCD have prioritized supporting pre-medical students and establishing a pre-medical professional education pipeline. Bakersfield College has supported the re-establishment of a pre-medical student organization and developed a series of workshops and academies to provide students interested in medical professions with the information they need to be successful, provide STEM course guidance and support, provide field trips to medical schools, and medical school application and financing information that often presents barriers for San Joaquin Valley pre-medical students. A KCSOS K16 subaward of \$447,439, is supporting the development of student academies and workshops, modeled after medical schools' student outreach, engagement, and support programs. Partnerships with Western University and UC Merced have made considerable progress toward establishing a robust medical professional student pipeline. Early accomplishments that include the development of linkage agreements and transfer relationships are described below.

Western University of Health Sciences: BC, Kern CCD, Kern Medical, and California State University Bakersfield (CSUB) have been working with Western University to develop and implement pre-medical student academies, support students' medical school application preparation, and establishment of course linkage agreements for Chemistry B1A and B1B, Math B6A, Physics B4B, PHYS B2A courses. Western University features colleges of osteopathic medicine, health sciences, pharmacy, graduate nursing, dental medicine, optometry, podiatric medicine, and veterinary medicine. Initially, the partners are working with the College of Osteopathic Medicine and are interested in expanding to other medical professions programs in the future.

UC Merced: The California Wellness Foundation funded a UC Merced partnership with Bakersfield College / Kern CCD and several other community colleges to map BC (and other partner community college) courses and student support needs to ensure diversity, equity, inclusion, and access for aspiring pre-medical students interested in applying to UC Merced's new medical school. The California Wellness Foundation project began in 2023 and is expected to conclude in 2024.

Allied Health, Nursing & Nursing Education Programs

Bakersfield College (BC), Cerro Coso Community College (CCCC), Porterville College (PC), and the Kern Community College District are implementing new and expanding existing medical assistant, nursing assistant, vocational nursing, and registered nursing programs. Regional employers report a significant shortage of registered and vocational nurses. To address this gap, Kern CCD college faculty are collaborating to grow the vocational and registered nursing program student pipeline.

Kern CCD Nursing & Allied Health Enrollment Growth – The California Community Colleges Chancellor’s Office awarded growth funding to:

- Bakersfield College, \$676,604 for 2019-2023; and
- Porterville College, \$425,080 for 2019-2023.

Bakersfield College currently offers nursing assistant, vocational nursing, radiology technician, respiratory technician, and registered nursing programs. BC has invested in its campus clinical lab space, added clinical instructors and clinical sites.

Allied Health & Nursing Programs: Starting in Spring 2023, BC is starting a Nursing Assistant Training Program, in Fall 2023, BC’s RN cohort size increased from 50 to 90 students. An additional increase to 140 students was approved on 5/17/2023. The BC part time evening Licensed Vocational Nurse LVN to RN Program is expected to begin in Fall 2024. A Perioperative Nursing Apprenticeship Program was approved by the California Community College Chancellor’s Office (CCCCO) California Apprenticeship Initiative (CAI) and began training in 2023. Bakersfield College CCCCCO New and Innovative California Apprenticeship Initiative (CAI) 2023 grant awards for Perinatal and Neonatal Nursing will begin in 2024. The Kern Health Systems Expansion of the Nursing Program project will also begin in 2024. The recently awarded Kern Adult Education Consortium’s English Language Learning (ELL) Healthcare Pathways grant provides training for medical assistant, nurse assistant, pharmacy technician, phlebotomist, certified medical translators, resident care assistants, and addiction specialist occupations.

Public Health Informatics: Bakersfield College and the Kern CCD are partners in a statewide collaborative funded by a US Health and Human Services (US HHS) grant to develop curriculum to train public health informatics job skills and support the diversification of the public health workforce. A 2023 CCCCCO CAI Planning grant is working toward a US Dept. of Labor (US DOL) and CA Division of Apprenticeship Standards (CA DAS) approved Management Analyst – Public Health apprenticeship program, expected to be implemented in 2024 or 2025.

Cerro Coso Community College currently offers emergency medical technician (EMT), human services, certified nursing aide, medical assisting, medical billing and coding, home health aide, and licensed vocational nursing. Cerro Coso is implementing innovative distance learning health programs to ensure equitable access to education and training to people living in rural and remote areas.

Porterville College offers emergency medical technician (EMT), psychiatric technicians, and registered nursing. Over the past year, the new Allied Health Facility, a \$22M science building has been added to the campus. Porterville College nursing program received \$425,080 for 2019-2023 enrollment growth. Starting in Fall 2023, PC’s RN cohort will be doubled from 20 to 40 students starting in Fall 2023.

Healthcare Workforce Supply Gaps

The SJV has the lowest ratios of licensed physicians (MDs and DOs), nurse practitioners (NPs), registered nurses (RNs), therapists, counselors, and social workers per 100,000 population in California and the second lowest ratios of physician assistants (PAs), certified nurses (CNs) and psychologists per capita (Coffman, Bates, & Geyn, 2017; Bogucki, Brantley & Salsberg, 2022). There are 157 medical doctors per 100,000 residents in the SJV compared with 411 in the Bay area. Similarly, there are 45 primary care physicians per 100,000 residents in the SJV compared to 157 primary care physicians per 100,000 residents statewide.

Kern County has a severe shortage of medical professionals across all fields of care including Primary Care, Pediatrics, Allergy & Immunology, Cardiology, Dermatology, Endocrinology, Gastroenterology, Neurology, Rheumatology, Oncology Surgery, Ophthalmology, Orthopedics, ENT, Urology, Psychiatry, and Radiology. Labor market data for physicians, surgeons, and physician assistants indicate no regional completions and a sizable number of 2020 hires and projected openings per year through 2030.

Projected Kern County Jobs, Hires, Separations, and Annual Openings

Position Title	SOC	2020 Jobs	2020 Hires	2020 Separations	Avg Annual Openings	2030 Jobs
Physicians	29-1210	1,310	189	241	42	1,352
Surgeons	29-1240	104	12	27	3	101
Physicians Assistants	29-1070	191	71	49	18	253
Registered Nurse RN	29-1140	5,324	1,082	1,215	363	5,988
Vocational Nurse VN / LVN	29-2060	1,196	527	501	117	1,400
Medical Assistant	31-9092	2,148	1,246	1,286	304	2,491
Medical Support Staff	43-6013	1,569	812	915	193	1,730

Source: Lightcast (2022).

Kern County lacks sufficient healthcare professionals, resulting in long wait times for medical services and increased disease severity at diagnosis. Those with resources seek care outside the SJV. Those with fewer resources are left to navigate limited services and delays in treatment. The US Dept. of Labor Outlook indicates a 16% job growth for public health and related medical occupations, and local labor market indicators mirror this trend. The following table provides a snapshot of current workforce demand for RNs, LVNs, medical assistants, and medical support staff. Expanding healthcare and medical education opportunities is critical as healthcare and medical professionals often prefer to practice in the region in which they live or are trained. Given the projected health workforce shortages and persistent maldistribution of providers, there is a compelling rationale for expansion of educational opportunities that is well-planned and aligned with community needs.

Healthcare Sector Job Demand (2/10/2022)

Employer (*CBA I worker owned)	Job Title	# Jobs	Annualized Starting Wages	Annualized Top Wages
Adventist Health	RN	112	\$84,510.40	\$139,838.40
Allied Up*	RN	40	\$187,200.00	\$228,800.00
Bakersfield Family Medical	RN	10	\$101,088.00	\$101,212.80
Dignity*	BH RN I/II/III	500	\$81,764.80	\$169,644.80
KC Behavioral Health*	PH Nurse- RN	5	\$65,853.36	\$103,540.80
KC Public Health*	RN	15	\$62,649.36	\$98,503.32
Kern Medical*	RN	>100	\$71,000.00	\$110,000.00
Adventist Health	VN	5	\$52,540.80	\$77,708.80
Allied Up*	VN	75	\$60,320.00	\$81,120.00
Bakersfield Family Medical	LVN	13	\$61,006.40	\$65,561.60
Dignity*	LVN	5	\$56,160.00	\$72,800.00
KC Behavioral Health*	VN 1/11	12	\$42,037.08	\$55,507.68
KC Public Health*	LVN I/II	2	\$42,037.08	\$55,507.68
Adventist Health	NA	50	\$33,966.40	\$45,219.20 to
Allied Up*	Med/Support Staff	77	From \$39,520	\$124,800.00
Bakersfield Family Medical	Med/Support Staff	51	From \$36,816	To \$61,006
Dignity*	Med/Support Staff	91	From \$33,280	To \$87,360
KC Public Health*	M.A.	2	\$34,606.32	\$41,357.64
KC Public Health*	PT, OT	4	\$81,199.08	\$97,040.28
Kern Medical *	CNA, MA	>80	From \$32,000	To 41,000
7 Employers	Sector Total Jobs	1,249		

RN Registered Nurse, VN Vocational Nurse, NA Nursing Assistant, MA Medical Assistant
PT Physician Therapist, OT Occupational Therapist

Lack of Diversity and the Need for Diversity, Equity, and Inclusion

Among middle skill healthcare jobs ranging from medical secretaries and administrative assistants (earning \$17.64 per hour) to registered nurses (earning up to \$44.19 per hour) there is an underrepresentation of men (15% of the workforce), white workers and Hispanic or Latino workers and an overrepresentation of Asian American workers compared to the geographic area population (COECCC, 2022). In professional medical occupations such as physicians, osteopaths, and physician assistants, there is an underrepresentation of men, white and Hispanic or Latino professionals and an over representation of Asian American professionals compared to area population (Lightcast, 2022).

Talent Pipeline

Over the past five years, BC, CCCC, and PC graduated 4,353 nursing professionals / healthcare paraprofessionals and increased the number of graduates in the last two years in response to COVID. In 2021-22, BC graduated 149 nursing students (including vocational nursing (VN), Licensed vocational nursing to associate degree Nursing (LVN to ADN), and registered nursing (RN) students) and 1981 healthcare paraprofessionals (including emergency medical technicians (EMTs), medical assistants (MAs), and nurse assistants (NAs)). CCCC graduated 27 nursing students and 22 healthcare paraprofessionals. PC graduated 19 nursing students and 55 healthcare paraprofessionals.

KCCD: Healthcare Occupations	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Bakersfield College	522	620	555	771	852	874
Cerro Coso Community College	64	113	122	93	112	161
Porterville College	110	143	84	110	107	97
	696	876	761	974	1,071	1,132

(Kern CCD IR Tableau Dashboard, 2024)

The talent pipeline does not offer a ready solution to meet the healthcare needs of the SJV or the Kern CCD service area. Multiple constraints impact the ability to meet local and regional employers' workforce needs. There is a lack of representativeness among STEM faculty and students who complete STEM education and that are interested in pursuing healthcare or medical professional occupations. Healthcare accreditation entities and medical schools manage and limit the number of students able to enter healthcare and medical school programs. Healthcare programs have experienced a persistent lack of faculty and clinical placement options in the Kern CCD service area and across the SJV that in turn limits the number of students the accreditation entities will permit.

Healthcare accreditation entities, established to ensure quality education, limit the number of students entering healthcare programs. Limited faculty and clinical instructors, program costs and long-term demand serve to constrain program expansion. Local program completion rates are between 75-80% of incoming students. The limited number of healthcare professionals willing to serve as faculty and limited clinical placement opportunities constrain program expansion. Program completions from MAs through RNs have been significant across occupations. Until recently, the SJV has not had a medical school in the SJV. Local teaching hospitals host residents each year. Supply gaps in healthcare workforce and medical professionals are significant and persistent. Over the next decade or so, the region will face the loss and retirement of a considerable number of medical professionals as 30% of physicians and 37% of psychologists are over 60 years old compared to 17% statewide (Bogucki, Brantley, & Salsberg, 2022).

Work-Based Learning

Work-based learning has always been an integral component of healthcare education. All three colleges have expanded work-based learning, clinical labs, and internship opportunities for healthcare students. Despite increased focus, accrediting body requirements, and significant effort, persistent gaps remain in ensuring an adequate number of opportunities for students to gain direct clinical experiences in the allied health science field. Early exposure of high school and early college students to the medical field through direct clinical experience is important. This provides students opportunities to connect their textbook knowledge to real world scenarios, to evaluate their interests, and network and meet other trainees. Admissions officers often look at an applicant's clinical health care experiences as a key determining factor for acceptance to medical school. By expanding training opportunities in the region, students will be more competitive for medical school applications. Investments in clinical training opportunities are important as health professionals often prefer to practice in the region in which they train and are critical to providing health professionals with similar racial/ethnic, cultural, linguistic, and socio-economic backgrounds compared to the region's population. As part of this program, CMSP candidate students will be involved in Kern Medical's Emergency

Medicine Research Associate Program (EMRAP), SIMRAP, and Valley Fever Research programs that provide students with essential exposure to clinical settings.

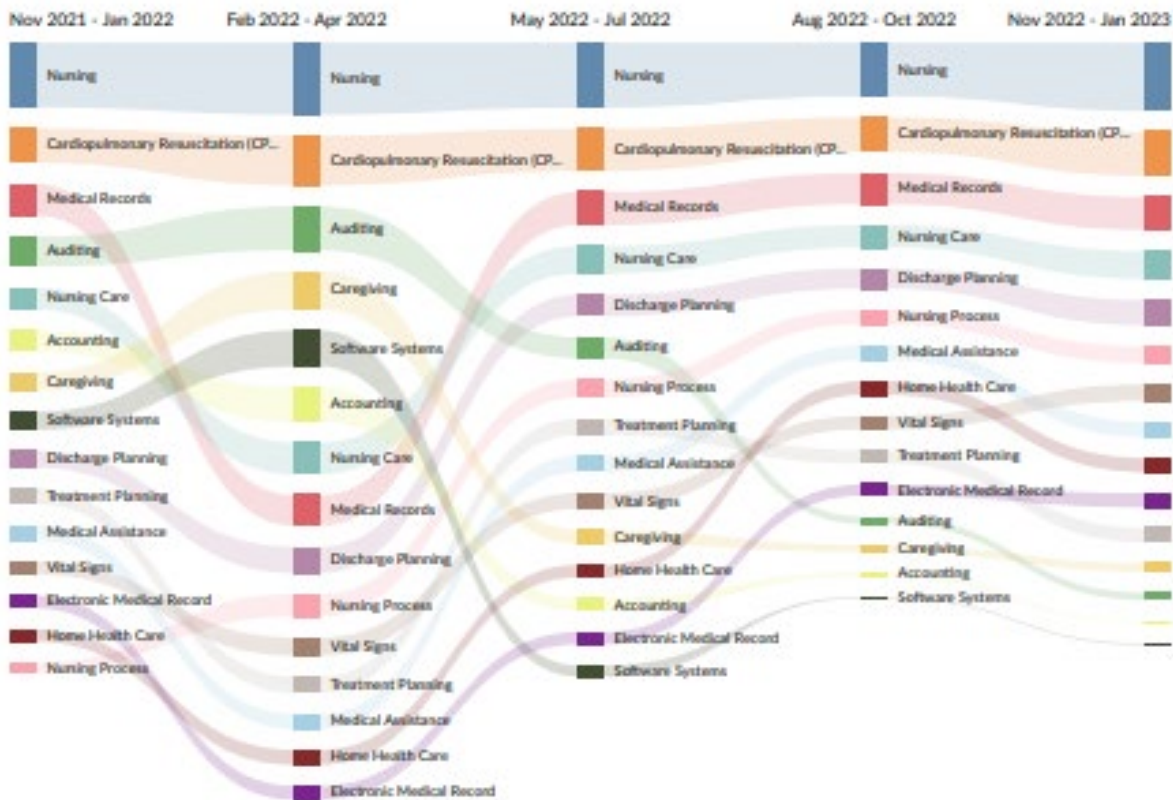
Top Emergent Competencies / Core Competencies

Illustration #1, below, provides a summary of the top skills listed in employers’ job postings for all job types in the top ten healthcare industries in Kern County and Kern CCD’s four-county area including Kern, Tulare, Inyo, and Mono Counties. The healthcare industry sectors included in this summary of industry skills are Offices of Physicians (except mental health specialists; 62-1111), Offices of Physicians, Mental Health Specialists (62-1112), Offices of Mental Health Practitioners (62-1330), Offices of all other miscellaneous Health Practitioners (62-1399), Outpatient Mental Health and Substance Abuse Centers (62-1420), HMO Medical Centers (62-1491), All other Outpatient Care Centers (621491), Home Health Care Services (62-1610), All other miscellaneous ambulatory health care services (62-1999), Residential Mental Health and Substance Abuse Facilities (62-3220), state hospitals (90-2622) and local hospitals (90-3622).

Illustration 1. Top 15 Skills for all Job Types by Quarter in 12 Healthcare Industry Sectors in Kern, Tulare, Inyo & Mono Counties

Top 15 Skills for All Job Types by Quarter

Skills help us understand the direction an industry is headed.



(Source: Lightcast. Industry Snapshot Report. Retrieved February 8, 2023)

The top 10 skills listed in job postings were nursing, CPR, medical records, nursing care, discharge planning, nursing process, medical assistance, home health care, vital signs, treatment planning and electronic medical records. Among those skills the last four, auditing, caregiving, accounting, and software systems moved from relatively large numbers of job postings to fewer postings comparing the November 2021 - January 2022 quarter to the November 2022 - Jan 2023 year to year periods. The report does not provide an analysis regarding the shift in skills listed in job postings, nor does the report suggest an explanation for the shift in skills listed in job postings described above.

Emerging Opportunities

Healthcare workforce grant funding has historically come from the US Health and Human Services (US HHS), Health Resources and Services Administration (HRSA), the US Department of Labor (US DOL), the California Workforce Development Board (CA CWDB), and the California Community College Chancellor's Office (CCCCO). The COVID-19 pandemic significantly impacted the healthcare industry from outpatient physicians' offices to hospital level care and there has been increased funding of healthcare workforce grant opportunities. Kern CCD has or will submit the following healthcare grant applications:

California Apprenticeship Initiative (CAI):

Bakersfield College Implementation Grant - Medical Assistant & Phlebotomist

Bakersfield College Planning Grant - Nursing Assistant

Cerro Coso Implementation Grant – Vocational Nursing – Distance Learning Pilot

Expanding Clinical Instructors - US DOL Nursing Expansion Grant (December 2024 or 2025).

References

- Bogucki C, Brantley E, Salsberg E. (2022). [The Race and Ethnicity of the California Healthcare Workforce](#). Institute for Health Workforce Equity. Washington, DC: George Washington Univ.
- Centers of Excellence CCC (2022). [South Central Valley/ Southern Mother Lode Subregional Labor Market Overview](#)
- Coffman, J., Bates, T., Geyn, I. (2017). [Current and Future Health Workforce Needs in the San Joaquin Valley](#). Healthforce Center at UCSF.
- Lightcast / EMSI (2022). [Occupation Report: Physicians & Physician Assistants: Occupation Race/ Ethnicity Breakdown and Occupation Gender Breakdown](#).
- Public Policy Institute of California (PPIC). (2022) [California Poverty by County and Legislative District \(2017-19\)](#).
- U.S. Census Bureau (2022). American Communities Survey: [Quick Facts Kern and Tulare counties, California, and United States](#).

Energy Sector Industries

Energy industries are one of the largest industries in the Kern Community College District service area, including traditional oil and gas industry, solar and wind clean renewable energy, electrification, and emerging carbon management industries. Employment in the Energy Industry is undergoing an accelerated transformation. The oil and gas industries are expected to see statewide job losses of more than 10,000 jobs by 2030 while job growth is expected in the clean renewable energy industries. The amount of job growth is dependent on the speed of state and national climate policy implementation and the presence of a skilled regional workforce. Statewide in 2021, clean energy jobs grew 13% compared to a 6% growth rate for all jobs. Funding contained in the Bipartisan Infrastructure Law and the Inflation Reduction Act and California's \$8.1 billion investment in energy projects in the 2022 state budget are expected to accelerate the growth in clean energy jobs. Kern Community College District is collaborating with partners to ensure that the region realizes the maximum economic benefits of clean energy innovation and that those benefits accrue equitably to all community members.

Current Energy Workforce Projects

California Renewable Energy Lab (CREL)

The California Renewable Energy Lab is an extension and expansion of the work initiated through the Valley Strong Energy Institute and Bakersfield College's partnership with the National Renewable Energy Lab (NREL). CREL is designed to provide workforce development and community education for the entire Kern Community College District service area. CREL is organized across three centers of excellence:

1. California Resources Corporations Carbon Management Institute.
2. Clean Transportation Center of Excellence.
3. Clean Energy and Grid Resiliency Center of Excellence.

CREL was provided \$50M in 2022/23 state budget funding. These funds will be used to accelerate the development of workforce development, academic course and certifications, and community education. Capital development of demonstration projects in Carbon Capture and Storage, Microgrids, and Agrivoltaics will support workshops, educational demonstrations, and professional training. CREL, through a campus as a living lab approach, and facility and equipment upgrades will support training for medium to heavy duty commercial electric vehicle maintenance and charging infrastructure.

Bakersfield College

Valley Strong Energy Institute

The Valley Strong Energy Institute is the current iteration of the Bakersfield College Energy Technology Transfer & Workforce Development Initiative. The Valley Strong Energy Institute has played a key role in community education through its Ag/Water/Energy Education series. The Valley Strong Energy Institute recently launched its first workforce development class ENER B54NC *Sustainable Energy* which is part of the newly created Modern Energy certificate. The other classes in the certificate are ENER B52NC *Carbon Capture and Storage* and ENER B53NC *Energy Data Analysis*.

Automotive Technology Program

The BC Automotive Technology program includes an Introduction to Electric Vehicle class (AUTOB70NC) and is developing a comprehensive set of electric vehicle training courses.

Kern CCD 21st Century Energy Center

Since 2010, the 21st Century Energy Center has trained over 1,000 individuals for entry-level renewable energy jobs as Solar Installers, Wind Turbine Technicians, and Utility Line Workers. The 21st Century Energy Center is currently offering Solar Installation, Utility Line Clearance Arborist, Vegetation Management Pre-Inspector, Basic Rigging, Intro to Zero Emission Vehicles and Careers, Intro to Clean Energy, Electrical Safety / NFPA 70e Certification, and ZEV Charging Infrastructure Installation in partnership with the IBEW Kern County Electrical Apprenticeship training center, including the Electrical Apprenticeship Readiness Training. 2024 courses include EV Charger Maintenance & Repair, Basic Construction Skills, Hydrogen Fueling infrastructure, and Industrial Energy Efficiency Assessment Training. Training is made possible through the following grant funding:

California Workforce Development Board - High Road Training Partnership Resilient Workforce Fund \$2.49M. Clean Energy Workforce Readiness Training, Solar Installation Training, Zero Emission Vehicle Workforce Training, Microgrid Basics Training, Carbon Dioxide Reduction and Storage Basic Training.

US Department of Energy - Vehicle Technologies Office \$1.2M. The South San Joaquin Valley Zero Emissions Vehicle Talent Pipeline #2. The project expands the Talent Pipeline project. Adds hydrogen fueling infrastructure training.

US Department of Energy - Solar Energy Technologies Office \$1.195M. The Solar Homes and Career for Justice40 Communities project provides solar installation and Electrical Apprenticeship Readiness training. Paid direct experience installing Solar on Grid Alternatives or Habitat for Humanity homes and entrepreneurship training for those starting their own solar businesses.

US Dept. of Energy (DOE) - Central California Industrial Assessment Center (IAC) \$1.46M - Bipartisan Infrastructure Law: Industrial Assessment Center (IAC) Program - IACs at Trade Schools, Community Colleges, and Union Training Programs; and Building Training and Assessment Centers (BTAC) Program.

Energy Innovation Workforce Coalition

This spring, Kern CCD hosted the first meeting forming the Energy Innovation Workforce Coalition. The Energy Innovation Workforce Coalition focuses on bringing stakeholders together to understand emerging workforce needs and to create a dialogue to develop strategies to help maximize economic benefits from clean energy innovation and ensure equitable access to these benefits. During this meeting three employer led sub-committees were formed:

- Clean Energy Innovation and Microgrids
- Clean Transportation

The Carbon Management sub-committee group has been focused on establishing a Direct Air Capture (DAC) Hub in Kern County and participating in the DOE Communities LEAP (Local Energy Action Plan) Carbon Management Park Project. The Clean Energy Innovation and Microgrids sub-committee has also been participating in the DOE Communities LEAP Community Resilient Microgrid project. All three sub-committees have led to partnerships that are accelerating Kern CCD's energy industry work.

Workforce Supply Gaps

The size of the permanent workforce employed in carbon management, microgrids, and transportation electrification is not fully known. These and other clean energy innovations are in preliminary or emergent stages of commercialization. State climate goals are driving investment, development, and construction of facilities creating temporary construction trades jobs.

Determining the size and duration of both the construction workforce, and the number and type of quality permanent clean energy jobs are critical to ensuring availability of immediate upskilling and long-term training programs.

The following table lists the current projections of the employment for trades persons. The counties' employment patterns are distinct. Kern County has more electricians, plumbers and pipefitters, and welders. The historic basis of the employment projections may not accurately estimate the future demand for workers given the changes in state policies and the emergence of new energy industries and processes. In addition, traditional oil and gas is expected to shed jobs over the next few years. Tradespersons currently working in oil and gas may fill emerging clean energy jobs, a positive outcome, which may impact the number of available jobs to traditional age individuals interested in becoming tradespersons.

Carbon Management & Renewable Energy Workforce by County

Top Occupations by County	Annual Openings	Jobs 2020 & 2025		5-Year change Number & Percent		Median Wage
Kern County						
Civil Engineers (17-2051)	49	522	635	114	21.8%	\$93,538
Civil Technologist/Technician (17-3022)	18	133	190	56	42.4%	\$60,674
Construction Management	68	575	629	53	9.3%	\$105,019
Electricians (47-2111)	227	1,221	1,386	165	13.5%	\$62,421
Electricians – Helpers (47-3013)	20	114	92	-22	-19.2%	\$37,502
Cement masons & finishers (47-2051)	52	607	511	-96	-15.8%	\$47,403
Plumbing, Pipefitting & Steamfitters	139	968	1,099	131	13.5%	\$61,027
Sheetmetal workers	25	183	221	37	20.4%	\$59,446
Welders	125	1,049	1,073	24	2.3%	\$46,771
Tulare County						
Civil Engineers (17-2051)	15	150	165	14	9.7%	\$93,267
Civil Technologist/Technician (17-3022)	7	56	65	9	16.3%	\$60,674
Construction Management	25	194	268	74	37.8%	\$94,931
Electricians (47-2111)	95	536	566	30	5.5%	\$60,757
Electricians – Helpers (47-3013)	12	<10	62	insuff	insuff	insuff
Cement masons & finishers (47-2051)	20	260	203	-57	-22.1%	\$45,614
Plumbing, Pipefitting & Steamfitters	66	428	524	96	22.4%	\$70,970
Sheetmetal workers	21	143	170	27	18.8%	\$59,342
Welders	63	464	465	1	0.3%	\$39,161
Inyo & Mono County, combined						
Civil Engineers (17-2051)	2	25	27	2	5.2%	\$106,917
Civil Technologist/Technician (17-3022)	1	<10	<10	Insuff	Insuff	Insuff
Construction Management	1	20	19	-1	-5.9%	\$110,009
Electricians (47-2111)	6	44	48	4	10.0%	\$56,542
Electricians – Helpers (47-3013)	0	<10	<10	Insuff	Insuff	Insuff
Cement masons & finishers (47-2051)	3	17	15	-2	-11.6%	\$58,581
Plumbing, Pipefitting & Steamfitters	4	32	38	6	18.6%	\$58,748
Sheetmetal workers	1	<10	<10	Insuff	Insuff	Insuff
Welders	1	<10	<10	Insuff	Insuff	Insuff

Lack of Diversity and the Need for Diversity, Equity, and Inclusion

Diversity among the electrician, electrician helpers, cement masons and finishers occupations, Black / African American (3% of the workforce), Asian (1.7%), and American Indian / Alaskan Native (<1%) and women (3.6%) are underrepresented among the trades workforce. Retirements expected soon are at the national average.

Talent Pipeline

All three Kern CCD colleges offer education and training to prepare graduates for one or more of the carbon management and renewable energy occupations. Certificate and degree awards over the past five years in architecture / industrial drawing / AutoCAD programs; Construction management and technology; Electrician, Plumbing / Pipefitting and Sheetmetal apprentices; and Welding programs graduates.

KCCD: Energy Occupations	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Bakersfield College	144	139	108	58	138	99
Cerro Coso Community College	34	38	30	28	25	41
Porterville College		20	10	12	25	6
	178	197	148	98	188	146

(Kern CCD IR Tableau Dashboard, 2024)

Work-Based Learning

Bakersfield College, Cerro Coso Community College, and Porterville College have embedded work-based learning opportunities for its energy and construction certificate, pre-apprenticeship, and degree programs. The trades pre-apprenticeship programs lead to apprenticeship with journey electricians, cement masons, plumbers / pipefitters / steamfitters, sheet metal workers, and welders. In addition, BC, CCCC, and PC have student employment offices that provide student support for those seeking internships and employment.

Energy Industries: Top Emergent and Core Competencies

The following are the top emergent and core competencies for personnel working in clean transportation clean energy innovation and occupations across the energy sector.

Top Emergent Competencies:	
Clean Transportation <ul style="list-style-type: none"> ● Electric drive motor diagnostics and repair ● Regenerative braking diagnostics and repair ● Charging Station Communication Protocols OCPP, OCPI, Open ADR, OCP, OSCP, eMIP etc. ● Hydrogen Fueling Infrastructure 	Clean Energy Innovation <ul style="list-style-type: none"> ● SCADA Supervisory Control & Data Acquisition ● Data analytics ● Demand response incentives ● Utility bill reduction and optimization ● Islanding and grid resilience
Energy Industry Core Competencies	
<ul style="list-style-type: none"> ● Safety ● Electrical Safety – NFPA 70e Arc Flash protection 	<ul style="list-style-type: none"> ● Electric Vehicle Training Partnership Certification ● Crew leadership / supervision

<ul style="list-style-type: none"> ● Electrical line installation ● Direct current (DC) electricity ● Alternating current (AC) electricity ● Apprentice electrician ● Journeyman electrician ● Electrical contractor license 	<ul style="list-style-type: none"> ● Report writing ● Troubleshooting ● Electrical repair ● Wiring ● Conduit bending ● Trade math
--	---

Emerging Opportunities

There are several emerging public and private funding opportunities available to address workforce and community education needs in or related to the energy industry.

1. Install CREL demonstration projects
2. Build Electric Vehicle Community Education Lab Trailer
3. Develop new associate degree program in Energy
4. Develop skills crosswalk between existing Oilfield Services workers and emerging Carbon Capture and Storage workforce needs
5. Develop Biomass Carbon Capture and Storage Project
6. Develop Agrivoltaics Demonstration Project
7. Analyze Hydrogen Energy Workforce and Economic Development Opportunities
8. Analyze Renewable Biofuels Workforce and Economic Development Opportunities

Funding opportunities for energy workforce training includes Employers Training Panel funds, CCCCCO Strong Workforce Local and Regional funding, and California Apprenticeship Initiative, California Energy Commission (CEC) grant funding programs, and US Department of Energy grant among other public and private support.

US Dept. of Energy, Industrial Decarbonization and Emissions Reduction Demonstration-to-Deployment Funding Opportunity Announcement, National Cement \$21.9M grant. Lead applicant is in the interview process. Award announcement forthcoming; potential subaward.

US Department of Commerce, Economic Development Administration, 2023 (Fresno) Distressed Area Recompete Pilot Program Phase 1. Award announcements forthcoming; potential subaward.

California Air Resources Board, Advanced Technology Demonstration and Pilot Projects. City of Bakersfield / Sine Watts application. Kern CCD - Community Outreach / Workforce partner. Award announcements forthcoming; potential subaward (\$958,000).

California Economic Development Department, Displaced Oil & Gas Worker Fund (DOGWF) 2023-24. Partner and potential subawardee on KIM WDB Employers' Training Resource and/or Steelworkers Union applications. Award announcements forthcoming.

U.S. Department of Energy, Office of Fossil Energy and Carbon Management, National Energy Technology Laboratory, University Training and Research (UTR) Program - ***Request for Information*** (RFI) (DE-FOA-0003216): Growing Carbon Management Education Capacity at Minority Serving Institutions (MSI). Potential future funding opportunity.

Manufacturing / Advancing Technologies

Food manufacturing including dairy, fruit and vegetable, and other agricultural and food manufacturing are primary industries in Kern and Tulare counties due to their proximity to large scale production agriculture and animal husbandry operations. Other types of manufacturing include aerospace parts, petroleum, cement, and plastics manufacturing. In Inyo and Mono counties, beverage manufacturing, and wood product manufacturing are the primary industries.

Current Workforce Development Projects

All three Kern CCD colleges offer manufacturing and advancing technologies related certificate and degree programs that prepare graduates for high skill high wages jobs.

Bakersfield College (BC)

The BC **Industrial Automation** Bachelor of Science Degree program covers electronics, computer technology, programmable logic controllers, robotics, materials and product handling, motion control motor drives, networked control systems, production equipment, process controls, operations management, infrastructure, design, operations, and engineering. Graduates are prepared for careers in Energy, Logistics, and Manufacturing industries.

The BC **Industrial Technology** Associate of Science Degree program covers the principles of industrial drawing/CAD basic 2D to 3D solid modeling to obtain graphic solutions, design refinements, modifications, and delineations. The program includes DC and AC electronics, Drafting, CAD, Oxygen Acetylene welding and cutting and welding processes with electives in CNC Lathe programming and operation, furniture & cabinetmaking, and construction.

The BC **Industrial Drawing** Associate of Science Degree program (and stackable job skills certificate and certificate of achievement) provides the knowledge and skills to enter or advance in architectural and civil drafters, electrical and electronics drafters, engineering technicians, mechanical drafters, CAD technicians and managers.

BC Manufacturing / Machine Technology certificates and degrees include **Manufacturing Technology** Associate of Science Degree (and stackable certificate of achievement) covers manufacturing tools such as manual machining, computer-controlled machining (CNC), welding, CAD, and trade math. The **Manufacturing Metal Fabrication Technology** Associate of Science Degree prepares students for entry level positions within the sheet metal trade with skills in layout, fabrication, and assembly. The **Basic Machine Tool Operations Lathe Mill** job skills certificate covers the use of precision measuring, drilling, saws, lathes, and milling machines. Graduates are prepared for careers as machinists. The **Computer Numerical Control Programming** job skills certificate covers set-up, operation, and programming CNC lathes and milling machines. Graduates are prepared for careers as a CNC machinist, programmer, and operator.

The BC **Occupational Safety & Risk Management** Industrial Technology Associate of Science (and stackable certificate of achievement) covers broad based professional preparation to work in the field of occupational safety and risk management, protecting people, property and the environment using hazard identification, and risk control strategies to balance safety and compliance with production and profit. The curriculum includes scientific foundations, regulatory frameworks and courses in occupational safety, health, risk management, and

environmental health. Specialized Occupational Safety and Risk Management degrees and certificates are available regarding electrical safety and the agriculture, business, health industries.

BC Welding certificates and degrees include *Welding* Associate of Science degree (the stackable job skills certificate and certificate of achievement), the *Blueprint Reading and Layout for Welders* job skills certificate, the *Gas Metal Arc/Gas Tungsten Arc/Flux Core Arc Welding* job skills certificate, and the *Shielded Metal Arc Welding* job skills certificate. The associate degree includes plate and pipe welding, GMAW and FCAW, Gas Tungsten Arc Welding, Blueprint Reading for welders and machinists, template development for welders, drafting and CAD, machine tool processes, and steel structures.

Cerro Coso Community College (CCCC)

The CCCC *Industrial Process Technician* job skills certificate is a 16-unit program that includes trade math, blueprints, tool and equipment operation, process technology, industrial safety, health, and environment. This program will prepare graduates for jobs in food and beverage processing, pharmaceuticals, biomanufacturing, paper and pulp production, oil and gas, energy and power generation, water and wastewater treatment, chemical and agricultural manufacturing, and environmental safety.

The CCCC *Welding Technology* certificate of achievement is a 23-unit program that includes trade math, tool and equipment operation, oxyacetylene welding, shielded metal arc welding, gas metal arc welding, gas tungsten arc welding, pipe and tube welding and welding fabrication. Welding fabrication skills are often utilized in manufacturing maintenance and repair of processing and packaging lines.

Porterville College (PC)

The PC *Industrial Technology* programs are available as either a 9.5-unit job skills certificate or a 16.5-unit certificate of achievement. The job skills program prepares graduates for a job as a building or production line maintenance technician. This 9.5-unit program includes electrical theory, electrical motor theory, timer controls, industrial sensors, DC motor drives, AC variable frequency drives, conveyor systems, mechanical devices, refrigeration, air conditioning, pumps, pneumatics, and hydraulics, and accessing programmable logic controllers (PLC). The certificate of achievement program adds additional instruction in PLCs, arc and gas welding, human relations, teamwork, communication, conflict resolution skills, first aid.

PC offers *Logistics* 11-unit job skills certificate or 20-unit certificate of achievement programs. The job skills program prepares graduates for jobs in warehousing, operations, and supply chain occupations as well as entering or advancing in logistics management careers. Learning outcomes include understanding the overall flow of goods, services, and information to satisfy customer and business goals, how to efficiently utilize personnel, facilities, and equipment to achieve logistics functions, and how to analyze, prepare, file and process freight claims and address disputes. The certificate of achievement includes a comparative understanding of the roles and objectives of logistics disciplines, advanced tools to achieve operational efficiencies, utilization of multidisciplinary teams to effectively exceed customer expectations, negotiations, bidding, and contracts, legal and regulatory constraints to integrated logistics, and the value added by global logistics intermediaries.

Workforce Supply Gaps

Industry Overview

The following two tables provide a high-level view of the types of food manufacturing industries that are present in Kern, Tulare, Inyo and Mono counties, their current and projected employment, earnings and the estimated expansion or contraction of those industries. The first table provides food manufacturing industry data and the second table provides all other types of manufacturing industries. illustrates the high density of food manufacturing plants due to the proximity to Kern and Tulare counties' large scale agricultural operations.

Food Manufacturing Jobs by County

County Industry	Rank	2020 Jobs	2030 Jobs	Percent Change	2022 Earnings per worker
Kern County					
Other Food Manufacturing	1	3,381	2,436	-28%	\$72,211
Dairy Product Manufacturing	3	667	900	35%	\$75,927
Fruit & Vegetable / Specialty	6	555	135	-76%	\$81,042
Beverage Manufacturing	10	345	392	14%	\$58,579
Tulare County					
Dairy Product Manufacturing	1	2,523	3,123	24%	\$88,108
Fruit & Vegetable / Specialty	2	2,400	2,312	-4%	\$66,618
Animal Food Manufacturing	5	661	708	7%	\$104,266
Other Food Manufacturing	7	438	961	119%	\$75,721
Inyo County					
Beverage Manufacturing	1	173	195	13%	\$84,959
Other Food Manufacturing	2	82	52	-37%	\$55,889
Mono County					
Beverage Manufacturing	1	50	79	58%	\$62,342

(Data source: Lightcast (2023) industry overviews by county)

The following table provides industry employment, projected 2030 employment, average earnings per worker for all other manufacturing (non-agricultural / non-food). Non-agricultural or non-food-related manufacturing businesses are comparatively fewer in number with a mixed upward trend. Aerospace products and parts manufacturing industry jobs are estimated to increase by 58% to 1,309 jobs in 2030 in Kern County. Wood and paper manufacturing has a relatively small footprint within the region. Plastics manufacturing industry jobs are projected to increase in Kern County and decrease in Tulare County with more jobs lost than gained. Kern County petroleum manufacturing jobs are projected to decrease 35% by 2030. Non-agricultural / non-food manufacturing is small, compared to agricultural / food related manufacturing. Estimated aerospace manufacturing jobs in Eastern Kern County would positively impact area communities, adding high skill high wage jobs and contributing to the local economy.

All Other Manufacturing Jobs by County

County Industry	Rank	2020 Jobs	2030 Jobs	Percent Change	2022 Earnings per worker
Kern County					
Aerospace Product/Parts Mfg.	2	829	1,309	58%	\$160,048
Petroleum & Coal Manufacturing	4	660	431	-35%	\$192,484
Cement & Concrete Product Mfg.	5	560	539	-4%	\$97,391
Plastics Manufacturing	7	518	587	13%	\$62,689
Tulare County					
Plastics Manufacturing	3	1,150	771	-33%	\$76,126
Converted Paper Product Mfg.	4	1,058	1,101	4%	\$74,176
Other Wood Product Mfg.	6	558	440	-21%	\$50,566
Printing & Related Activities	8	366	273	-25%	\$62,086
Inyo County					
Veneer, Plywood, and Engineered Wood Product Manufacturing	3	24	17	-46%	\$48,757
Bakeries & Tortilla Manufacturing	4	7	<10	Insuff.	\$35,662
Mono County					
Other Misc. Manufacturing	2	19	<10	Insuff.	\$63,320
Nonferrous Metal Production (Except Aluminum)	3	13	17	31%	\$51,503
Other Wood Product Mfg.	4	10	42	320%	\$50,370

Lightcast (2023) Highest Ranked Manufacturing Industries

Insuff = Insufficient data

Among the top manufacturing businesses in Kern, Tulare, Inyo, and Mono counties, those with the largest workforce are those in agriculture or food-related manufacturing, as illustrated by the data provided in the first two tables. The following table describes the manufacturing industry staffing patterns by county were cross-checked with occupational overviews to determine the number of individuals employed in each occupation in each county in 2020 and estimated to be employed in those occupations in 2030. Occupations' average wages for 2022 are also provided. Overall, manufacturing industry occupations educational requirements range from high school to some postsecondary to bachelor's degrees. Correspondingly, wages range from below to slightly above the regional living wage. Kern CCD programs focus on job skills with high wage returns.

Bakersfield College, Cerro Coso Community College, and Porterville College certificate and degree programs provide the education knowledge and skills that graduates need to enter and advance within the manufacturing industry to achieve regional living wages in industrial technology, manufacturing and machine technology, occupational safety and risk management, welding and metal fabrication and include skills in drafting / CAD skills, blueprint reading, lathe and milling, computer-controlled machining (CNC), and programmable logic controllers.

Top Manufacturing Staffing Patterns: Occupations by County

Top Occupations by County (1)	Annual Openings	Jobs 2020 & 2025		5-Year change Number & Percent		Median Wage
		2020	2025	Number	Percent	
Kern County						
Laborers & Freight Stock & Material Movers, Hand (53-7052)	1,535	6,685	8,755	2,069	31.0%	\$37,523
Industrial Truck & Tractor Operators (53-7051)	662	2,147	3,672	1,525	71%	\$37,211
Packers and Packagers, hand (53-7064)	278	1,943	1,485	-457	-23.5%	\$29,931
Packaging & Filling Machine Operators (51-9111)	120	751	799	49	6.5%	\$35,360
First Line Supervisors of Production and Operating Workers (51-1011)	96	703	810	107	15.2%	\$61,360
Food Batch Makers (51-3092)	60	420	298	-122	-29.1%	\$34,570
Tulare County						
Laborers & Freight Stock & Material Movers, Hand (53-7052)	755	3,539	4,228	689	19.5%	\$33,821
Packaging & Filling Machine Operators (51-9111)	185	1,294	1,279	-15	-1.2%	\$37,378
Misc. Assemblers & Fabricators (51-2098)	137	1,828	2,265	437	23.9%	\$32,603
Industrial Truck & Tractor Operators (53-7051)	396	1,797	2,259	462	25.7%	\$45,531
Food Batch Makers (51-3092)	72	495	402	-93	-18.9%	\$36,358
First Line Supervisors of Production and Operating Workers (51-1011)	87	629	673	45	7.1%	\$60,112
Inyo & Mono County, combined						
Laborers & Freight Stock & Material Movers, Hand (53-7052)	21	94	123	29	30.6%	\$34,093
Packers and Packagers, hand (53-7064)	7	62	38	-24	-38.1%	\$29,528
Packaging & Filling Machine Operators (51-9111)	5	26	34	8	32.0%	\$34,487
Demonstrators & Product Promoters (41-9011)	0	37	36	-1	-3.5%	\$40,306
Packaging & Filling Machine Operators (51-9111)	5	26	34	8	32.0%	\$34,487
Misc. Assemblers & Fabricators (51-2098)	4	25	25	0	0%	\$35,549

(Data Source: Lightcast (2023, Occupation Overviews by County).

Lack of Diversity and the Need for Diversity, Equity, and Inclusion

Manufacturing jobs in general have a more diverse workforce than the national average and are at or slightly more gender diverse than the national average. The estimated risk of retirement of the workforce in the occupations listed are at or slightly more than the national average. The racial composition of manufacturing workers is comparable to the general population except for Black / African American (2.6%) and women (34.5%) which are under-represented among the manufacturing industry workforce (Lightcast, 2023).

Talent Pipeline

Bakersfield College, Cerro Coso, Porterville College, and several other Central Valley Mother Lode region colleges serve the workforce needs of the SJV manufacturing industries. In the last five years, Kern CCD college students graduated with certificates and degrees in industrial technology, manufacturing technology, occupational safety and risk management and welding.

KCCD: Manufacturing Awards	2018-19	2019-20	2020-21	2021-22	2022-23
Bakersfield College	279	193	168	294	259
Cerro Coso Community College	38	30	28	25	41
Porterville College	66	39	30	37	12
	383	262	226	356	312

(Kern CCD IR Tableau Dashboard, 2023)

Bakersfield College Manufacturing Awards	2018-19	2019-20	2020-21	2021-22	2022-23
Industrial Technology	244	157	137	272	215
Occupational Safety & Risk Management		4	2	3	4
Welding	35	32	29	19	41
	279	193	168	294	260

(Kern CCD IR Tableau Dashboard, 2023)

Work-Based Learning

Kern Community College District, Bakersfield College, Cerro Coso Community College, and Porterville College have embedded work-based learning within many of its certificate and degree programs. In addition, each of the colleges have robust student employment offices that provide students with support to acquire internships and employment. Building trades programs lead to the opportunity to prepare for admittance to union apprenticeship programs.

Top Competencies

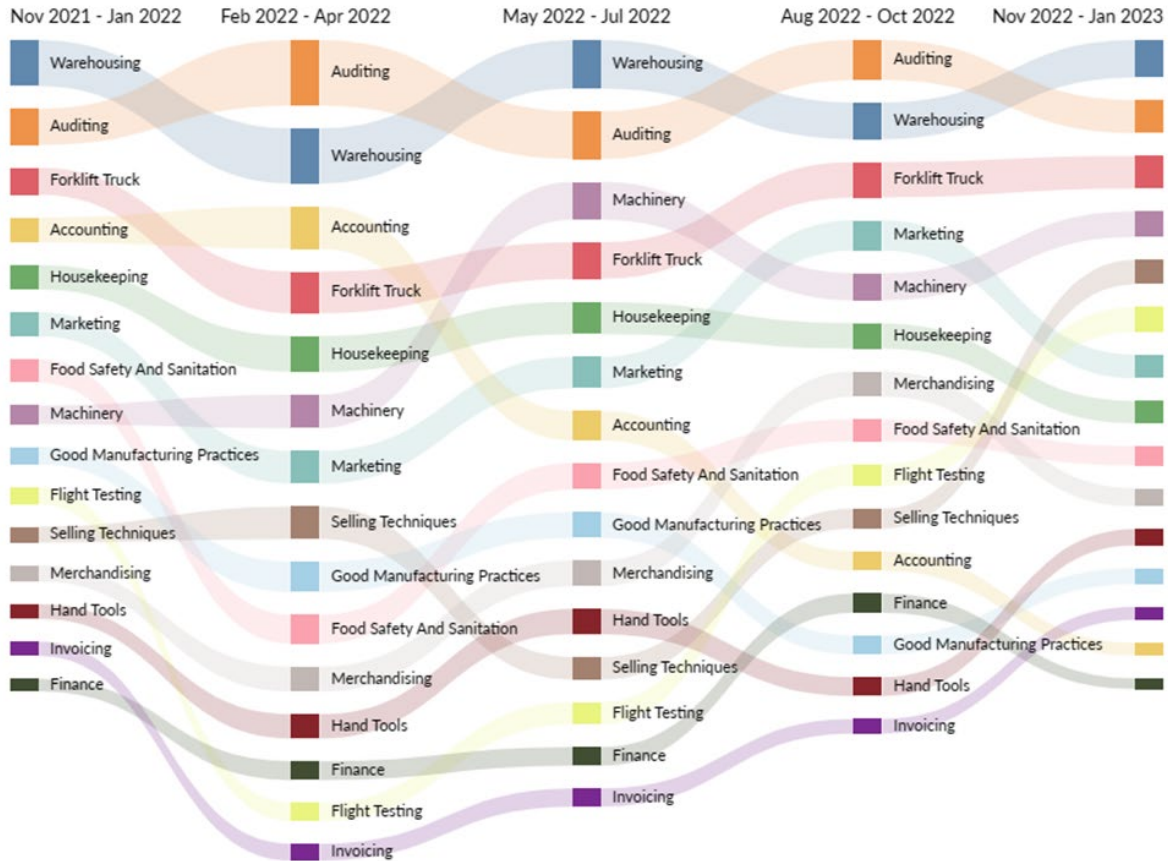
Manufacturing industry skills included in job postings vary across the four county Kern CCD service area due to the mix of manufacturing industries in each county. Illustration 1 below illustrates the top manufacturing skills across all four counties as listed in job postings as they vary across the prior year. The top skills include warehousing, auditing / accounting, forklift truck operation, machinery marketing / selling. In Kern County, flight test skills are also among the top skills listed. In Tulare, where there is a density of food processing plants, food safety and sanitation and good manufacturing practices are among the top skills listed. Inyo and Mono counties' unique manufacturing skills include merchandising, software systems, software engineering, computer science, and new product development.

Illustration 1. Job Skills Listings in Manufacturing Industries in Kern, Tulare, Inyo & Mono

Top 15 Skills for All Job Types by Quarter



Skills help us understand the direction an industry is headed.



(Source: Lightcast. Industry Snapshot Report. Retrieved February 8, 2023)

Emerging Opportunities

In 2015, Bakersfield College was awarded a baccalaureate degree program funding support for its industrial automation Bachelor of Science degree program. These funds provided equipment and initial faculty hiring to support the launch of the upper division program. Further development of manufacturing technology, industrial technology, occupational safety and risk management and welding fabrication programs and workforce development funding sources include CCCCO Strong Workforce Program (SWP) Local and Regional funds, California Apprenticeship Initiative (CAI), US Department of Agriculture and the US Department of Labor.

Agriculture

Climate change and prolonged drought conditions has led to an increased interest in regenerative agriculture, improving soil health, crop yields, and sustainability, and sequestering carbon in support of efforts to stem climate change. California has founded learning laboratories in Northern California at Chico State University and at University of California, Davis, in the northern San Joaquin Valley. California Polytechnic State University and San Luis Obispo have also dedicated space on their campuses and within their academic endeavors to highlight regenerative agriculture techniques. Neither of these centers are within a reasonable travel distance for farmers and operations managers in Kern County and the southern San Joaquin Valley, an area of historically large-scale production.

California has experienced persistent drought, reduced availability of local and imported surface water, and are further constrained by the 2014 Sustainable Groundwater Management Act (SGMA) which requires basin-level balancing of recharge and extraction by 2040. Southern San Joaquin Valley (SJV) communities expect to fallow up to 30% of agricultural land by the early 2040s (Hanak et al., 2019) resulting in significant socio-economic impacts in the region. The impact of reduced agricultural productivity is expected to be compounded by declining fossil fuel extraction (Fernandez-Bou et al., 2021). In the southern SJV, fossil fuel drilling frequently produces water in amounts ranging from 3 to 10 barrels of water to 1 barrel of oil. After appropriate treatment, this is a potentially significant source of water for agricultural use.

Equally important to future agricultural processes - hydroponic systems can save up to 95% of water usage over conventional growing methods. By 2050, there will be 9 billion people to feed in the world. At the same time, arable farmland is decreasing. To cultivate more food with less space and less water, technologies such as hydroponics are being deployed to grow more food in a smaller footprint, closer to the urban environment. Producing fresh greens and vegetables could help meet growing global food demands in an environmentally responsible and sustainable way by reducing distribution chains to offer lower emissions, providing higher-nutrient produce, and drastically reducing water usage and runoff. Education in hydroponic operations will introduce students to a solution to drought, food insecurities and environmental stewardship for the potential problems facing future generations. An introduction to these urban agriculture technologies can excite and bring more students into the plant science program.

The integration of advanced technology has improved the effectiveness and efficiency of modern agricultural operations. Precision agriculture processes and the utilization of robotic systems that manage data from temperature and moisture sensors, aerial imaging, and GPS technology result in higher crop productivity, decreased use of inputs such as water, fertilizer, and pesticides which keeps prices down, less chemical runoff reducing impact on natural ecosystems, and increased worker safety (1). Climate change is accelerating the demand for precision agriculture and a trained workforce to implement and manage the related business processes.

The Kern Community College District is taking on these climate change challenges by investing workforce education in advanced agricultural precision processes and technology, providing community education, and supporting industry entrepreneurship.

Current Workforce Development Projects

Bakersfield College: Sustainable Agriculture & Water Center of Excellence

The Regional Center of Excellence in Sustainable Agriculture & Water serves as a regenerative agriculture education center, providing workshops, experts, speakers, direct education, specialized equipment, and a local community of growers that are implementing regenerative practices. The center acts as a living laboratory that would exhibit current regenerative agriculture practices, offer non-credit workshops and courses, and serves as a networking hub connecting experts, farmers, students, consumers, and landholders. The Bakersfield College Delano Campus hosts the Sustainable Agriculture & Water Regional Center of Excellence which features regenerative agriculture demonstration plots, equipment leasing, and workshops by agriculture business and technology experts.

Bakersfield College – CNAP Partnership

Bakersfield College is partnering with the California Nevada Climate Adaptation Program (CNAP), a partnership of Desert Research Institute, the UC San Diego Scripps Institute of Oceanography, UC Merced, and others. BC faculty / CNAP partners have developed curriculum modules and will provide training on the integration of the curriculum modules, the use of state climate data tools, and support greater utilization of water management resources for agricultural knowledge-to-action decision making by the SJV agriculture workforce. The CNAP team will expand the number of faculty externships and student internships available throughout the SJV.

Bakersfield College – Regenerative Garden

The BC Regenerative Garden located at the Delano Educational Center provides education regarding sustainability and regenerative agricultural production practices while increasing soil health and sequestering carbon to contribute to carbon neutral goals. The Garden offers interactive plots of land that will demonstrate regenerative garden practices, soil surveys, an equipment lending library of machinery, specialized workshops, noncredit enrichment courses leading to a certificate of achievement.

Bakersfield College – Gandhi Peace and Learning Garden

The Mohandas Karamchand Gandhi Peace and Learning Gardens are dedicated to his teaching and philosophies. The Gandhi Peace and Learning Garden highlights Bakersfield College's value of community by providing a designated space for growth through learning and peaceful engagement. The peace gardens provide a serene setting of paths and vegetation with naturalistic seating for students to learn, collaborate on projects, engage with one another, and hone their academic and professional skills. The Gandhi Peace and Learning Gardens provide a peaceful respite in the center of a busy and bustling campus, made possible by support from the Ravi and Naina Patel Foundation. The Gandhi Peace and Learning Garden promotes global citizenship and cultural diversity by including six Peace Poles in the Gandhi Peace and Learning Garden reading 'May Peace Prevail on Earth' in different languages. Designed and manufactured by BC faculty and students with support from local Bakersfield Rotary Clubs, these peace poles link the Bakersfield College campus to the [International Peace Pole Project](#).

Workforce Supply Gaps

Industry Overview

Agriculture related industries vary by county in size and focus. have varying densities in each of the four counties served by the Kern Community College District. The top agriculture related industries in Kern, Tulare, Inyo, and Mono counties are crop production (111), animal production (112), support activities for agriculture and forestry (115), and food manufacturing (311). The following tables provide agriculture and agriculture related manufacturing industries employment by county and the workforce supply gap by occupation.

Top Agricultural Industries by County

County Industry	Rank	2020 Jobs	2030 Jobs	Percent Change	2022 Earnings per worker
Kern County					
Support Activities: Agriculture	1	41,538	49,898	20%	\$40,649
Crop Production	2	16,414	13,436	-18%	\$61,301
Animal Production	3	1,972	1,960	-1%	\$64,418
Tulare County					
Support Activities: Agriculture	1	23,190	25,517	10%	\$41,551
Crop Production	2	6,206	7,827	24%	\$50,908
Animal Production & Aquaculture	3	5,760	5,768	0%	\$61,795
Inyo County					
Animal Production	1	16	12	-25%	\$35,567
Crop Production	2	9	NA	NA	\$49,754
Support Activities: Crop & Animal Production	3, 4	4	NA	NA	Crop \$115,259 Animal \$52,605
Mono County					
Animal Production	1	25	33	32%	\$19,772
Crop Production	2	23	30	30%	\$51,880
Support Activities: Crop Production	4	1	0	NA	\$115,259

Top Agriculture Related Manufacturing Industries by County

County Industry	Rank	2020 Jobs	2030 Jobs	Percent Change	2022 Earnings per worker
Kern County					
Other Food Manufacturing	1	3,381	2,436	-28%	\$72,211
Dairy Product Manufacturing	3	667	900	35%	\$75,927
Fruit & Vegetable / Specialty	6	555	135	-76%	\$81,042
Beverage Manufacturing	10	345	392	14%	\$58,579
Tulare County					
Dairy Product Manufacturing	1	2,523	3,123	24%	\$88,108
Fruit & Vegetable / Specialty	2	2,400	2,312	-4%	\$66,618
Animal Food Manufacturing	5	661	708	7%	\$104,266
Other Food Manufacturing	7	438	961	119%	\$75,721
Inyo County					
Beverage Manufacturing	1	173	195	13%	\$84,959
Other Food Manufacturing	2	82	52	-37%	\$55,889
Mono County					
Beverage Manufacturing	1	50	79	58%	\$62,342

Agricultural workforce supply gaps.

Occupation (2)	Annual Opening	Jobs 2020 & 2025		5-Year change Number & Pct		Median Wage
Agriculture Operations Management						
First Line Supervisors	558	3,761	3,799	39	1%	\$18.28
Sales representatives, wholesale & mfg.	664	6,281	6,479	197	3%	\$30.98
Buyers & purchasing agents	166	1,695	1,691	(4)	0%	\$29.93
Cost Estimators	129	1,350	1,378	28	2%	\$36.52
Agriculture Equipment Mechanics						
Farm Equipment Mechanics & Service	129	1,184	1,243	58	5%	\$19.50
Heavy Equipment Mechanics	153	1,505	1,530	25	2%	\$27.31
Pest Control						
Pesticide handlers, sprayers, applicators	54	374	386	12	3%	\$16.38
Pest Control Workers	138	921	982	60	7%	\$17.58
Agriculture Technicians						
Ag & Food Science Technicians	87	656	652	(5)	(1%)	\$18.52
Biological Technicians	47	342	352	10	3%	\$17.47
Forest & Conservation Technicians	64	491	501	10	2%	\$17.98
Environmental Science & Protection	41	311	322	11	4%	\$21.04
Life, Physical, Social Sci, All other	47	359	374	15	4%	\$33.98
Ag inspectors and compliance						
Ag inspectors	99	608	608	0	0%	\$21.64
Compliance Officers	145	1,547	1,658	110	7%	\$35.51

(Lightcast, 2023, Occupation Overviews).

The integration of precision agriculture is significantly changing the knowledge and skills of the workforce and is requiring the upskilling of existing and incoming operations managers, equipment mechanics, technicians, inspectors, and compliance officers. Emerging agricultural occupations such as drone operators, agricultural satellite/GPS image and data analysts, Internet of Things (IOT) technicians, and artificial intelligence business decision programming based on the precision agriculture big data are showing up in labor market job postings information. Agriculture industry employers in Kern County from 2015-19 listed 32 unique job postings for drone operators, 348 unique job postings for data and image analysts (3). Industry experts predict these numbers will increase as costs drive adoption of technology (4).

Lack of Diversity & Need for Diversity Equity & Inclusion

Among middle skill agriculture, water, and environmental technologies jobs such as agriculture operations management, agriculture equipment mechanics, pest control, agriculture technicians, inspectors, and compliance officers' occupations (earning between \$16.38 per hour to \$36.52 per hour), there is an underrepresentation of women (30% of the workforce), Hispanic or Latino workers and an overrepresentation of white workers compared to the area population (2). A broader look at the industries of crop and animal production, beverage and food manufacturing and support activities indicates reduced underrepresentation of women (41%) and Hispanic workers (Lightcast, 2023).

Work-Based Learning

Agriculture, water, and environmental technologies advisory board members from industry and discipline area community college faculty have discussed upskilling strategies for technical level workers with deep experiential knowledge of industry practices, but need general business management, data analytics and internet of things (IOT) technologies that are becoming integrated into industry precision agriculture practices. In addition, traditional age students progressing through an agriculture business program pathway will need a substantial amount of work based and experiential learning to fully appreciate industry practices. In response to these needs, BC and Kern CCD are implementing a regenerative garden at its Delano campus to support students’ needs for experiential work-based learning and working with industry advisory board members to identify upskilling needed for incumbent workers to attain. Bakersfield College and Porterville College agricultural programs have embedded and faculty are working to expand the number of work-based learning opportunities, collaborative industry partnership projects and internships available to students. In addition, BC, CCCC, and PC have student employment offices to support students in applying for and acquiring internship and employment opportunities.

Talent Pipeline

Bakersfield College student enrollment in Agriculture, water and environmental technologies is resilient, outpacing institutional headcount increases despite the 3.5% decrease in enrollment due to the COVID-19 pandemic. Students earning certificate and degrees increased significantly in 2019-20 and these awards were sustained through 2021-22 driven by agriculture business, production, and mechanized agriculture program completions. The COVID-19 pandemic likely resulted in the reduced number of awards in 2022-23.

KCCD Data Tables: Awards	2018-19		2019-20		2020-21		2021-22		2022-23	
	BC	PC	BC	PC	BC	PC	BC	PC	BC	PC
Agribusiness	0	2	2	7	1	16		10		7
Agriculture Business	42		67		69		100		43	
Agriculture Business Mgmt	9		6		5		1		2	
Agriculture Plant Science	1		4		3		4		7	
Agriculture Production		6		12		9		7		6
Mechanized Agriculture			13		19		12		0	
Plant Science Crops	8		12		7		5		8	
Plant Science Horticulture			1		3		3		1	
Total Awards	60	8	105	19	107	25	125	17	61	13

(Kern CCD IR Tableau Dashboard, 2024)

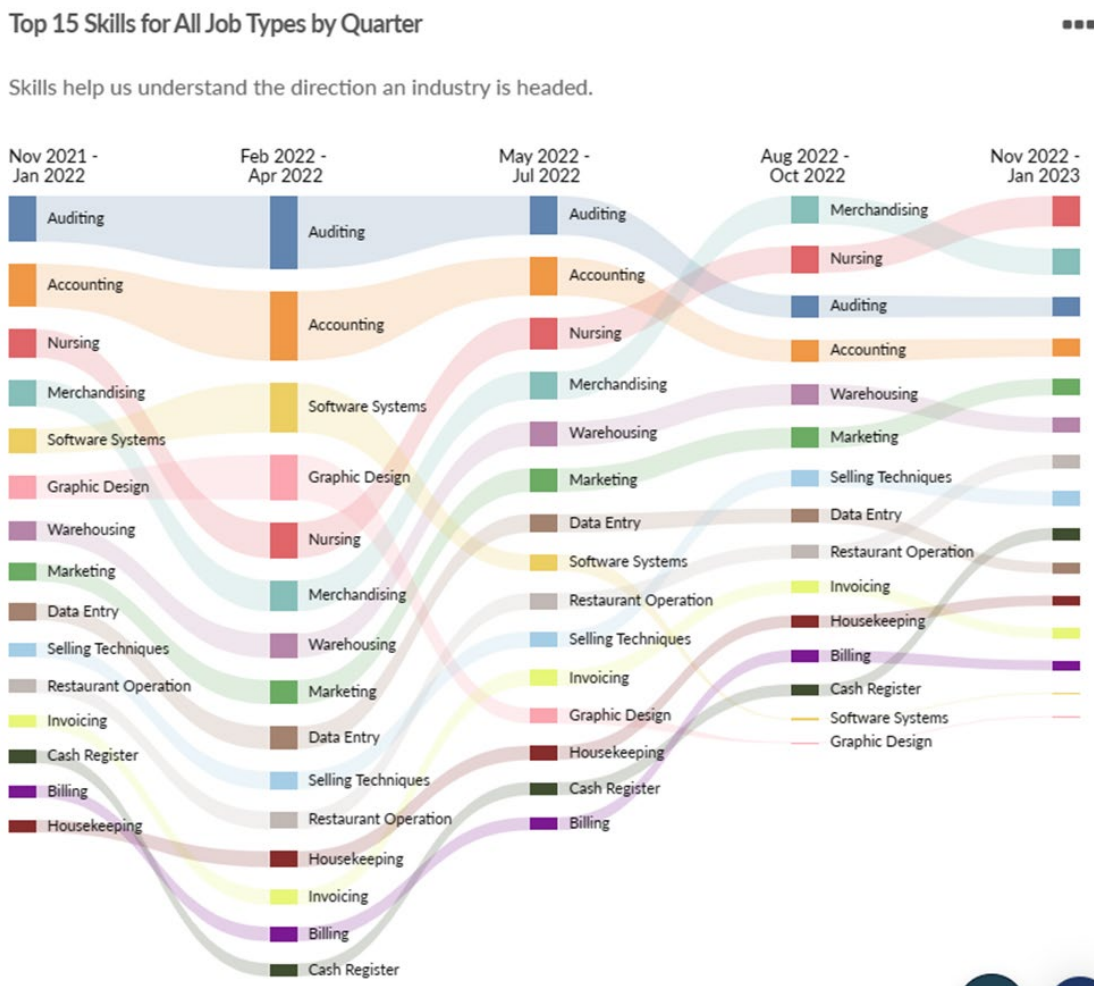
References

1. US Department of Agriculture (2022). Agriculture Technology. [Agriculture Technology \(usda.gov\)](https://www.usda.gov/technology).
2. Centers of Excellence (2022). [South Central Valley/Mother Lode: Subregional Labor Market Overview](#) and Lightcast (2023). Industry Overviews.
3. Lightcast (formerly EMSI) (2022). Job Postings reports – drone operators and data / image analysts.
4. AgNext (2019). Experts Take on Precision Agriculture.

Top & Emerging Competencies

The top agricultural production in Kern, Tulare, Inyo, and Mono counties are crop production (111), animal production (112), support activities for agriculture and forestry (115), and food manufacturing (311). The top Crop and Animal Production skills appearing in job postings for most of the year are seeking auditing, accounting, and preparation for merchandising (software, graphic design) skills and switch to primarily merchandising, accounting, auditing, and warehousing functions in August to October. The top skills listed in job postings for Support Activities (Agriculture, crop production, animal production) fluctuates throughout the year with a focus on inventory management, food safety, warehouse functions, and communication (Bilingual Spanish/English). The top four food manufacturing skills appear consistently year-round: food safety and sanitation, good manufacturing practices, hazard analysis and critical assessment followed by warehouse, equipment maintenance, inventory, and accounting. The top skills appearing in job postings for each of these agricultural industries by county are illustrated in the charts below (Lightcast, 2022 Industry Overview by industry by four counties).

Illustration 1. Top Skills for Crop and Animal Production in Kern, Tulare, Inyo & Mono



(Source: Lightcast. Industry Snapshot Report. Retrieved February 8, 2023)

Illustration 2. Top Skills: Support Activities for Crop & Animal Production

Top 15 Skills for All Job Types by Quarter

Skills help us understand the direction an industry is headed.

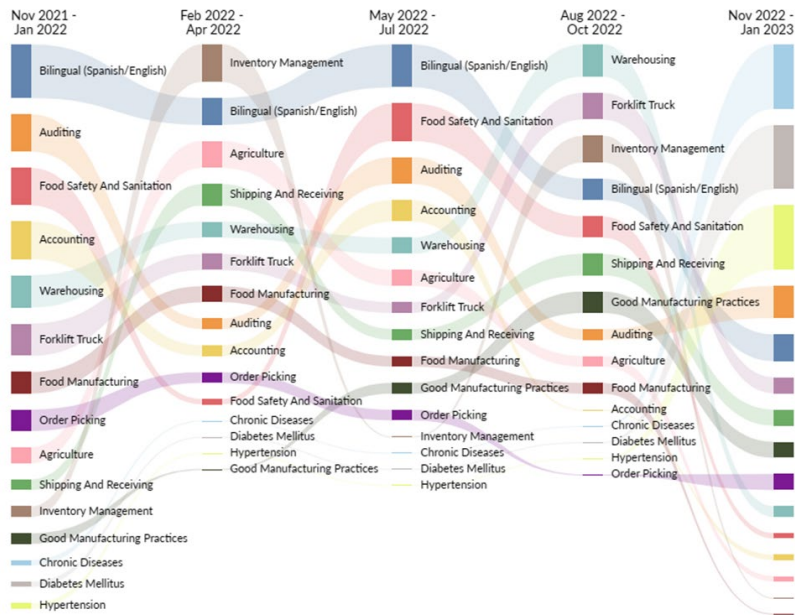
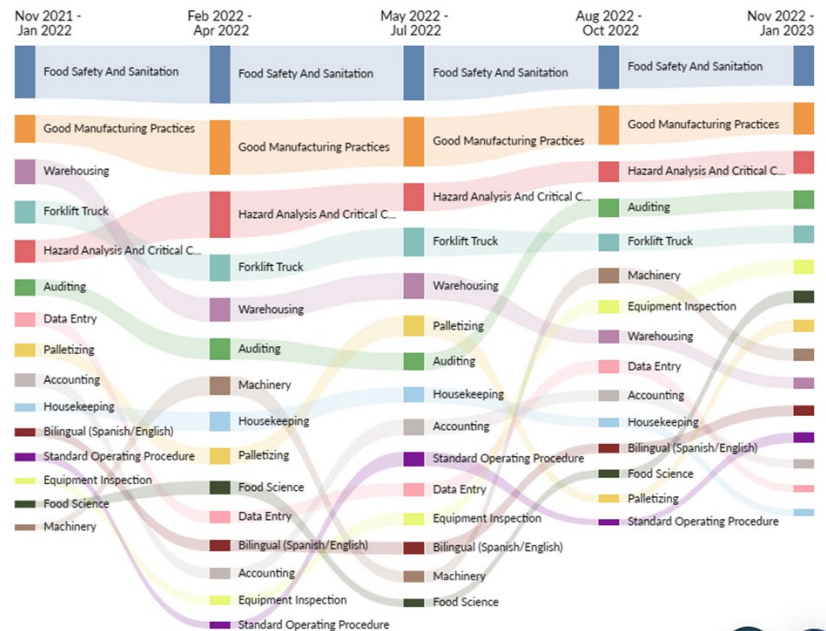


Illustration 3. Food Manufacturing Job Postings: Top Skills

Top 15 Skills for All Job Types by Quarter

Skills help us understand the direction an industry is headed.



(Source: Lightcast. Industry Snapshot Report. Retrieved February 8, 2023)

Emerging Opportunities

There are several emerging areas of focus in the agriculture sector. Among these are satellite imaging and geographic information systems (GIS) mapping, agricultural production of biofuels and hydrogen, as well as the utilization of clean renewable energy to offset production use of grid electricity and thereby manage costs. Small business services are also needed in rural areas to support the entrepreneurial innovation occurring within the agriculture sector.

Satellite Imaging & GIS Mapping

The high-tech agriculture workforce will need training in GIS, data science, land use, crop yields, and water usage data, tools, and information-based decision-making tools. Among the skills needed include processing and analyzing satellite photos and managing GIS data sets regarding irrigation, water usage, water recharging, and other relevant areas of interest. Several software and data tools will be utilized including [Land IQ](#) for SGMA water sustainability management. Restoration, recharge, water management, salinity and nutrients, and regulatory support are among the other areas of interest of water managers, and agricultural operations managers. Other data sources include Aerial Electromagnetic Surveys, California's Climate Change Assessments (CalAdapt and CalEnviroScreen), and the Farmland Mapping and Monitoring Program. Students will produce maps and statistical data used for analyzing impacts on California's water utilization and SGMA reporting.

Agricultural Production of Biofuels & Hydrogen

Establish a biofuels program that will teach students to create ethanol, biodiesel, and cultivate algae. Biofuels are a sustainable energy source made from organic materials or recycled oils that are converted into liquid fuels. Plant biomass, an agriculture waste product, is used to make the biofuel ethanol and biodiesel, a combination of alcohol (ethanol) and oil or fat. This program of study will include advanced vehicle technologies, sustainable technologies, biology, chemistry, electrical, and mechanical fundamentals. More recently, biomass plants are being equipped to generate hydrogen as an alternate fuel.

Agriculture Utilization of Clean Renewable Energy

San Joaquin Valley agricultural producers use a significant amount of energy to operate their businesses. Traditional energy sources are used in pumping irrigation water, operating medium and heavy-duty equipment and vehicles in the agricultural production process and transportation to market. These energy needs could be met through a variety of renewable energy sources such as solar or wind, utilizing agricultural waste streams such as biomethane, aerobic and anaerobic digesters, and microgrid deployment to ensure energy reliability and resilience in rural locations without a direct or an affordable tie to the grid.

In Development: The Precision Agriculture & Emerging Tech Innovation Center

The Bakersfield College Launchpad, a business / entrepreneur support and service center is working with the Bakersfield College Agriculture and Water COE to establish the **Precision Agriculture and Emerging Technology Innovation Center / Jobs Accelerator (IC / JA)**. The IC/JA will build on the region's Agriculture sector, capitalizing on its proximity to major markets, energy, international trade, and warehouse infrastructure and engage professional experts, researchers, and educators *to grow, mature, and expand the emerging Agriculture Technology cluster* by:

- Fostering entrepreneurship and small business development
- Developing a strong innovator & entrepreneur ecosystem
- Development and commercialization of Ag Tech innovations and process improvements
- Developing a skilled workforce that meets the needs of the emerging Ag Tech cluster to support business management decision-making, reduced cost, and improved returns.
- Developing agriculture specific educational programming, infrastructure and small business supports to provide the workforce skills, technologies, and needed supports.
- Linking communities, markets, entrepreneurs and businesses, workers, technologies, and skills needed to support those linkages, and
- Developing an integrated regional Ag Tech ecosystem that will identify and address shared policy goals and challenges; and will result in multiple positive benefits and outcomes, spurring new business formation, business expansion, economic growth, and high wage job creation.

Kern County is one of the most productive agricultural regions in the United States. However, increasing costs of inputs such as energy and water may drive demand for mechanized agriculture, the internet of things devices to conserve and manage water and energy, satellite, and agriculture business data management tools including artificial intelligence tools to contribute to the analysis and interpretation of agriculture operations big data. Consequently, the demand for workforce education, training, and upskilling on these emerging strategies, tools, and devices are projected to continue to increase over the next several decades. Therefore, we believe that IC / JA will generate significant return on investment for many years, providing significant benefit to the residents and businesses in the surrounding rural communities.

There are several federal and state grant opportunities that have been identified as potential opportunities to support the Innovation Center / Jobs Accelerator, including several grant programs offered by the US Department of Agriculture, the US Department of Commerce, and the US Department of Labor. In addition, CCCCO Strong Workforce local and regional funds as well as private philanthropic funding are available to support innovative workforce education.

References

- Fernandez-Bou, A. S. et al. (2021). 3 challenges, 3 errors, and 3 solutions to integrate frontline communities in climate change policy and research: lessons from California. *Frontiers in Climate*, 3, 104. <https://doi.org/10.3389/fclim.2021.717554>
- Hanak, E. et al. (2019). Water and the future of the San Joaquin Valley. <https://www.ppic.org/publication/water-and-the-future-of-the-san-joaquin-valley/>

Business, Business Services, and Entrepreneurship

Business management occupations are the foundation of the priority industry sectors in Kern County, including small start-ups, emerging technology-based businesses, and large facilities. Therefore, it is critical that business and entrepreneurial skills are available at both the high school and postsecondary educational levels for traditional and nontraditional students. All three Kern Community College Districts offer business courses, certificates, and degrees.

Current Workforce Development Projects

Bakersfield College Launchpad

The Bakersfield College Launchpad exists to empower residents of Kern County with entrepreneurial resources to successfully launch and grow small businesses through the delivery of educational opportunities and support services through fostering collaboration. As a part of Bakersfield College Workforce and Development vision, the Launchpad's aim is to focus on entrepreneurship mindset and resources by expanding the learning landscape, offer entrepreneurial and business courses, build community partnerships, and provide business technical support to entrepreneurs and business owners.

The Bakersfield College Launchpad offers a multitude of no-cost business support services for entrepreneurs, start-ups, and existing small businesses. Our assistance includes one-on-one counseling and coaching with educational staff and industry partners, entrepreneurial working space, business workshops, and no cost noncredit courses. Then Launchpad is located downtown at the Weill Institute and open to all Kern County residents.

Innovative Engagement, Job Preparation, and Training

Bakersfield College (BC) regularly engages community partners to support economic growth and upward mobility. In 2023, Bakersfield College's Launchpad began utilizing a federal Entrepreneurship Ecosystem Technical Assistance and Grant Program, funded through the City of Bakersfield, to make a favorable impact on the entrepreneurship ecosystem and target audiences in the city and address economic impacts of the COVID-19 pandemic on area small businesses. The Launchpad program and its TA partners are focusing on providing economic recovery and revitalization via technical assistance to entrepreneurs, start-ups, and small businesses, particularly within Bakersfield's disadvantaged communities. To date, 48 small businesses have been provided with over \$450,000 in grants under this program; specifically, grants already awarded include: one \$40,000 grant, two \$25,000 grants, and 45 \$5,000 or \$10,000 grants. Bakersfield City allotted a total of \$2.4M, including ~\$500k for the TA component, for this Entrepreneurship program. These grants support business expansion, and in some cases, support the hiring of full-time staff at living wages.

Kern CCD colleges are available to develop innovative training for businesses and their employees in business, communication, and customer relations and technical skills. In Fall 2020, BC partnered with *Chick-fil-a* to provide employees with a noncredit office and business skills program. The BC / Bakersfield City School District *Parent University* provides training in parenting and child development, college-readiness noncredit skills courses, and English for Multi-Lingual Students courses to support English language learning. The City Serve / BC *HireUp* Project provides Basic Office Skills Certificate of Completion (CDCP). The BC / Kern High School District Adult School *JobSpot* offers noncredit computer skills courses and

provides GED testing. BC also provides CDCPs in ADA - accessible electronic media, noncredit certificates in educational paraprofessional careers, online teaching for K16 teachers, and applied and educational leadership.

Information Technology Apprenticeships. Several information technology apprenticeship awards have recently been announced and are in the process of being implemented. These include Apprenticeships in the Information & Communication Technologies (ICT)/Digital Media- California Apprenticeship Initiative (CAI) - Central CA - ***IT Project Manager Apprenticeship Program***, BC project (\$499,513). Apprenticeships in the Information & Communication Technologies (ICT)/Digital Media and Business & Entrepreneurship Industry Sectors - California Apprenticeship Initiative (CAI) - Central CA - ***OpenClassrooms Apprenticeship Program***, (\$499,513). ***Amazon Web Services (AWS) Cloud Skills Pilot*** - Cerro Coso Community College (2022-23).

Workforce Supply Gaps

In 2021, there were 800 annual business job openings in the Kern CCD service area. The General and Operations Managers includes business owners, entrepreneurs, office administrators, supervisors, and managers. The remaining occupations are middle-skill support occupations critical to businesses. Computer network and support staff occupations are not included in the workforce supply table. (Centers of Excellence [COECCC], 2022).

The Workforce Supply Gap table includes business and entrepreneur positions. In Kern County, there are 3,361 general and operations managers, less than the national average (adjusted for region size) of 5,397 although the average annual compensation of \$105,997 is about the national median of \$103,646. Projected growth in general and operations manager jobs from 2020 to 2030 is 406 jobs or 12.1% (Lightcast, 2023).

The General and Operations Manager table disaggregates this key occupation by industry. Kern County Crop Production Support Activities, at 5.3% of total employees, has the largest percentage of G&O managers, followed by Restaurants and Other Eating Places at 3.7%. Of the top six industries, all but one had less than 5% of their total employees were general and operations managers. The General and Operations Managers occupational inverse staffing pattern provides insight into the industries that employ the largest number of business owners, entrepreneurs, and independent contractors (Lightcast, 2023).

Business & Entrepreneurship Workforce Supply Gaps

Occupation (1)	Annual Openings	Jobs 2020 & 2025		5-Year change Number & Percent		Median Wage
Kern County						
General & Operations Managers	95	5,610	7,146	1,536	27.4%	\$72,948
Sales Managers	38	723	921	199	27.5%	\$95,368
Sales Representatives	43	1,634	1,678	44	2.7%	\$62,677
Business Professionals	180	5,558	6,312	753	13.6%	\$48,972
Business Professionals, Other	80	1,437	1,493	56	3.9%	\$42,953
Support Staff	139	9,751	9,534	-217	-2.2%	\$41,669
Tulare County						
General & Operations Managers	38	2,681	3,433	752	28.0%	\$71,356
Sales Managers	13	430	517	87	20.3%	\$93,434
Sales Representatives	12	694	782	88	12.7%	\$53,367
Business Professionals	66	2,761	3,141	380	13.8%	\$50,670
Business Professionals, Other	31	736	906	170	23.1%	\$49,146
Support Staff	55	4,935	4,560	-376	-7.6%	\$41,239
Inyo County						
General & Operations Managers	2	166	212	46	27.4%	\$70,635
Sales Managers	0	18	25	7	37.7%	\$80,066
Sales Representatives	0	26	6	9	35.5%	\$69,380
Business Professionals	1	146	145	-1	-0.6%	\$47,548
Business Professionals, Other	0	42	31	-11	-26%	\$51,223
Support Staff	1	243	231	-12	-5.0%	\$42,984
Mono County						
General & Operations Managers	3	162	276	115	70.8%	\$77,505
Sales Managers	0	18	36	18	101.7%	\$89,182
Sales Representatives	0	29	54	25	87.2%	\$69,095
Business Professionals	1	138	179	41	30.0%	\$51,853
Business Professionals, Other	0	36	33	-2	-6.5%	\$55,534
Support Staff	2	205	218	12	5.9%	\$45,503

Data Source: Lightcast (2023). Occupational Overview x SOC x County

General & Operations Managers: Employment by Industry

General & Operations Managers employed by industry (1)	Jobs 2021	Jobs 2020 & 2030		10-Year change Number & Pct	
11 Agriculture					
1151 Crop Production Support Activities	195	177	231	54	30%
22 Utilities & 23 Construction					
2211 Electric Power Generation	18	18	26	8	43%
2382 Building Equip Contractors	61	54	69	15	27%
4x Trade: 42 Wholesale, 44-45 Retail, 48-49 Transportation & Warehousing					
4471 Gas Stations	68	64	78	14	21%
4481 Clothing Stores	37	37	47	10	28%
4523 General Merchandise Stores	43	42	53	12	27%
4841 General Freight Trucking	51	46	74	27	59%
4931 Warehousing & Storage	61	38	87	49	129%

5x - 52 Finance & Insurance, 54 Prof, Sci & Tech, 55/56 Management & Support					
5242 Agencies, Brokerages & Ins-related	31	24	29	15	60%
5412 Accounting, Tax Prep, Bookkeeping	35	36	49	13	37%
5611 Office Administrative Services	41	37	54	17	45%
6x - 61 Education; 62 Healthcare					
6214 Outpatient Care Center	16	16	25	10	64%
6241 Individual & Family Services	73	69	111	42	62%
71 Arts, Entertainment, Recreation and 72 Accommodations & Food Services					
7225 Restaurants & Other Eating	139	124	191	67	54%
8x Other Services & 9x Public Admin.					
8111 Auto Repair & Maintenance	74	72	85	13	18%
9029 State Govt (Except Educ & Hospitals)	57	57	66	10	17%
9039 Local Govt (Except Educ & Hospitals)	107	106	115	8	8%
Note: Table includes a selection of top industries. Top 4 industries job gains bolded)					

Data Source: Lightcast (2023).

Lack of Diversity & Need for Diversity Equity & Inclusion

In the Kern, Tulare, Inyo, and Mono region, men and women employed in business occupations are comparable to the general population although men dominate higher paying positions and women in lower paying positions. African American workers (4%) and Hispanic / Latino workers (44%) are slightly underrepresented compared to the regional population (Lightcast, 2023).

Talent Pipeline

Kern CCD Business and Entrepreneurship certificate and degree awards have increased from 447 in 2018-19 to 548 awards in 2022-23. General business averaged 50% of awards while agriculture business and business support occupations training each averaged 20% to 25% of awards each year (Kern Community College District, 2022).

Kern Community College District Business Awards

KCCD Business Awards	2018-19	2019-20	2020-21	2021-22	2022-23
Bakersfield College	311	287	357	466	406
Cerro Coso Community College	78	55	89	73	75
Porterville College	58	72	70	65	67
	447	414	516	604	548

The historically based projected growth from 2020 to 2030 is an additional 406 general and operations managers, an estimate that includes agriculture managers (support activities for crop production). There is some concern that the elevated rate of business formations that occurred during the COVID-19 pandemic persists, this estimate might not fully account for the business professionals and support staff education and training demand. In response to business advisory board members' requests, colleges are developing industry specific business certificates such as auto maintenance and repair, culinary, and welding businesses.

Work-Based Learning

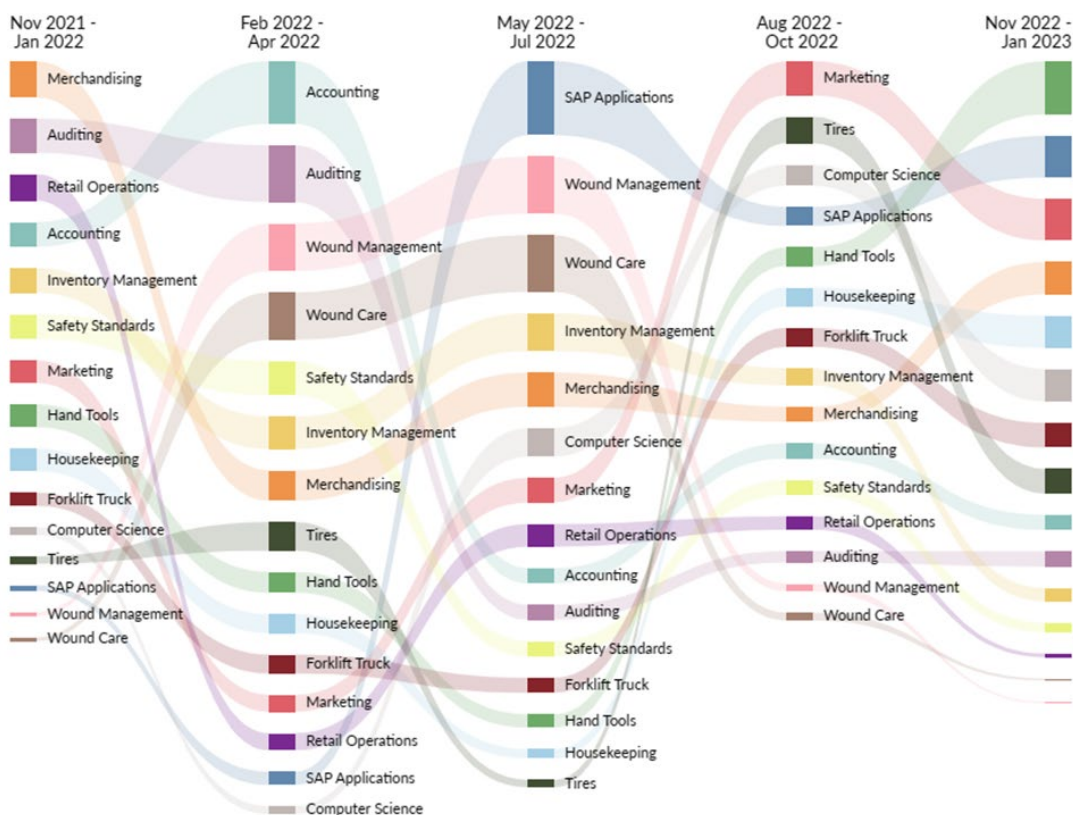
Students interested in Business and Entrepreneurship may have vastly different paths to these career decisions with some interested as matriculating high school students, others may come to the career after having worked in one or more industries, and still others may unretire to be an entrepreneurial or business venture. For those who have not worked in the industry of interest, work-based learning can be gained in industry specific certificate and degree programs such as Agriculture Business. Other individuals may just need education and training in specific business skills such as accounting, bookkeeping, or human resources. Those launching a new start-up can get short, just-in-time, business counseling and skill training through the Bakersfield College Launchpad, expert consultants, and classes. Business students and entrepreneurs that are already business owners or are opening a new business, have or are creating their own jobs. For those who are not yet ready to become business owners, the BC, CCCC, and PC student employment offices help students and graduates to market their business skills to potential employers.

Top Competencies

Among these occupations, accounting, SAP applications experience, auditing, administrative support, marketing, and merchandising skills and a drivers' license are among the most frequent licensing and skills listed in regional job postings.

Top 15 Skills for All Job Types by Quarter

Skills help us understand the direction an industry is headed.



(Lightcast, 2023)

Emerging Opportunities

The Kern CCD, and economic development entities are actively seeking funding to develop a research, development, and business innovation ecosystem. If successful this ecosystem would spur local innovation, business technology transfer, and commercialization, increase business formations, and result in the establishment of successful businesses at a rate greater than that seen in the past. If these efforts are realized, the number of general and operating managers, business professionals, and support staff in multiple industry sectors, and potentially in agricultural business, might not be met by the existing rate of business, professional and support staff awards (3). Funding sources available to meet urban and rural demand for business development and support services is available through the CCCCCO Strong Workforce Local and Regional funding, California Apprenticeship Initiative, and several grant opportunities available from the US Department of Commerce Economic Development Administration (US DOC EDA) and the Minority Business Development Administration (US DOC MBDA).

References:

Centers of Excellence, (2022). South Central Valley/ Mother Lode: Labor Market Overview.
Kern Community College District (2022). Tableau Dashboard: Awards by Program
Lightcast (2023). Occupation Overview in Kern County.

Transportation & Logistics

The transportation, logistics and warehousing industries are expanding their presence in Kern and Tulare counties, and to a lesser extent in Inyo and Mono counties. Industry experts cite the low cost of warehouse space and land as key drivers for siting new facilities.

Current Workforce Development Projects

Bakersfield College

BC offers an *Automotive Technology* Associate of Science, and the set of certificates of achievement in Automatic Transmissions, Automotive Heating and Air Conditioning, Brake Systems, Electrical and Electronic Systems, Engine Overhaul and Repair, Engine Performance, Light Duty Diesel Performance, Manual Drive and Axles, and Suspension and Steering. The BC Automotive Technology AS graduates can continue their education toward a Bachelor of Science by transferring to Rio Hondo College or Weber State University. The BC automotive technology programs prepare graduates for positions as automotive repair technicians, bus and truck mechanics, automotive specialty technicians, small engine mechanics, and diesel technicians. Electric Vehicle Repair & Maintenance: BC has partnered with the Greater Bakersfield Auto Dealers Association to establish a new training site located in the auto mall to provide upskilling for new and incumbent automotive technicians.

21st Century Energy Center

ZEV Vehicle Charging Infrastructure Training. In partnership with the Kern Council of Governments, Bakersfield College, and other project partners, the Center faculty developed an Introduction to Zero Emission Vehicles and Careers courses. The Center has established a partnership with the Kern County Electrical Apprenticeship program to provide Electric Vehicle Charging Installation pre-apprenticeship training and is developing an Electric Vehicle Charging Station Operations and Maintenance Technician training course.

Workforce Supply Gaps

Critical middle skill Transportation and Logistics industry occupations include freight stock laborers, movers and handlers, stockers and order fillers, heavy tractor trailer truck drivers, industrial truck and tractor operators, and light truck drivers. Recently, Amazon, Dollar General and several others have located or expanded their operations in Kern County. Over the past few years, several logistics warehouse businesses sited new locations in Kern and Tulare counties, an economic development trend expected to continue based on the low cost of land in both counties. The following table illustrates the 2021 annual job openings and the projected five-year hiring trend, and current median wages.

Transportation & Logistics Supply Gaps

Top Occupations by County (1)	Annual Openings	Jobs 2020 & 2025		5-Year change Number & Percent		Median Wage
		2020	2025	Number	Percent	
Kern County						
Laborers & Freight Stock & Material Movers, Hand (53-7052)	1,535	6,685	8,755	2,069	31.0%	\$37,523
Stockers & Order Fillers (53-7065)	1,312	4,423	6,460	2,036	46.0%	\$30,285
Heavy & Tractor Trailer Truck Drivers (53-3032)	936	5,217	6,572	1,355	26.0%	\$47,320
General & Operations Managers	524	3,162	4,379	1,217	38.5%	\$96,554
Industrial Truck & Tractor Operators (53-7051)	662	2,147	3,672	1,525	71%	\$37,211
Light Truck Drivers (53-3033)	290	2,003	2,284	280	14%	\$37,627
Tulare County						
Laborers & Freight Stock & Material Movers, Hand (53-7052)	755	3,539	4,228	689	19.5%	\$33,821
Heavy & Tractor Trailer Truck Drivers (53-3032)	525	2,774	3,618	844	30.4%	\$45,448
Stockers & Order Fillers (53-7065)	572	2,030	2,760	730	36.0%	\$29,931
Industrial Truck & Tractor Operators (53-7051)	396	1,797	2,259	462	25.7%	\$45,531
General & Operations Managers	276	1,470	2,183	713	48.5%	\$91,998
Light Truck Drivers (53-3033)	147	905	1,282	377	41.6%	\$43,202
Inyo & Mono County, combined						
General & Operations Managers	39	206	330	124	60.2%	\$100,428
Laborers & Freight Stock & Material Movers, Hand (53-7052)	21	94	123	29	30.6%	\$34,093
Light Truck Drivers (53-3033)	7	57	63	6	10.5%	\$42,378
Heavy & Tractor Trailer Truck Drivers (53-3032)	7	53	55	2	3%	\$49,155
Reservation & Transportation Clerks	7	11	31	20	191%	\$36,071

Data Source: Lightcast (2023). Occupational Overviews x County

Lack of Diversity and the Need for Diversity, Equity, and Inclusion

In the Kern, Tulare, Inyo, and Mono region, workers' representation by self-reported race is comparable to the general population although at 33% women are underrepresented among the workforce (Lightcast, 2023, Industry Overview).

Talent Pipeline

Bakersfield College Automotive technician program certificate and degree awards for the past five years are listed below (Kern CCD IR Tableau Dashboard, 2023). Although there was a decline during the pandemic, when in-person classes were not available, the student registrations for face-to-face programs, including the automotive technician program, have been steadily increasing. In addition, as transportation electrification and alternative fuel sources continue to gain in utilization among transportation and logistics companies, these programs may see increased enrollment from both incumbent workers as well as traditional age students.

KCCD: Auto Tech Awards	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Bakersfield College		87	113	84	62	80
Cerro Coso Community College						
Porterville College						
	0	87	113	84	62	80

(Kern CCD IR Tableau Dashboard, 2024)

Work-Based Learning

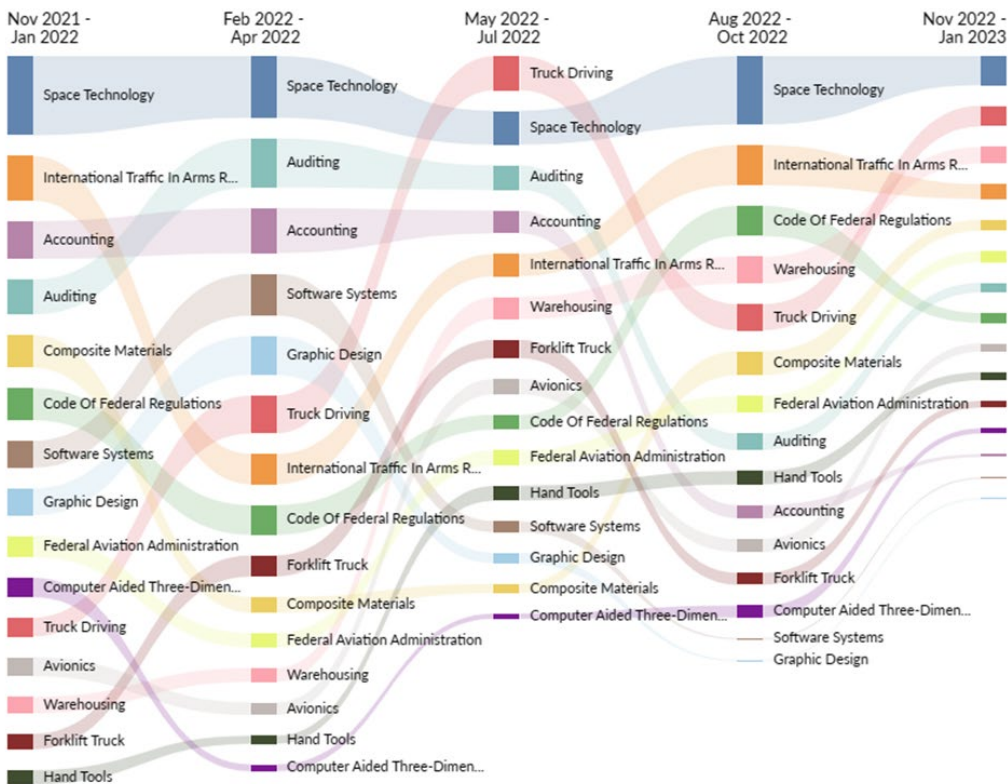
The automotive technician is a work-based learning program, and the supply chain logistics program has embedded work-based learning opportunities for its students. Training on clean and renewable energy vehicles is provided at the Greater Bakersfield Auto Dealers Association training site located within a less than a mile of multiple car and truck dealerships. In addition, the BC, CCC, and PC student employment offices support students and graduates to apply for and acquire internships and employment in the transportation and logistics industries.

Top Competencies

The primary competencies for the transportation and logistics industries include space design and management, international shipping regulations, inventory, auditing, accounting, warehousing, and truck driving skills (Lightcast, 2023, Industry Job Postings.)

Top 15 Skills for All Job Types by Quarter

Skills help us understand the direction an industry is headed.



Lightcast, 2023

Emerging Opportunities

The Transportation and Logistics industries are poised to undergo significant shifts to electric vehicles, hydrogen fuel, and other clean or cleaner energy. Light duty local delivery trucks are good candidates for electrification, where the EV charging infrastructure is available. Heavy duty and tractor trailer trucks are more likely to shift to alternative fuels that generate significant torque necessary for hauling sizable loads from Los Angeles ports throughout the state and the nation, including over the grapevine into Kern County to its many warehouses.

Among the funding sources identified to support workforce development programs include the US Department of Labor, the US Department of Commerce, California Workforce Development Board (CWDB), the California Community College Chancellor's Office (CCCCO), the California Air Resources Board (CARB) and the California Energy Commission's (CEC) workforce division.

Defense and Aerospace Industry

One of the largest industries found in the Cerro Coso Community College (CCCC) service area is aerospace and defense. According to Hamilton, Keough, Ratnatunga, and Wong (2015), the aerospace and defense industry was listed in the top six industries of Kern County. Hamilton et al. stated that the aerospace and defense was ranked high because of its output, employment share, specialization, and growth. The three major aerospace and defense facilities served by CCCC are China Lake Naval Air Weapons Station (NAWS), Edwards Air Force Base (AFB), and Mojave Air and Space Port.

China Lake NAWS (China Lake)

According to the US Navy, “China Lake provides and maintains land, facilities, and other assets that support the Navy’s research, development, acquisition, testing, and evaluation (RDAT&E) of cutting-edge weapons systems for the warfighter” (para. 1). The Navy states that China Lake is the largest single land holding base. It represents 85% of the Navy’s RDAT&E. China Lake is located to the north and east of the City of Ridgecrest. The base is over 1.1M acres with two ordinance ranges. The US Navy reported the following team classifications at China Lake: military personnel (2% @ 192 personnel), Department of Defense Civilians (71% @ 5,727 personnel), and contractors (27% @ 2,236 personnel). The occupation groups used at China Lake are scientist and engineer (S&E), business and program management, technician specialist, S&E technician, administrative support, and federal wage system. The base hires approximately 317 personnel on average per year.

Edwards AFB (Edwards)

Edwards is home to the Air Force Test Center, Air Force Test Pilot School, and NASA’s Armstrong Flight Research Center. The base is in the southeast corner of Kern County. Edwards is the second largest Air Force base in the United States. According to the US Air Force (2022a), the population of Edwards is 11,457. Here is the population breakdown: active-duty Air Force personnel (2,207), Air Reserve and National Guard (37), civilian employees (4,302), contractors (2,265), associates and non-appropriated funds (NAF) (education) (229), private businesses (175), base exchange (138), and family members (2,104). US Air Force (2022b) reported the following civilian hot jobs at Edwards: computer scientist, budget analyst, IT specialist, computer engineer, recruitment and training manager, chief data officer, business and program managers, financial specialist, family advocacy treatment manager, police officer, training specialist, scheduler, engineer, aircraft maintenance, and electronics engineer.

Mojave Air and Space Port

The Mojave Air and Space Port is a 3,300-acre facility that includes an industrial park with over 70 transportation companies (Hamilton, Keough, Ratnatunga, and Wong, 2015). Some of the larger well-known organizations located at the airport and industrial park include The Spaceship Company, Masten Space Systems, Inc, Scaled Composites, LLC, Flight Test Associates, BAE Systems, Interorbital Systems, Capsed Limited, Firestar Technologies, Cambium, Stratolaunch, Northrop Grumman, Nexgen Aircraft Corporation, Incotec, Whittinghill Aerospace, and PPG Aerospace.

Current Defense & Aerospace Workforce Development Projects

1. **Defense and Aerospace Coalition** formed to address critical workforce needs in the local defense and aerospace sectors. Coalition partners include China Lake, Edwards, Mojave Air and Space Port,
2. **Workforce Development plans** developed for China Lake, Edwards, and Mojave Air and Space Port to assist each location with outreach, recruitment, community education, professional development, academic programs, apprenticeships, and K12 education.
3. **Bachelor's degree programs:** Development of a bachelor's degree program(s) universal to the aerospace and defense industry.
4. **Associate degree programs:** Development of new associate degree programs in areas relevant to data science, electrical engineering, and engineering fundamentals (for transfer to higher education).
5. **IT courses:** Development and implementation of noncredit courses in information technology linked to certifications.
6. **Professional Development:** Development of noncredit courses in professional development to align with aerospace and defense industry needs (e.g., CAMIO software training and/or certification).
7. **Apprenticeships:** Explore apprenticeship programs in machining, information technology, and engineering.
8. **K12 STEM:** Offer STEM summer academies and/or bootcamps to include K12 field trips that focus on military and aerospace topics.
9. **Dual Enrollment:** Expand STEM dual enrollment opportunities.
10. Promote and attend recruiting events that support the aerospace and defense industry.
11. Defense and Aerospace Summit

Workforce Supply Gaps

The Kern Community College District has been in extensive discussions with military personnel regarding their workforce needs over the past year. These discussions, surveys, and information provided identified unmet demand for specific technical skills. The team cross-walked military skills to civilian occupations. These occupations will be validated by military and civilian partners in future discussions to ensure that we have correctly identified unmet workforce gaps critical for their respective operations. The following table lists the historical job numbers and projections based on current and prior year funding.

Defense & Aerospace Workforce Supply Gaps

Occupation (1)	Jobs 2020 & 2030		2021 Openings	2020 Retirements	Median Wage
Aerospace					
Aerospace Engineers (17-2011)	638	717	37	166	\$111,238
Aerospace Engineering & Operations Technologists & Technicians (17-3021)	44	34	4	N/A	\$79,153
Engineering Technologists & Technicians, except drafters (17-3029)	845	715	71	183	\$80,721
Engineers, all other (17-2199)	737	744	47	184	\$120,081
Computer Science					
Computer Hardware Engineers (17-2060)	155	190	13	33	\$107,956
Network & Computer Systems Administrators (15-1244)	477	500	46	71	\$87,629
Computer Systems Analysts (15-1211)	600	637	57	114	\$95,143
Information Security Analysts (15-1212)	113	159	16	21	\$106,447
Electrical / Mechanical / Military					
Electrical & Electronic Engineering Technician (17-3023)	731	606	66	180	\$89,992
Industrial Machinery Mechanics (49-9041)	1,512	1,745	184	433	\$60,717
Military Only	2,688	2,908	343	N/A	\$34,083
Airline / Aircraft					
Airline Pilots, Copilots, & Flight Engineers (53-2012)	176	205	30	19	\$214,046
Aircraft Pilots & Flight Engineers (53-2010)	378	438	63	86	\$187,445
Aircraft Mechanics & Service Technicians (49-3011)	719	827	64	119	\$73,522
Geographic Area	Kern, Tulare, Inyo, and Mono Counties				

(Lightcast, 2023, Occupation Overviews)

Lack of Diversity and the Need for Diversity, Equity, and Inclusion

The racial and gender diversity in the listed occupations is not reflective of the broad community. Persons self-identifying as African American, Black, and Hispanic are underrepresented and White employees are overrepresented compared to the general population. Women are underrepresented in the engineering (26.7%), computer science (32%), and military (17.3%) workforce. (Lightcast, 2023.)

Talent Pipeline

Kern CCD programs in computer information systems, computer science, cyber security technology, data analysis, and engineering certificate and degrees awarded over the past five years. Awards include computer information technology, cybersecurity, engineering, and engineering-related technology certificates and degrees (Kern CCD IR Tableau, 2024).

KCCD: Computer & Engineering Awards	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Bakersfield College	108	117	63	78	152	140
Cerro Coso Community College	55	86	103	109	122	67
Porterville College	10	17	10	14	5	20
	173	220	176	201	279	227

Work-Based Learning

Work-based learning is embedded within computer and engineering certificate and degree programs, pre-apprenticeship, and apprenticeship programs. In addition, the student employment office works to find internships and employment opportunities for students and graduates.

Top Emergent and Core Competencies

In a recent meeting with the Department of Defense (US Air Force and US Navy) and China Lake Base Commander, several top emergent competencies and core competencies are noted. The following are the top emergent and core competencies for personnel working at the base:

Top Emergent Competencies: USAF, USN, China Lake: Base Employees	
<ul style="list-style-type: none"> ● Digital engineering ● Artificial intelligence / machine learning ● Embedded computing ● Model-based systems engineering (MBSE) ● Unified modeling language (UML) ● Computer Engineering / Advanced Software 	<ul style="list-style-type: none"> ● CAMIO ● Engineering tools ● Modeling language ● Radio frequency (RF) engineering ● Electrical Engineering
Core Competencies: USAF, USN, China Lake: Base Employees	
<ul style="list-style-type: none"> ● Systems engineering and integration. ● Electronic warfare ● Weapons aerodynamic analysis ● Propulsion technologies ● Energetics processing ● Mission systems engineering 	<ul style="list-style-type: none"> ● Project management ● Flight test engineering ● Embedded Software ● Weapons guidance and control systems ● Cyber security

Emerging Opportunities

Cerro Coso Community College’s Cybersecurity Baccalaureate Degree Program (BDP) has been provisionally approved, pending intersegmental review. Several federal and state grant proposals have been submitted, are under consideration, or are in development to support East Kern defense and aerospace industry, including the Mojave Air and Space Port (MASP) and the Edwards Air Force Base. A 2024 CCCCCO CAI Information Technology Expansion grant application focused on defense and aerospace is in development.

References:

- Hamilton, P., Keough, K., Ratnatunga, M., & Wong, P. (2015). An economic road map for Kern County. *Milken Institute*. https://milkeninstitute.org/sites/default/files/reports-pdf/Kern-County-Economic-Road-Map-by-Milken-Institute2_2.pdf
- US Air Force. (2022a). *Edwards AFB*. <https://installations.militaryonesource.mil/in-depth-overview/edwards-afb>
- US Air Force. (2022b). *Hot jobs at Edwards Air Force Base*. <https://www.edwards.af.mil/About/Jobs/>
- US Navy. (2022). *Naval Air Weapons Station China Lake*. <https://cnrsw.cn.navy.mil/Installations/NAWS-China-Lake/>

Education

The Education industry sector includes career pathways from Pre-K to Post-Secondary teaching, administrative, student services, and non-instructional support occupations, and provides training, education, and professional development for staff, teachers, faculty, and administrators.

California Community College Teacher Preparation Programs (CCC-TPPs) were established in the community colleges in 2001 to address severe teacher shortages (Education Code Title 3, Division 7, Part 48, Chapter 2, Article 4.5); and align CCCCCO goals to decrease faculty shortages in nursing, early childhood pathways, and education (CCCCO Vision 2030 Goal 2, Outcome 11). As per the [CA Educ Code § 78275 \(2022\)](#), the Legislature found and declared that (1) There is a significant teacher shortage in California and the nation; (2) The teacher shortage is exacerbated by the lack of minority teacher candidates; and (3) In California, there is an estimated shortfall of between 260,000 and 300,000 teachers during the first decade of the 21st century. Nationwide, the shortfall is estimated to be between 2,000,000 and 2,200,000 during that same timeframe.

Teacher Preparation Programs (TPPs) align with the Chancellor’s Office Goal 2 / Outcome 11 – to increase system capacity to decrease faculty shortages in key sectors including nursing, early childhood pathways and education and Senate Bill 85 (2017 Education Trailer Bill) established the California Community College (CCC) Guided Pathways Program with the goal of ensuring integrated student success programs and services. Since the inception of CCC-TPPs, integrated student services have been at the heart of teacher preparation programs.

California community colleges play a vital role in preparing the teacher workforce, including preparing over 60% of teachers in the state. Unfortunately, reports issued via the Commission on Teacher Credentialing (CTC), the state agency charged with overseeing educator preparation for public schools in California, make no mention of the role of California Community Colleges in preparing and training individuals for careers in education. Instead, only the 4-year higher education institutions are mentioned, as they are part of the last step to becoming certified to teach, i.e. the licensing and credentialing of students as professional educators.

Current Education Workforce Development Programs and Projects

Kern CCD Colleges offer the following TPP degree and certificate programs are:

DEGREES	BC	CC	PC
Child and Adolescent Development AA-T	BC		
Child Development AA			PC
Early Childhood Education (ECE) AS-T	BC	CC	PC
CERTIFICATES OF ACHIEVEMENT (CoA)			
CD Associate Teacher CoA		CC	PC
ECE Administration Specialist CoA			PC
Early Intervention Assistance CoA			PC
CD Master Teacher CoA		CC	
CD Master Teacher - Infant Toddler CoA	BC		
CD Master Teacher - Special Ed CoA	BC		
CD Site Supervisor CoA		CC	
CD Teacher Permit CoA		CC	PC
Intro to Early Care & Education CoA	BC		
Transitional Kindergarten CoA	BC		
JOB SKILLS CERTIFICATE (JSC)			
CD Assistant Teacher JSC	BC		
CD Associate Teacher JSC	BC		

DEGREES	BC	CC	PC
Education Studies (ES) AS	BC		
Elementary Teacher Education AA-T	BC		PC
CERTIFICATES OF ACHIEVEMENT (CoA)			
ES Paraprofessional Level I CoA	BC		
ES Paraprofessional Level II CoA	BC		
ES Paraprofessional Level III CoA	BC		
ES Paraprofessional Level IV CoA	BC		
JOB SKILLS CERTIFICATE (JSC)			
Online Teaching Level I JSC	BC		
Online Teaching Level II JSC	BC		
Online Teaching Level III JSC	BC		
Online Teaching Level IV JSC	BC		

More information on the TPP pathways can be found at the respective college sites: [Bakersfield College - Education Pathway](#); [Cerro Coso Community College - Child Development and Education](#); and [Porterville College - Education Careers](#).

Bakersfield College was awarded \$1.3M in 2020 through the **US Department of Education's Title V** grant program to support the Education Pathway for future teachers as California continues to face a rising teacher shortage. Specifically, over the next decade, it is projected that 30% of teachers in the state will retire while it is also anticipated a rising number of children will be entering the school system. The Teacher Preparation Program will provide vital support services to 140 new eligible students every year over 5 years who are not already served by another program.

In Fall 2023 Bakersfield College was a recipient of a \$2.93M **US Department of Education Child Care Access Means Parents In School (CCAMPIS)** 4-year grant. The BC CCAMPIS program supports the participation of low-income parents in postsecondary education through the provision of campus-based childcare services. Funds are used to support campus-based childcare programs primarily serving the needs of low-income students enrolled in IHEs, providing before- and after-school services. In addition, the CCAMPIS grant benefits TPP students via CDC demonstration laboratory classrooms offering a model of best practices in early childhood education (ECE) while providing work-based learning opportunities through observation and on-floor interactions with young children and their families.

Porterville College was also awarded a \$1.91M **US Department of Education Child Care Access Means Parents In School (CCAMPIS)** grant for the 5-year period of 2020-2025. PC's CCAMPIS project catalyzes efforts to address regional inequities in educational attainment, meet regional workforce demands, and increase the number of Hispanic graduates prepared to enter professional careers. Activity objectives are based on Title V goals established for this project: Goal (1) Improve Hispanic student enrollment and transition to career or university; (2) Increase academic success through use of predictive analytics; (3) Strengthen institutional capacity to enhance the skills and abilities of faculty and staff to better serve and instruct Hispanic and underprepared students; and (4) Improve existing space to meet the needs of STEM students.

Open Textbooks Pilot (OTP): California State University Bakersfield (CSUB) partner, was awarded **US Department of Education** Fund for the Improvement of Postsecondary Education (FIPSE) for the **Open Textbooks Pilot (OTP) Program** award for its *Pathways Of Possibilities for Transforming Higher Education Curriculum Alignment Program (POP THE CAP)*. Porterville College and Antelope Valley College are funded project partners and Bakersfield College and Taft College are serving as advisory partners. Pathways Of Possibilities for students focuses on affordability and use of Open Educational Resources (OER) for Curriculum Alignment Program (CAP) courses required for community college transfer credit to universities. Training and support are provided to encourage collaboration in the creation, design, and curating of accessible, no cost, high quality OER course materials. A shared OER assessment tool (QAR 4 OER) ensures quality assessment measures are reached for the high level OER adoption proposed. A mixed-methods research design study evaluates the effectiveness of OER in meeting student learning outcomes aligned with teacher performance expectations (TPEs). A shared cloud connects OER materials created with open access repositories.

Faculty Diversification Fellowship Program

Bakersfield College is part of [Aspire's Regional Collaboratives \(RC\)](#), a network of geographically related 2- and 4-year institutions. There are Aspire regional collaboratives in California, Iowa, and Texas, and an additional three will be added by 2022, expanding reach and impact across the United States. In this model, institutions work together to share and develop programs and experiences that work towards two primary goals:

1. Increase the number and diversity of the pool of graduate students and qualified professionals pursuing a teaching career in STEM at 2-year colleges; and
2. Expand and strengthen the skills of future, early-career, and current STEM faculty to teach the diverse student populations.

In order to meet the goals of the alliance, BC analyzed student and faculty demographic data for Fall 2019. These data show that white faculty are overrepresented compared to Underrepresented Minorities (URM) faculty members. There is a vast body of research that links the academic success of students of color with a diverse faculty group (Benitez, et al., 2017). Further, the underrepresentation of women and racial minorities in STEM fields continues to increase although the number of individuals from these groups are earning more degrees in these disciplines (Fisher, et al., 2019). While the college has made progress in [diversifying the faculty pool for STEM disciplines](#), there is still room for growth and expansion. See [BC Faculty Diversification](#) and [CSUB Graduate Fellowship](#) program webpage links.

The Central Valley Higher Educational Consortium (CVHEC) is serving as the project backbone organization along with Cerro Coso Community College, Porterville College, Taft College, and UC Merced. Funding from the Kern County Superintendent of Schools' K16 grant (\$1.196M) had made it possible to scale the fellowship cohorts.

Workforce Supply Gaps

California is experiencing a chronic and severe teacher shortage. The global pandemic exacerbated the teacher shortage crisis that reached a new peak in fall 2021. Throughout the state, there is a shortfall of teachers enrolled in credential programs and early childhood education (ECE) programs, TK-12 school districts, and community colleges are all experiencing teacher shortages. "According to the California Department of Education, there were more than 10,000 teacher vacancies during the 2021-22 school year, particularly concentrated in [rural communities](#), communities of color and low-income communities, as well as a 16% reduction in new teacher credentials, the first decline in nearly a decade." ([Branson-Potts, 2023.](#))

California is at the epicenter of a teacher shortage that has been years in the making, as we educate far more students than other states and serves a far greater proportion of disadvantaged students than national averages across the early care and education (ECE) system for pre-Kindergarten children, K-12, and higher education. This is true on a regional level as well.

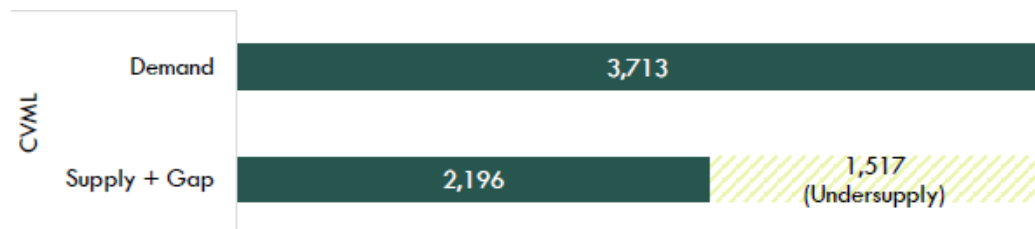
The recent changes enacted in California in 2021 related to preschool and the preparation, professional development, and advancement for the early care and education workforce, commit the state to universal preschool for all 4-year-olds by 2025-26, which of course affects the TPPs across the state and further increases the demand for early childhood educators. The largest expansion is through transitional kindergarten (TK), a district-based preschool program, and

exponentially increases the need for school districts to hire additional teachers (Melnick, H., Garcia, E., & Leung-Gagné, M. (2022).

Subsequently, the CCCCO's Centers of Excellence (CEOCCC) recently published 11 relevant Child Development (CD)/ECE labor market information (LMI) reports for the Central Valley / Mother Lode (CVML) region. For example, the Columbia College (12/2022) report regarding Child Development workforce supply gap determined the demand in the local labor market was not being met by community college programs. This report summarizes regional labor market demand, wages, skills, and postsecondary supply for *Child Development-relevant occupations*:

- Preschool Teachers, Except Special Education (SOC 25-2011)
- Teaching Assistants, Except Postsecondary (SOC 25-9045)
- Childcare Workers (SOC 39-9011)

The CEOCCC determined that there is a significant educational workforce undersupply throughout the CVML region (COECCC, 2022 Dec., COECCC, 2023 Mar.) reporting the Integrated Postsecondary Data System (IPEDS) regionwide data showing that the average of 2,196 CVML Child Development / Teacher awards issued (from 2019-2020 through 2021-2022) still resulted in an undersupply of 1,517 Child Development Teacher/Future Educators in the region. [This report includes TOP/CIP Codes 080200 - Educational Aide (Teacher Assistant) / 13.1210 - Early Childhood Education and Teaching and 13.0500 - Child Development/Early Care and Education.]



(COECCC, 2022 Dec).

Increases in preschool, TK-12 pathways, and community college programs proposed in the Governor's 2021 budget, will be impacted by the lack of future teachers in preparation pipelines in California's training programs. The statewide expansion of Early Care will be the training responsibility of primarily the community college system and teacher preparation programs continue to struggle to find support for ECE.

Lack of Diversity and the Need for Diversity, Equity, and Inclusion

The lack of teacher diversity in California's teacher workforce continues to impact California's children who need improved linguistic, cultural, ethnic and gender representation in their classrooms and teachers with knowledge of local communities. Community college-based teacher preparation programs can provide critical support such as the recruitment of teachers of color, bilingual educators, and expanded gender representation in the CA educator workforce, the development of model quality teacher preparation pathways which include ongoing career exploration (junior high, high school, college), contextualized learning opportunities, dual-enrollment pathways, apprenticeships, teacher preparation models of collaboration, and strengthening partnerships with 4-year institutions and professional organizations.

Some CCC-TPP programs offer mentoring and other free opportunities for students to gain access to the resources and tools necessary to be successful on the education pathway. Wraparound services, such as designated counseling, tutoring, and individualized learning supports need to be offered to CCC-TPP students, whether they are dual enrolled high school students, enrolled CCC-TPP community college students, or community members considering a career change. These “best practices” include career exploration activities that are embedded throughout CCC-TPP offerings. These practices need to be expanded to meet the needs of students interested in working with children in youth in California, as they face a complicated and highly regulated system of teacher development that needs guidance, support, and services at the front-end of the pathway.

Talent Pipeline

Regional Communities of Practice (COPs) - CCC TPPs are at the forefront of a collaborative effort to be strategic and deliberate in aligning education systems in an innovative way, moving away from the less effective short-term methods of teacher recruitment into a holistic, whole student approach that supports teacher preparation pathways and student success. CCC TPPs deliberately engage in long-term strategies for teacher preparation success while also intentionally implementing the *Grow Your Own* model in a strategic effort to diversify the field. The idea is to grow teachers early and from specific groups that show potential for mobility within the system:

- Paraeducator population
- Afterschool care provider population
- Parent population

Students need to enroll in courses to both prepare for immediate jobs in the sector and then to plan for career and college pathways that meet long-term career needs, including TK-12 teaching, counseling, administration, and leadership positions in programs for children and youth. TPPs COPs can provide models for individual colleges to implement as well as regional expertise in the sector.

Increases in preschool, TK-12 pathways, and community college programs proposed in the Governor’s 2021 budget, will be impacted by the lack of future teachers in preparation pipelines in California’s training programs. The statewide expansion of Early Care will be the training responsibility of primarily the community college system and teacher preparation programs continue to struggle to find support for ECE.

Tracking majors and completers is a statewide challenge in both child development and education; those who are pursuing a Single Subject Teaching Credential who are recorded under specific majors (ex. Sciences, English, Mathematics) and or due to the various permit options available (e.g., the CTC permit matrix (CTC, 2021). Thus, while the awards data below is as accurate as possible, it is presumed to be an undercount of the students in the TPP pathway.

KCCD EDUCATION AWARDS	2018-19	2019-20	2020-21	2021-22	2022-23
Bakersfield College	577	424	423	732	395
Cerro Coso Community College	84	109	115	72	85
Porterville College	64	84	147	181	126
	725	617	685	985	606

(Kern CCD IR Tableau Dashboard, 2024)

The Vision 2030 Education commitment (Goal 2:11) and SB 85 are particularly crucial in early college, dual enrollment, and “2+2” programs between the CCC-TPPs and regional CSUs. Student support services are indispensable for creating a seamless transition from community college to CSU educator preparation programs. CCC-TPP has a current agreement with the CSU system (CCC/CSU Collaboration Framework) related to working together on teacher education pathways and has many established partnerships. The main objective of all systems is to simplify transfer pathways for students to seamlessly transition into the workforce, in high-need, mid- to high-wage jobs.

Work-Based Learning

Work-based learning is embedded within child development and education certificate and degree programs, so that students can engage in formalized career exploration such as work-based learning, fieldwork, practicum, pre-apprenticeship opportunities, and apprenticeship opportunities. Students are also given many informal opportunities for work-based learning through volunteering and community-based learning placements with local education related partners, engaging in activities and community events related to education, and through close communication and on-going networking with leaders in the field of education. TPPs focus on supporting students throughout their education pathway by providing resources from birth (through Early Childhood Education programs) to career attainment -- a true Cradle-to-Career model of education.

Top Emergent and Core Competencies

The National Education Association’s (NEA), suggested top priorities for TPPs are:

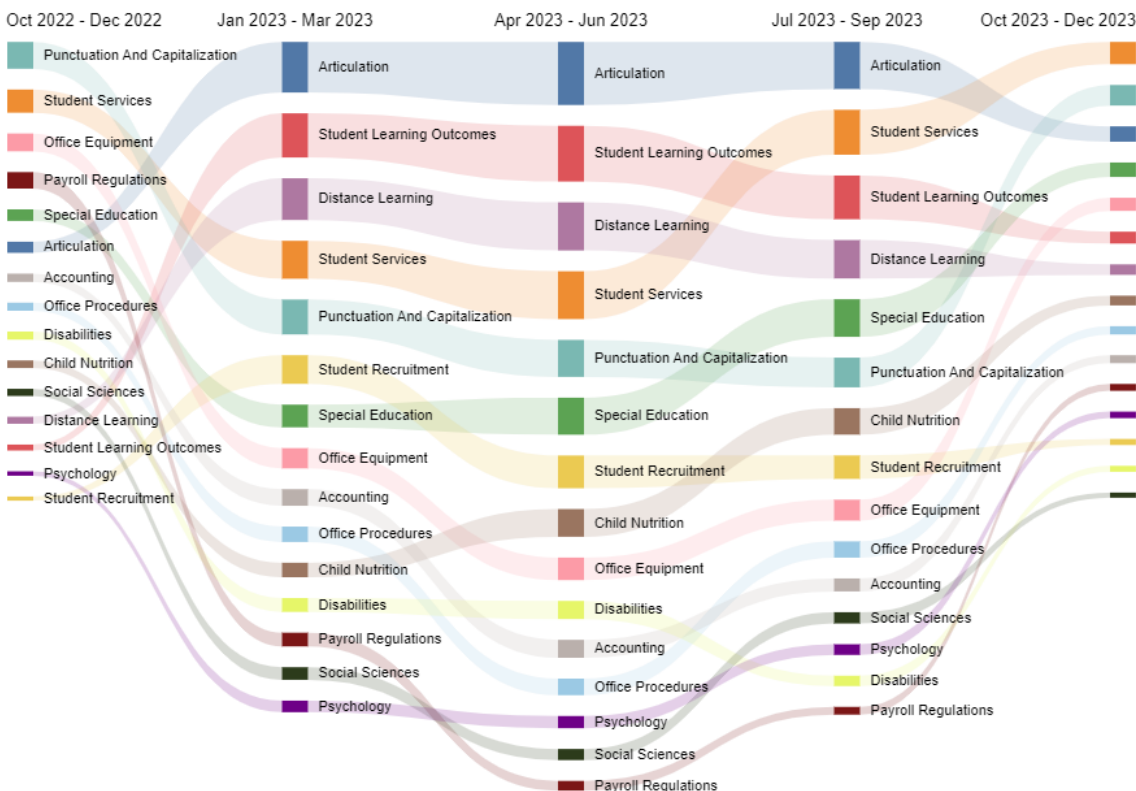
1. Apply the standards for initial licensure and professional licensure developed by the teacher-led coalition of stakeholders along with NBPTS’ Five Core Propositions as a guide for developing teacher preparation programs.
2. Require that all pathways for teacher preparation include a minimum of a full year of clinical practice with a well-trained, carefully matched, qualified professional/accomplished teacher (collaboratively selected and trained along with the host school/district). Field experiences should be infused throughout coursework prior to the clinical practice year.
3. Support candidate academic skill development through culturally responsive authentic project learning. Support candidate development of cultural competency through collaboratively developed, extensive and intensive interactions with diverse PreK-12 students, fellow teacher candidates, and TPP faculty.

These are all currently addressed by the CCC-TPPs throughout the state. In California, the CTC oversees teacher preparation programs at more than 100 institutions. These programs graduate more than 10,000 teacher candidates per year, almost one in 10 of the nation’s TPP completers. In 2016–17, the number of substandard credentials issued in the state outpaced the number of new preliminary credentials issued to teachers prepared in California TPPs. Over the past 10 years, California has considerably revised its standards for teacher preparation and performance expectations for beginning teachers, focusing on preparing teachers to develop students’ higher-order thinking skills, support social-emotional as well as academic learning, and effectively teach students with different language and learning needs.

Current job postings reveal a wide range of instructional, pedagogical, and technical skills that educational employers are seeking among their new hires, including student services, articulation, student learning outcomes, distance learning, and much more.

Top 15 Skills for All Job Types by Quarter

Skills help us understand the direction an industry is headed.



Emerging Opportunities

Among the funding sources identified to support Education programs include the: US Department of Education, US Department of Labor, US Department of Commerce, National Science Foundation (NSF), and California Community College Chancellor’s Office (CCCCO). Specific future grant possibilities include:

Dyslexia Grants to Preparation Programs - available on a one-time basis via the CTC to IHEs or LEAs, to update program curriculum and course offerings to align with the common trunk Teacher Performance Expectation (TPEs), new Education Specialist TPEs, and include pedagogy on dyslexia for both general and special education programs.

Integrated Undergraduate Teacher Preparation Grants Program - the CTC was allocated \$20M to award one-time grants to IHEs for 4-year integrated TPPs, including student teaching, and/or to adapt an existing 5-year program into a 4-year program. These grants can support integrated programs of professional preparation that produce teachers in the designated shortage fields of special education, bilingual education, science, health, computer science, technology,

engineering, mathematics, transitional kindergarten, or kindergarten and/or that partner with a California community college to create an integrated program of professional preparation.

National Science Foundation's GRANTED Program - the Growing Research Access for Nationally Transformative Equity and Diversity (GRANTED) is being looked at as a possibility to expand past TPP mentoring programs for future educators.

References:

- Benitez, M; James, M.; Joshua, K; Perfetti, L; and Vick, S.B. (2017, Spring). ["Someone Who Looks Like Me": Promoting the Success of Students of Color by Promoting the Success of Faculty of Color.](#) Association of American Colleges and Universities Liberal Education, 103:2, 50-55. <https://www.aacu.org/liberaleducation/2017/spring/benitez>
- Branson-Potts, Haley. (2023, August) "'No one is coming to our rescue': Inside rural California's alarming teacher shortage". [Los Angeles Times.](#)
- Carver-Thomas, D. and Darling-Hammond, L. (2017) *Addressing California's growing teacher shortage: 2017 update*. Palo Alto, CA: Learning Policy Institute. <https://eric.ed.gov/?id=ED606729>
- Centers of Excellence California Community Colleges (COECCC) CVML labor market research reports on the Education & Social Services sector/category:
- COECCC. (2022, June). [Tutoring.](#)
 - COECCC. (2022, July). [Child Development - Associate Teacher](#)
 - COECCC. (2022, September). [Child Development.](#)
 - COECCC. (2022, September). [Early Childhood Education.](#)
 - COECCC. (2022, December). [Child Development Teacher/Future Educators.](#)
 - COECCC. (2023, March). [Child Development.](#)
 - COECCC. (2023, March). [Music Teachers.](#)
 - COECCC. (2023, April). [Infant Toddler Specialization](#) (Childcare workers).
 - COECCC. (2023, June). [Athletic Training.](#)
 - COECCC. (2023, October). [American Sign Language](#) (ASL).
 - COECCC. (2023, October). [Human Services.](#)
- Commission on Teacher Credentialing. (2023, April). Teacher Supply in California 2021-22: A Report to the Legislature. <https://eric.ed.gov/?id=ED629569>
- Commission on Teacher Credentialing (CTC), (2021). [Child Development and School-Age Emphasis Matrix.](#) [https://www.ctc.ca.gov/credentials/leaflets/child-development-permits-\(cl-797\)/child-develop-and-school-age-matrix](https://www.ctc.ca.gov/credentials/leaflets/child-development-permits-(cl-797)/child-develop-and-school-age-matrix)
- Fisher, Mendoza-Denton, Patt, Young, Eppig, Garrell, Rees, Nelson, and Richards (2019). Structure and Belonging: Pathways to success for underrepresented minority and women PhD students in STEM fields. <https://doi.org/10.1371/journal.pone.0209279>
- Melnick, H., Garcia, E., & Leung-Gagné, M. (2022). *Building a well-qualified transitional kindergarten workforce in California: Needs and opportunities* [Brief]. Learning Policy Institute.
- National Education Association Top Priorities: <https://www.nea.org/resource-library/great-teaching-and-learning/priorities/tpps>
- Patrick, S. K., Darling-Hammond, L., & Kini, T. (2023). [Educating teachers in California: What matters for teacher preparedness?](#) [Brief]. Learning Policy Institute.
- Thurmond, Tony. (2023, December) "Want to solve the teacher shortage? Start with increasing salaries". [EdSource.](#)

Kern Community College District

Workforce and Economic Development Roadmap

Bakersfield College, Cerro Coso Community College, and Porterville College, and the Kern Community College District faculty, staff and administrators are prioritizing areas of large unmet workforce demand, significant climate change adaptations, technology integration, and supporting local and regional economic development and diversification. This section provides detailed industry sector college workplans with goals, activities, and outcome objectives.

Healthcare Industry Sector Roadmap

The existing Bakersfield College (BC), Cerro Coso Community College (CC), and Porterville College (PC) healthcare programs are mature. The colleges focus over the next five years is to expand existing programs and add new programs that will address healthcare industries’ workforce demand and supply gaps. Each College will assess local demand each year to determine whether to seek approval for a cohort expansion or wait for the next assessment.

YEAR 1: 2023-2024		
BAKERSFIELD COLLEGE		
New / Enhanced Program(s)	Activity	Outcome
LVN, LVN to RN, & RN Programs	Recruit clinical sites. Recruit and train clinical instructors.	Increase # of clinical sites & instructors.
	Implement BRN approved increased enrollment.	Increased LVNs and RNs meet local and regional demand
	Implement hybrid modalities: Part-time evening, and employer-sponsored programs.	Increased LVNs and RNs meet local and regional demand
RN Pilot	Recruit clinical sites. Recruit and train clinical instructors.	Increased LVNs and RNs meet local and regional demand
	Implement online RN pilot program. BRN review & petition for program authorization.	Program authorized by BRN
RN Program	Recruit clinical sites. Recruit and train clinical instructors.	Increased LVNs and RNs meet local and regional demand
	Implement BRN approved increased enrollment.	Increased LVNs and RNs meet local and regional demand
Medical Assistant (MA) Program	Complete curriculum approval process. Implement hybrid modality MA program.	Address employer demand for medical assistants.
Behavioral and Mental Health Programs	Recruit clinical sites. Recruit & train Behavioral & Mental Health Program instructional staff.	Funding is acquired, programs are implemented in 2023-2024 or 2024-2025

CERRO COSO COMMUNITY COLLEGE		
New / Enhanced Program(s)	Activity	Outcome
LVN Pilot Program	Seek BRN approval for distance education VN program	BRN approval granted.

YEAR 2: 2024-2025

BAKERSFIELD COLLEGE

New / Enhanced Program(s)	Activity	Outcome
Behavioral and Mental Health Programs	Implement Behavioral and Mental Health programs	Address demand for behavioral health and mental health workers
RN Program	Assess student cohort size versus labor market need.	Either request cohort increase or defer 1 year.

CERRO COSO COMMUNITY COLLEGE

New / Enhanced Program(s)	Activity	Outcome
RN Program	Seek BRN approval for permanent RN program	RN program approved
LVN Pilot Program	Implement BRN approved distance education VN program	VN graduates achieve licensure.

PORTERVILLE COLLEGE

New / Enhanced Program(s)	Activity	Outcome
RN Program	Assess student cohort size versus labor market need.	Either request cohort increase or defer 1 year.

YEAR 3: 2025-2026

BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE

New / Existing Program	Activity	Outcome
All New & Existing Programs	Conduct Healthcare Program Evaluation	Update course content and make cohort size adjustments.

YEAR 4: 2026-2027

BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE

New / Existing Program	Activity	Outcome
All New & Existing Programs	Conduct Healthcare Program Evaluation	Update course content and make cohort size adjustments.

YEAR 5: 2027-2028

BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE

New / Existing Program	Activity	Outcome
All New & Existing Programs	Conduct Healthcare Program Evaluation	Update course content and make cohort size adjustments.

Energy Industry Sector Roadmap

Energy programs have been an area of innovation as KCCD, BC, CCCC, and PC keep pace with state policy changes that are impacting the local renewable and traditional energy industries. Commercial scale solar and wind renewable energy facilities are located throughout the San Joaquin Valley of Kern County eastward through Tehachapi and Mojave. Traditional oil and gas fossil fuel energy industries are concentrated in western Kern County and companies located in Kern County also serve oil and gas fields on the central coast and south Los Angeles. KCCD, BC, CCCC, and PC are partnering with National Renewable Energy Laboratories and the US Department of Energy Fossil & Carbon Management to ensure new and existing workforce development programs feature workforce skills applicable to renewable energy, carbon storage and management, and emerging energy technologies.

YEAR 1: 2023-2024		
BAKERSFIELD COLLEGE		
New / Existing Program	Activity	Outcome
Energy, HVAC, Welding, and other traditional energy skills related programs	Industry Advisory stakeholders' input	Update programs carbon management knowledge & skills as carbon management
Energy & Carbon Management: Emerging Workforce knowledge & skills	Participate in the DAC Hub and the Hydrogen Shot Partnerships	Identify emerging workforce knowledge & skills important to traditional students and incumbent worker upskilling
Energy & Carbon Management: Emerging Workforce knowledge & skills	BC, CCCC, PC advisory stakeholders identify local workforce needs.	Develop and design curricular modules, courses or programs needed by employers.

YEAR 2: 2024-2025		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
EV Electrification: expand modules to Auto / Truck / Mechanics programs	Complete curriculum modules or components	Integrate installation of EV charging stations,
Energy & Carbon Management: Emerging Workforce knowledge & skills	Participate in the DAC Hub and the Hydrogen Shot Partnerships	Identify emerging workforce knowledge & skills important to traditional students and incumbent worker upskilling
Energy & Carbon Management: Emerging Workforce knowledge & skills	BC, CCCC, PC advisory stakeholders identify local workforce needs.	Develop and design curricular modules, courses or programs needed by employers.

YEAR 3: 2025-2026		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Energy & Carbon Management: Emerging Workforce knowledge & skills	Participate in the DAC Hub and the Hydrogen Shot Partnerships	Identify emerging workforce knowledge & skills important to traditional students and incumbent worker upskilling
Energy & Carbon Management: Emerging Workforce knowledge & skills	BC, CCCC, PC advisory stakeholders identify local workforce needs.	Develop and design curricular modules, courses or programs needed by employers.

YEAR 4: 2026-2027		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Identify key emerging energy workforce demand in each college service area.	Develop modules, courses, and programs to address local needs.	Address local and regional workforce knowledge and supply / demand gaps
Energy & Carbon Management: Emerging Workforce knowledge & skills	BC, CCCC, PC advisory stakeholders identify local workforce needs.	Develop and design curricular modules, courses or programs needed by employers.

YEAR 5: 2027-2028		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Identify key emerging energy workforce demand in each college service area.	Develop modules, courses, and programs to address local needs.	Address local and regional workforce knowledge and supply / demand gaps
Energy & Carbon Management: Emerging Workforce knowledge & skills	BC, CCCC, PC advisory stakeholders identify local workforce needs.	Develop and design curricular modules, courses or programs needed by employers.

Manufacturing / Advancing Technologies Industry Sector Roadmap

BC, CCCC, and PC manufacturing / advanced technologies programs are mature. BC offers a Baccalaureate of Science in Industrial Automation, and associate degrees and certificates in Industrial Technology, Industrial Drawing, Manufacturing Technologies, Occupational Safety, basic manufacturing metal fabrication, machine tool operations, and computer numerical control programming, and welding. CCCC offers certificates in Industrial Process Technician and Welding Technology. Porterville College offers certificate programs in Industrial Technology and Logistics. There are two areas of industry innovation and integration of technology. Experts predict the adoption of emerging solar, hydrogen, battery storage and microgrid energy technologies. These energy generation, storage, and redeployment technologies aim to reduce input energy costs and reliability for agricultural, food, and other types of manufacturing processes. Maintenance technicians trained in these energy systems are needed to ensure predictable manufacturing costs, as well as consistency and reliability. Computerized and automated processes are expected to continue to be integrated throughout the agricultural, food, and products manufacturing and quality control processes. These technologies will require technicians that are trained in programming, hydraulic, mechanical, and electrical controls. Occupational safety training is important particularly where relatively new technologies are being implemented. These are the program enhancements contemplated over the next five years.

YEAR 1: 2023-2024		
BAKERSFIELD COLLEGE		
New / Existing Program	Activity	Outcome
BS Industrial Automation	Upgrade upper division program lab equipment.	Improved work-based student lab experiences that reflect industry practices.
Manufacturing (all):	Identify new areas of technology integration	Develop and design curricular modules, courses, or programs

YEAR 2: 2024-2025		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Manufacturing (all): Emerging Workforce knowledge & skills	Identify emerging energy sources and resulting Industrial process changes.	Identify new workforce knowledge & skills to accommodate alternate energy sources & process changes.
Manufacturing (all): Emerging Workforce knowledge & skills	BC, CCCC, PC advisory stakeholders identify local workforce needs.	Develop and design curricular modules, courses or programs needed by employers.

YEAR 3: 2025-2026		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Manufacturing (all): Emerging Workforce knowledge & skills	Identify emerging energy sources and resulting Industrial process changes.	Identify new workforce knowledge & skills to accommodate alternate energy sources & process changes.
Manufacturing (all): Emerging Workforce knowledge & skills	BC, CCCC, PC advisory stakeholders identify local workforce needs.	Develop and design curricular modules, courses or programs needed by employers.

YEAR 4: 2026-2027		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Manufacturing (all): Emerging Workforce knowledge & skills	Identify emerging energy sources and resulting Industrial process changes.	Identify new workforce knowledge & skills to accommodate alternate energy sources & process changes.
Manufacturing (all): Emerging Workforce knowledge & skills	BC, CCCC, PC advisory stakeholders identify local workforce needs.	Develop and design curricular modules, courses or programs needed by employers.

YEAR 5: 2027-2028		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Manufacturing (all): Emerging Workforce knowledge & skills	Identify emerging energy sources and resulting Industrial process changes.	Identify new workforce knowledge & skills to accommodate alternate energy sources & process changes.
Manufacturing (all): Emerging Workforce knowledge & skills	BC, CCCC, PC advisory stakeholders identify local workforce needs.	Develop and design curricular modules, courses or programs needed by employers.

Agriculture & Natural Resources Industry Sector Roadmap

BC, CCCC, and PC agriculture and natural resources programs are mature and well subscribed. However, climate change is accelerating the necessity for the integration of advanced technologies, precision agriculture, and innovation both in industry and therefore also in the classroom. For example, climate change fueled weather extremes are challenging the state and the industry to expand above- and below-ground water storage to cope with atmospheric rivers, at the same time as making strategic reductions in and management of water consumption that reflects the significant and persistent drought years experienced in the San Joaquin Valley. A greater understanding of these challenges, immediate, mid-term, and long-term solutions are at the forefront of ensuring the nation’s food security, the agricultural industry production and profitability, as well as effective management of natural resources to reduce the potential for climate and weather-related emergencies and disasters. The five-year roadmap is focused on ensuring that KCCCD agriculture and natural resources programs are current in understanding the presenting challenges, utilizing the available public data sets, and collecting and utilizing private data for industry and public interest decision-making.

YEAR 1: 2023-2024		
BAKERSFIELD COLLEGE		
New / Existing Program	Activity	Outcome
Addition to Forestry: Natural Resources (FORE B2) and Agriculture, Environment & Society (AGRI B1)	Pilot 2-week Climate Change Module in Intro to Agriculture course	Refinement, if necessary, and finalization of the new 2-week climate change module
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Agriculture and Natural Resources programs (all)	Partner with CNAP, UCSD, UC Merced and others to update curriculum	Students have a deeper knowledge of weather, water consumption, and real time data IT tools to support Ag production & NR preservation

YEAR 2: 2024-2025		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Agriculture and Natural Resources programs (all)	Partner with CNAP, UCSD, UC Merced and others to update curriculum	Students have a deeper knowledge of weather, water consumption, and real time data IT tools to support Ag production & NR preservation
Agriculture and Natural Resources programs (all)	Work with industry and academic partners	Develop or update curriculum to better meet students and employers’ needs.

YEAR 3: 2025-2026		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Agriculture and Natural Resources programs (all)	Partner with CNAP, UCSD, UC Merced and others to update curriculum	Students have a deeper knowledge of weather, water consumption, and real time data IT tools to support Ag production & NR preservation
Agriculture and Natural Resources programs (all)	Work with industry and academic partners	Develop or update curriculum to better meet students and employers' needs.

YEAR 4: 2026-2027		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Agriculture and Natural Resources programs (all)	Partner with CNAP, UCSD, UC Merced and others to update curriculum	Students have a deeper knowledge of weather, water consumption, and real time data IT tools to support Ag production & NR preservation
Agriculture and Natural Resources programs (all)	Work with industry and academic partners	Develop or update curriculum to better meet students and employers' needs.

YEAR 5: 2027-2028		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Agriculture and Natural Resources programs (all)	Partner with CNAP, UCSD, UC Merced and others to update curriculum	Students have a deeper knowledge of weather, water consumption, and real time data IT tools to support Ag production & NR preservation
Agriculture and Natural Resources programs (all)	Work with industry and academic partners	Develop or update curriculum to better meet students and employers' needs.

Business, Business Services & Entrepreneurship Industry Sector Roadmap

BC, CCCC, and PC business programs are mature and continuously evolving to reflect current business practices and software. Recent labor and workforce market shifts have resulted in a greater share of people working as independent contractors than ever before. In addition, as IT technologies and software systems evolve, there is interest in contract training for employees to ensure a smooth transition from older to newer systems. Business Programs are implementing just-in-time business courses for independent contractors, entrepreneurs, traditional and non-traditional students in career programs that need business education; expansion of business and entrepreneurship programs in rural communities within KCCD’s service area; increased availability of business programs offered face-to-face, distance education, or hybrid education (face-to-face and online). Contextualized business certificates in specific careers or industries will ensure graduates’ success in the workforce and the marketplace.

YEAR 1: 2023-2024		
BAKERSFIELD COLLEGE		
New / Existing Program	Activity	Outcome
Business / Entrepreneurship	Expand courses and programs to campuses in rural service areas: Delano, CA	Increase rural student enrollment in business & entrepreneurship courses and programs
HireUp	Review & expand entry level job skills training to meet employer need	Unemployed, underemployed, & homeless graduates gain skills and acquire good jobs.
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Business / Entrepreneurship	Expand courses and programs as needed by local industry	Increase rural student enrollment & completions
IT Apprenticeships	Expand apprenticeship placements	Students are paid while they learn and prepare for the workforce
Business, Entrepreneurship, & IT courses and programs (Credit, Noncredit & Contract Ed (C, NC, & CE))	Expand multiple modality course and program availability	Expanded rural and urban noncredit courses support entrepreneurship ecosystem.

YEAR 2: 2024-2025		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Business / Entrepreneurship	Expand courses and programs to campuses in rural service areas: Shafter, CA & Arvin, CA	Increase rural student enrollment in business & entrepreneurship courses and programs
HireUp	Review & expand entry level job skills training to meet employer need	Unemployed, underemployed, & homeless graduates gain skills and acquire good jobs.

BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Business / Entrepreneurship	Expand courses and programs as needed by local industry	Increase rural student enrollment & completions
IT Apprenticeships	Expand apprenticeship placements	Students are paid while they learn and prepare for the workforce
Business, Entrepreneurship, & IT courses and programs (C, NC & CE)	Expand multiple modality course and program availability	Expanded rural and urban noncredit courses support entrepreneurship ecosystem.

YEAR 3: 2025-2026		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Business / Entrepreneurship	Expand courses and programs as needed by local industry	Increase rural student enrollment & completions
IT Apprenticeships	Expand apprenticeship placements	Students are paid while they learn and prepare for the workforce
Business, Entrepreneurship, & IT courses and programs (C, NC & CE)	Expand multiple modality course and program availability	Expanded rural and urban noncredit courses support entrepreneurship ecosystem.

YEAR 4: 2026-2027		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Business / Entrepreneurship	Expand courses and programs as needed by local industry	Increase rural student enrollment & completions
IT Apprenticeships	Expand apprenticeship placements	Students are paid while they learn and prepare for the workforce
Business, Entrepreneurship, & IT courses and programs (C, NC & CE)	Expand multiple modality course and program availability	Expanded rural and urban noncredit courses support entrepreneurship ecosystem.

YEAR 5: 2027-2028		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Business / Entrepreneurship	Expand courses and programs as needed by local industry	Increase rural student enrollment & completions
IT Apprenticeships	Expand apprenticeship placements	Students are paid while they learn and prepare for the workforce
Business, Entrepreneurship, & IT courses and programs (C, NC & CE)	Expand multiple modality course and program availability	Expanded rural and urban noncredit courses support entrepreneurship ecosystem.

Transportation & Logistics Industry Sector Roadmap

BC, CCCC, and PC’s Transportation & Logistics industry sector programs including Automotive Technology, Transportation and Supply Chain, Industrial Maintenance, and Front-Line Supervision and Management programs vary from those that have been in place for many years and have strong enrollment to recent programs that are scaling up.

BC, CCCC, and PC front-line management and supervision programs and BC’s logistics and supply chain certificate and degree programs are mature and valued in warehouse management and operations. The pace of locating new warehouses within Kern County along Highway 99 and Highway 5 has continued to drive the demand for supervisors and related occupations. As the growth in warehouse square footage in the Kern and South Tulare counties, the workforce supply gap across occupations continues to grow. KCCD anticipates the need to expand these programs.

BC Automotive Technology programs are mature, have strong enrollment, and are keeping pace with industry innovations including Zero Emission Vehicle (ZEV) and alternate fuels technologies by incorporating updated systems maintenance into program curriculum. In response to the statewide EV charging infrastructure build-out, the 21st Century Energy Center is training Electricians to take and pass the Zero Emission Vehicle (ZEV) Charging Infrastructure state exam. In the near-term transportation decarbonization is a focus of state and federal policy. Therefore, ZEV and alternative fuel personal and commercial vehicles, as well as autonomous driving functions, embedded roadway charging, and lane controls are just some of the potential emerging technologies poised for commercialization and implementation. As these new EV technologies are adopted, curricular revisions will be needed.

YEAR 1: 2023-2024		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Front-Line Supervisor / Management Programs	Offer credit, non-credit, not-for-credit, and contract ed programs to meet employer needs	Just-in-time education and training programs ensures employers’ needs are met
Automotive Technology	Curriculum revision and updating re ZEV and alternate fuels	Ensure that graduates have the knowledge and skills to meet employers’ needs in servicing and repairing personal and commercial ZEV and alternate fuels vehicles.
ZEV Charging Infrastructure Installation	Expand ZEV training and testing services	Graduate Electricians that pass the exam are state authorized and required for projects that are installing ZEV Charging Station equipment.

YEAR 2: 2024-2025		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Logistics & Supply Chain Management	Revise & contextualize curriculum	Employers' management workforce needs are met
Automotive Technology	Curriculum revision and updating	Employer's vehicle repair & maintenance needs are met.
Industrial Maintenance	Contextualize curriculum	Employer's equipment repair & maintenance needs are met.

YEAR 3: 2025-2026		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Logistics & Supply Chain Management	Revise & contextualize curriculum	Employers' management workforce needs are met
Automotive Technology	Curriculum revision and updating	Employer's vehicle repair & maintenance needs are met.
Industrial Maintenance	Contextualize curriculum	Employer's equipment repair & maintenance needs are met.

YEAR 4: 2026-2027		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Logistics & Supply Chain Management	Revise & contextualize curriculum	Employers' management workforce needs are met
Automotive Technology	Curriculum revision and updating	Employer's vehicle repair & maintenance needs are met.
Industrial Maintenance	Contextualize curriculum	Employer's equipment repair & maintenance needs are met.

YEAR 5: 2027-2028		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Logistics & Supply Chain Management	Revise & contextualize curriculum	Employers' management workforce needs are met
Automotive Technology	Curriculum revision and updating	Employer's vehicle repair & maintenance needs are met.
Industrial Maintenance	Contextualize curriculum	Employer's equipment repair & maintenance needs are met.

Aerospace & Defense Industry Sector Roadmap

The Eastern Kern County aerospace and defense industry includes the Mojave Air and Space Port, the China Lake NAWS, and Edwards AFB. CC / KCCD faculty and administrators are working with civilian and military staff to support career awareness, and identify, develop, and deploy technical upskilling, and occupational certificate and degree programs to address workforce supply gaps in Engineering, Computer Science, Electrical, Mechanical, Military and Airline/Aircraft occupations. Of these occupational areas, BC, CCCC, and PC's Computer and Engineering are mature programs with strong enrollment. Enhancements and expansions opportunities exist in developing courses to provide education in advanced software, artificial intelligence, machine learning, engineering, modeling systems, programming languages, and other emergent and core competencies that East Kern employers report significant workforce supply gaps and incumbent worker technical skill gaps and needed upskilling.

YEAR 1: 2023-2024		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Aerospace & Defense (all)	Prioritize & implement upskilling opportunities	Address technical skills gaps that address employers' needs
Aerospace & Defense: Electrical, Mechanical, Engineering, and Computer Science programs	Develop, revise, and expand existing high priority certificate and degree programs	Ensure mid- and long-term high priority workforce shortages are addressed as soon as possible.

YEAR 2: 2024-2025		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Aerospace & Defense (all)	Implement high priority technical upskilling	Address technical skills gaps that address employers' needs
Aerospace & Defense: Electrical, Mechanical, Engineering, and Computer Science programs	Prioritize, develop, revise / expand existing high priority certificate and degree programs	Ensure mid- and long-term high priority workforce shortages are addressed as soon as possible.
Aerospace & Defense (all)	Develop K12 career awareness, K12 STEM, summer academies & bootcamps	Cultivate student awareness, interest, and enrollment in aerospace and defense career programs

YEAR 3: 2025-2026		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Aerospace & Defense (all)	Implement high priority technical upskilling	Address technical skills gaps that address employers' needs
Aerospace & Defense: Electrical, Mechanical, Engineering, and Computer Science programs	Prioritize, develop, revise / expand existing high priority certificate and degree programs	Ensure mid- and long-term high priority workforce shortages are addressed as soon as possible.
Aerospace & Defense (all)	Develop K12 career awareness, K12 STEM, summer academies & bootcamps	Cultivate student awareness, interest, and enrollment in aerospace and defense career programs

YEAR 4: 2026-2027		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Aerospace & Defense (all)	Implement high priority technical upskilling	Address technical skills gaps that address employers' needs
Aerospace & Defense: Electrical, Mechanical, Engineering, and Computer Science programs	Prioritize, develop, revise / expand existing high priority certificate and degree programs	Ensure mid- and long-term high priority workforce shortages are addressed as soon as possible.
Aerospace & Defense (all)	Develop K12 career awareness, K12 STEM, summer academies & bootcamps	Cultivate student awareness, interest, and enrollment in aerospace and defense career programs

YEAR 5: 2027-2028		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
Aerospace & Defense (all)	Implement high priority technical upskilling	Address technical skills gaps that address employers' needs
Aerospace & Defense: Electrical, Mechanical, Engineering, and Computer Science programs	Prioritize, develop, revise / expand existing high priority certificate and degree programs	Ensure mid- and long-term high priority workforce shortages are addressed as soon as possible.
Aerospace & Defense (all)	Develop K12 career awareness, K12 STEM, summer academies & bootcamps	Cultivate student awareness, interest, and enrollment in aerospace and defense career programs

Education Roadmap

Existing Kern CCD programs train future educators in Education at Bakersfield and Porterville Colleges, and in Child Development/ Early Childhood Education at Bakersfield College and Cerro Coso Community College.

The Bakersfield College Education Pathway is designed for students interested in becoming an Early Childhood Caregiver, Early Childhood Educator, Preschool Teacher, Special Education Teacher, or an Elementary School Teacher. Students can benefit from the growth this pathway accommodates through earning a Job Skills Certificate (JSC), a Certificate of Achievement (COA), and/or then a Transfer degree (AS-T or AA-T). BC’s Faculty Diversity Program is intended for those wanting to transition to adjunct faculty positions at the college level and will expand the number of participating fellows and mentors while conducting comprehensive project evaluations to determine progress toward Aspire goals and metrics as well as measuring its impacts in improving faculty diversity and student academic success.

The Child Development (CHDV) / ECE program at Cerro Coso Community College is currently the largest online program at CCCC. CHDV has completed the Curriculum Alignment Project which allowed for an easy transition to the AS-T Early Childhood Education. The faculty in the department are involved at local, state, and national levels to make sure the program stays up to date in terms of the requirements students need to meet to work in the field of early education.

Porterville College’s Education program, prior to 2019, offered courses under the discipline heading ‘Education’ that have since been changed to ‘Interdisciplinary’ but still appear historically for data related to the Education discipline. In 2019, a new Education course was created to meet the requirements of the C-ID course EDUC 200, EDUC P110 (Introduction to Elementary Education), and was offered for the first time in Spring 2020. Demand for the course was sufficient to offer three sections that semester, a demand which has continued to increase.

YEAR 1: 2023-2024		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
BC / CC / PC CC: CH / ECE Programs	BC / CC / PC: CCAMPIS grants (CC CCAMPIS grant in future TBD)	BC / CC / PC: CCAMPIS: Development of more classes that meet OER standards.
BC Faculty Diversification Program	Assess fellows transition to adjunct faculty positions. Develop MOUs with UC Merced and CSUB. Identify evaluation tools and metrics for project assessment. Add new partner institutions. Plan regional partner meeting. Expand recruitment to 50-60.	Complete assessment of fellows’ transition to adjunct faculty positions. Complete MOUs with UC Merced & CSUB. Select evaluation tools & metrics for 1 st assessment. Add new partner(s). Host regional partner meeting. Scale participation to 50-60.
CC: CH / ECE Programs	CC: At least one section of each AS-T CHDV class will meet OEI standards (POCR Review). CC: Develop non-credit certificate for family home childcare providers.	CC: Peer Online Course Review (POCR) aligns classes to high-caliber state standards and accessibility. CC: Increase qualified workforce in ECE to meet demand.

YEAR 2: 2024-2025		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
BC - Faculty Diversification Program	Assess fellows' transition to adjunct faculty. Conduct Evaluation on project impacts in Y1 (2022-23) and Y2 (2023-24).	Complete comprehensive evaluation of Y1 (2022-23) and Y2 (2023-24) and report out on project metrics, goals, and impact.
CC - CD ECE	Recruit Bilingual (English / Spanish) CHDV Instructors. Development of more CHDV classes that meet OEI standards (POCR Review) to increase section offerings.	Increase # of CHDV Associate Teacher courses offered in Spanish. Peer Online Course Review (POCR) aligns classes to high-caliber state standards and accessibility.

YEAR 3: 2025-2026		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
BC - Faculty Diversification Program	Assess fellows' transition to adjunct faculty. Conduct Program Evaluation project impacts in Y2 (2023-24).	Complete comprehensive evaluation of Y2 (2023-24) and report out on project metrics, goals, and impact.
CC - CD ECE	Recruit Dual Enrollment CHDV instructors in the service area.	Increase qualified workforce in ECE to meet demand.

YEAR 4: 2026-2027		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
BC Faculty Diversification Program	Assess fellows' transition to adjunct faculty. Program Evaluation Y3 (2024-25).	Complete program evaluation of Y3 (2024-25) and report out on project metrics, goals, and impact.
CC - CD ECE	[CC] Implement new non-credit certificate for family home childcare providers.	Increase workforce in ECE to meet demand.

YEAR 5: 2027-2028		
BAKERSFIELD COLLEGE / CERRO COSO COMMUNITY COLLEGE / PORTERVILLE COLLEGE		
New / Existing Program	Activity	Outcome
BC Faculty Diversification Program	Assess fellows' transition to adjunct faculty. Program Evaluation Y4 (2025-26).	Complete program evaluation of Y4 (2025-26) and report out on project metrics, goals, and impact.
CC CD ECE	[CC] Complete Program Review for all existing programs	Update course content as identified by the program review.