

BACCALAUREATE OF APPLIED SCIENCE (BAS) INDUSTRIAL AUTOMATION

Building upon more than 100 years of excellence, Bakersfield College continues to contribute to the intellectual, cultural, and economic vitality of the communities it serves.

Presentation to the Board of Trustees
November 13, 2014

Presenters:

Sonya Christian, Liz Rozell, Blair Pruett

Content Developed by the BAS Team

**BAKERSFIELD
COLLEGE**
1913 – 2013



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CALIFORNIA HIGHER EDUCATION MASTER PLAN

A MASTER PLAN
for
HIGHER EDUCATION
IN CALIFORNIA
1960-1975

"...It was the first time in the history of any state in the United States, or any nation in the world, where such a commitment was made -- that a state or a nation would promise there would be a place ready for every high school graduate or person otherwise qualified."

—

Clark Kerr 1999

SB 850

APPROVED

NEWS RELEASE

Sept. 28, 2014

Governor Signs Bill Enabling 15 California Community Colleges to Award Four-Year Degrees

California joins 21 other states that offer community college baccalaureates in workforce and technical fields

Governor Jerry Brown today signed into law a historic measure that for the first time enables a limited number of California community colleges to offer four-year degrees.

Senate Bill (SB) 850, authored by State Senator Marty Block (D-San Diego), drew overwhelming bipartisan and business support because it addresses a growing need for the state to become more competitive in areas of high workforce demand.

The pilot program authorized under SB 850 allows up to 15 different community college districts to offer one baccalaureate degree each in select workforce majors starting on Jan. 1, 2015 and ending on July 1, 2023.

*****Senate Bill 850 allows up to 15 different colleges in 15 different community college districts to offer one baccalaureate degree each.**

BACCALAUREATE ATTAINMENT

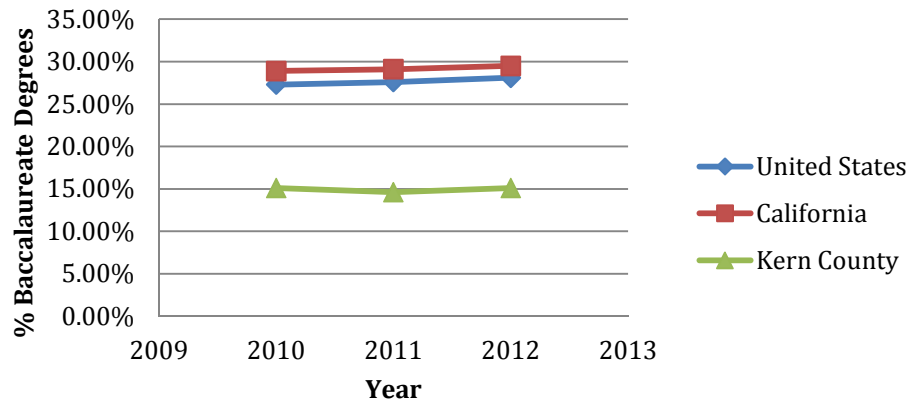
BY COUNTIES IN CALIFORNIA

County	Population 25 years and over	Percent bachelor's degree or higher	Rank	County	Population 25 years and over	Percent bachelor's degree or higher	Rank
Marin	187,610	55.8%	1	Humboldt	91,893	26.7%	21
San Francisco	644,836	53.6%	2	Butte	142,262	24.1%	22
Santa Clara	1,240,851	47.1%	3	Solano	279,393	24.1%	23
San Mateo	522,151	43.8%	4	Monterey	265,340	24.0%	24
Alameda	1,060,024	42.4%	5	Mendocino	60,606	23.4%	25
Contra Costa	728,065	39.4%	6	Riverside	1,405,232	20.5%	26
Santa Cruz	172,067	38.3%	7	San Joaquin	427,418	18.9%	27
Orange	2,037,907	37.3%	8	Fresno	560,633	18.5%	28
Yolo	119,945	37.3%	9	San Bernardino	1,254,340	18.5%	29
Placer	247,723	34.8%	10	Shasta	124,220	18.2%	30
San Diego	2,079,795	34.8%	11	Sutter	59,373	17.7%	31
San Luis Obispo	180,650	33.5%	12	Lake	46,706	17.1%	32
Nevada	73,598	32.4%	13	Stanislaus	321,347	16.1%	33
El Dorado	126,734	32.0%	14	Yuba	44,292	15.8%	34
Sonoma	339,841	31.8%	15	Kern	503,688	15.3%	35
Ventura	542,924	31.6%	16	Tulare	257,393	14.7%	36
Napa	94,818	30.3%	17	Imperial	106,011	13.0%	37
Santa Barbara	266,202	30.2%	18	Merced	149,009	12.8%	38
Los Angeles	6,525,066	30.0%	19	Madera	93,341	12.5%	39
Sacramento	943,594	28.0%	20	Kings	93,536	12.1%	40

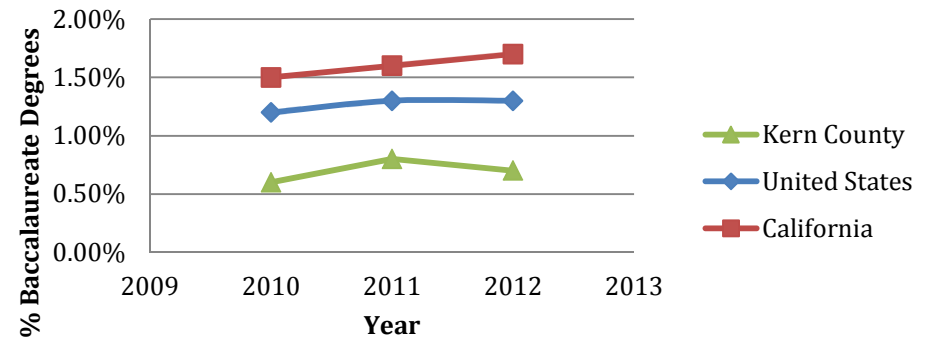
* The US Census website did not have data to report for 18 of the 58 counties in California. Inyo and Mono are among the 18 with no data.

BACCALAUREATE ATTAINMENT BY POVERTY LEVEL

Baccalaureate Attainment for Individuals Above the Poverty Level

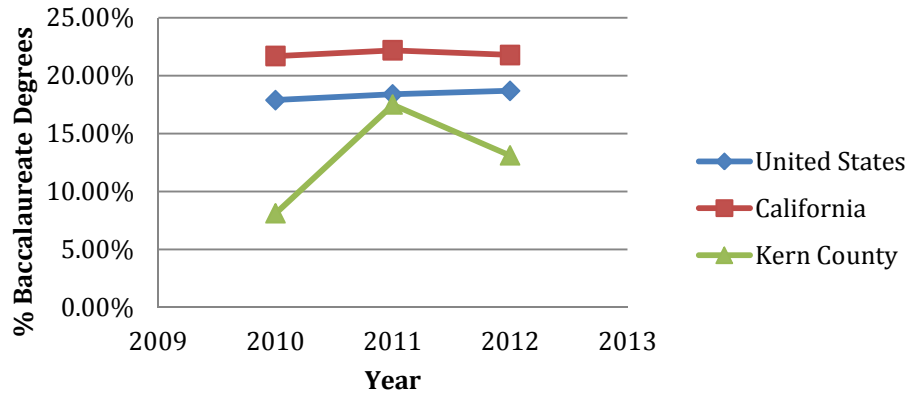


Baccalaureate Attainment for Individuals Below the Poverty Level

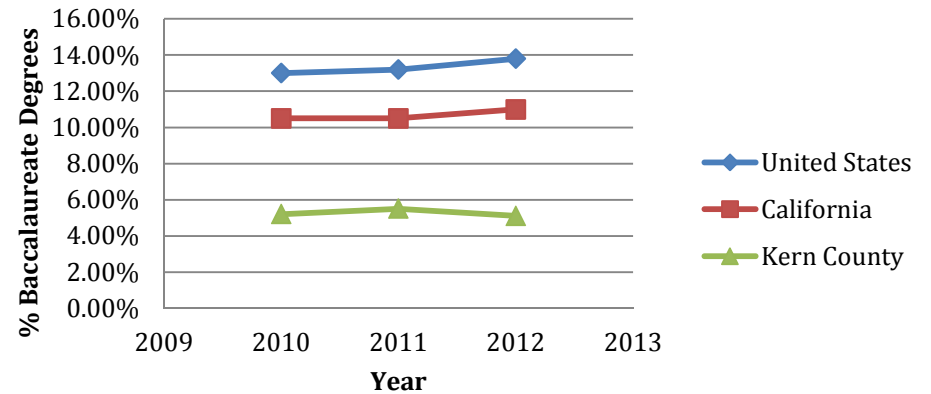


BACCALAUREATE ATTAINMENT BY ETHNICITY

Baccalaureate Attainment for Black/African American



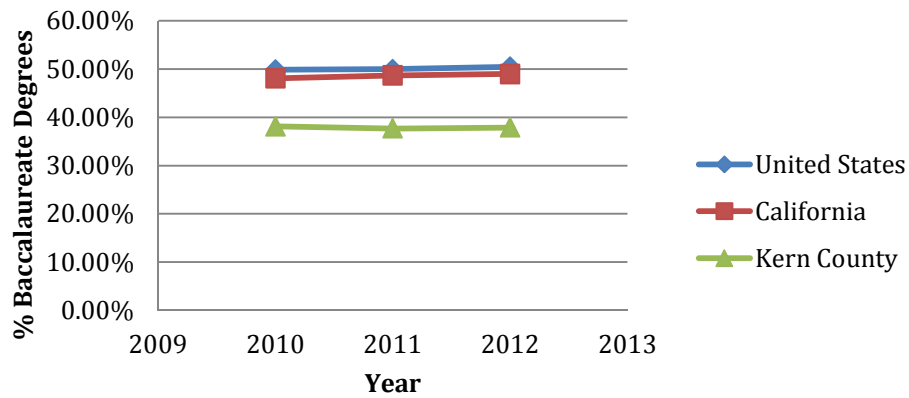
Baccalaureate Attainment for Hispanic/Latino



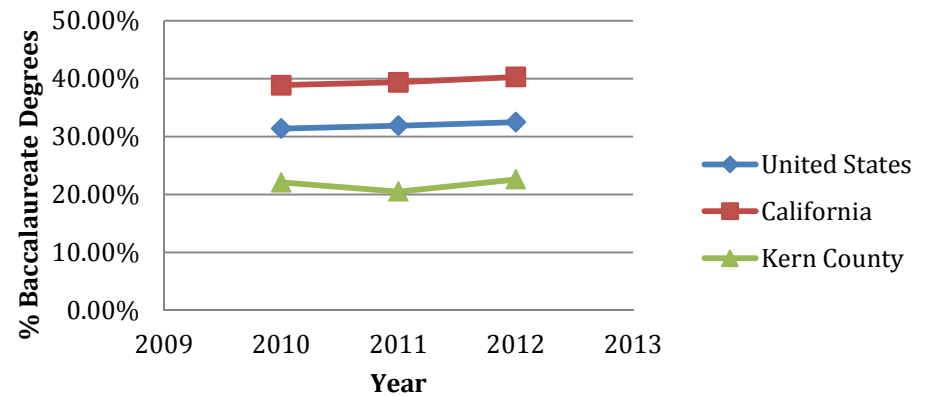
BACCALAUREATE ATTAINMENT BY ETHNICITY

USA-CA-KERN

Baccalaureate Attainment for Asian



Baccalaureate Attainment for White



BAS CONSTITUENCY SUPPORT

- Bakersfield College Academic Senate
- Bakersfield College Business & Industry Advisory Committees
- Curriculum Committee
- Program Review Committee
- President's Cabinet

VERBAL COMMITMENTS

Industry partners:

- AERA
- Chevron

Chambers:

- Bakersfield Chamber of Commerce
- Delano Chamber of Commerce
- Kern County Black Chamber of Commerce
- Kern County Hispanic Chamber of Commerce
- Kern Economic Development Corporation

VERBAL COMMITMENTS

Political partners:

- Kevin McCarthy
- Jean Fuller
- Leticia Perez

Others:

- Garden Pathways
- Kern Valley Prison

FINANCIAL ANALYSIS

SCENARIO 1 (WORST CASE)

**Start up
cost**

<\$1.4> Million



Sources of Funding:
Industry, Grants
BC Reserves,
Potential 2016 Bond

**Ongoing
Net (Cost)/
Contribution.**

<\$34,000>



Stabilizes after year 3

Assumptions:

1. Not including the potential additional revenue from FTES growth based on new state apportionment model
2. Includes \$84 tuition rate for Baccalaureate Program
3. Assumes zero apportionment for Freshman, Sophomore, Junior, and Senior FTES

FINANCIAL ANALYSIS

SCENARIO 2 (REALISTIC CASE)

**Start up
cost**

<\$1.4> Million →

Sources of Funding:
Industry, Grants
BC Reserves,
Potential 2016 Bond

**Ongoing
Net (Cost)/
Contribution.**

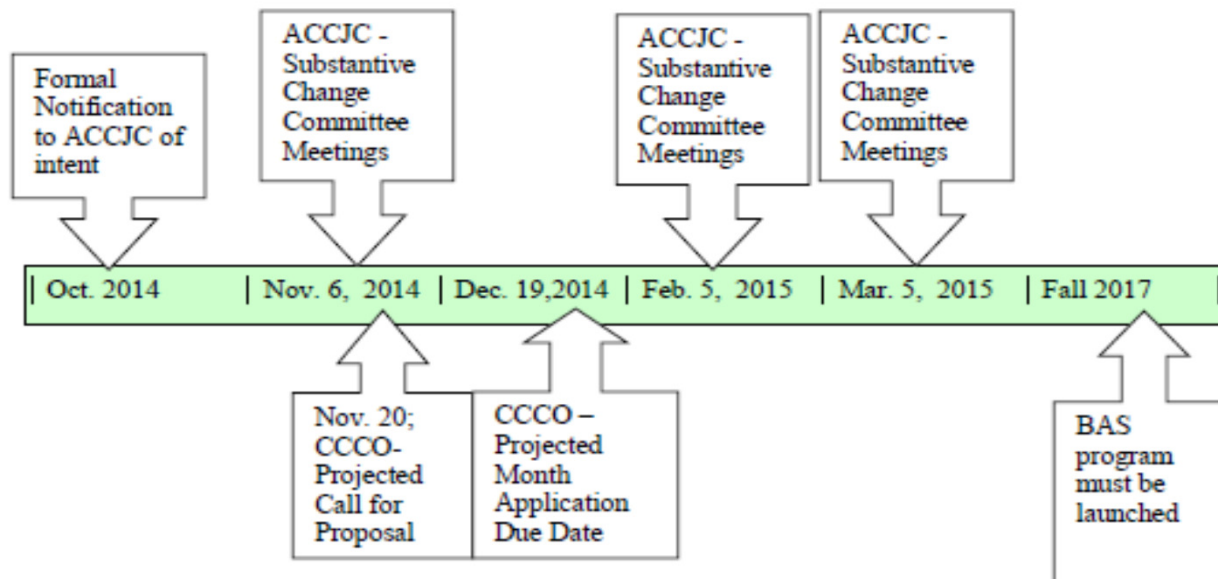
\$902,000 → Stabilizes after year 3

Assumptions:

1. Including the potential additional revenue from FTES growth based on new state apportionment model for Freshman, Sophomore, Junior, and Senior FTES
2. Includes \$84 tuition rate for Baccalaureate Program

PILOT PROGRAM TIMELINE

- Senate Bill (SB850)/State Chancellor's Office Tentative Timeline

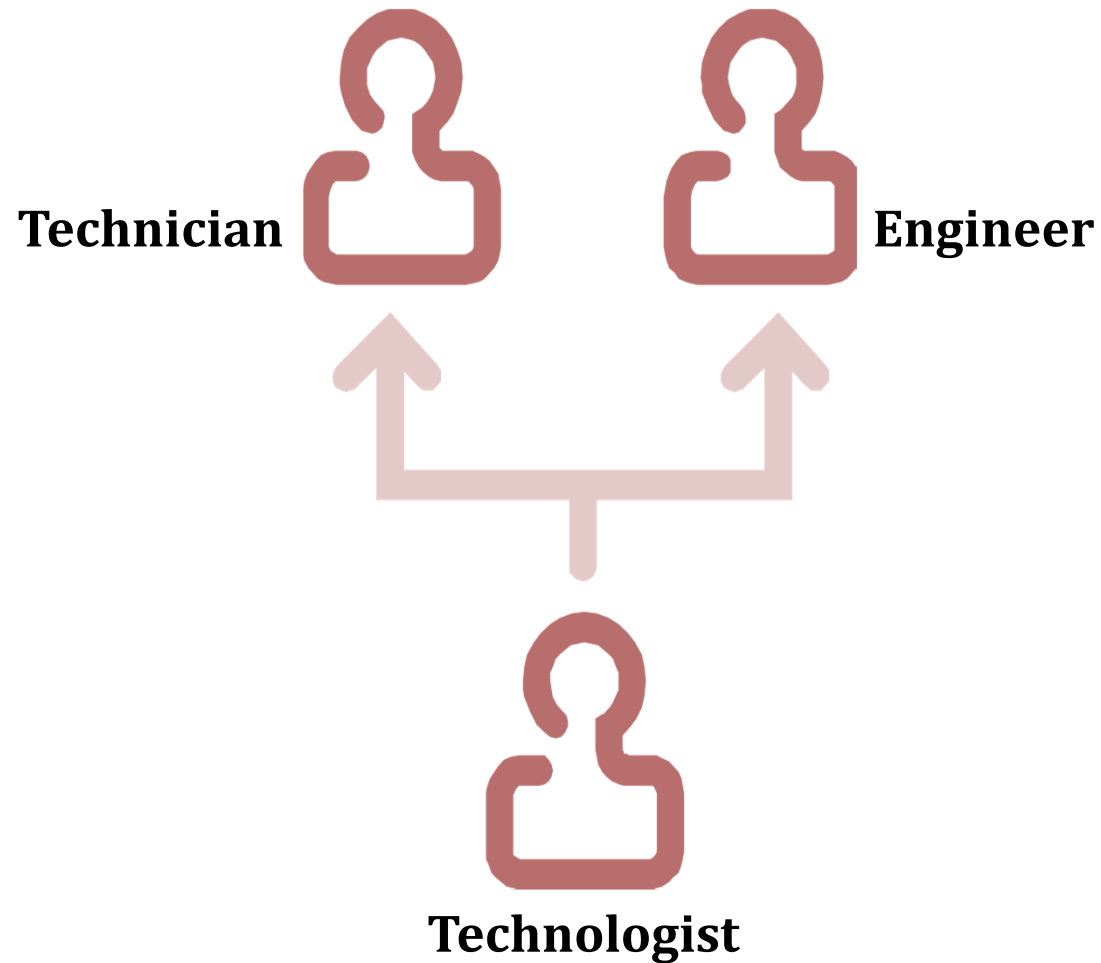


INDUSTRIAL AUTOMATION



Liz Rozell
Dean, STEM

WHY A BAS IN INDUSTRIAL AUTOMATION?



DEFINING INDUSTRIAL AUTOMATION

What is “AUTOMATION”?

“The technique of making an apparatus, a process, or a system operate automatically.” – Merriam-Webster Dictionary

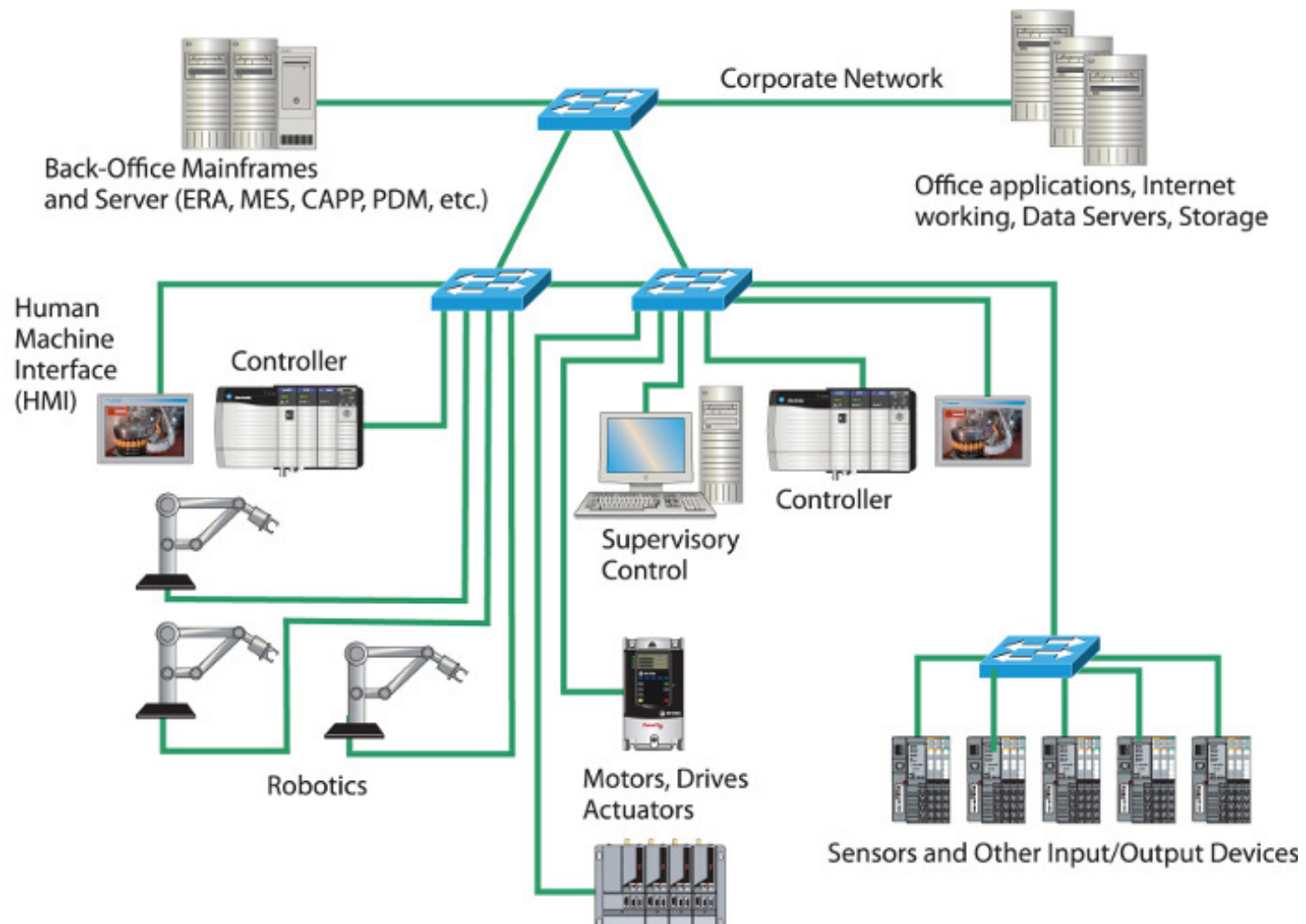
“The creation and application of technology to monitor and control the production and delivery of products and services...

...Automation involves a very **broad range of technologies** including robotics and expert systems, telemetry and communications, electro-optics, Cybersecurity, process measurement and control, sensors, wireless applications, systems integration, test measurement, and many, many more.” – Automation Federation (Industrial Association)

Source:

http://www.automationfederation.org/Content/NavigationMenu/General_Information/Alliances_and_Associations/The_Automation_Federation/About1/What_is_Automation_/What_is_Automation_.htm

INDUSTRIAL AUTOMATION TECHNOLOGIES



LOCAL AUTOMATION EMPLOYERS



Paramount Farms
Pistachios & Almonds



WHY A BAS IN INDUSTRIAL AUTOMATION?

Workforce Needs: Local demand for technical managers and high level technicians

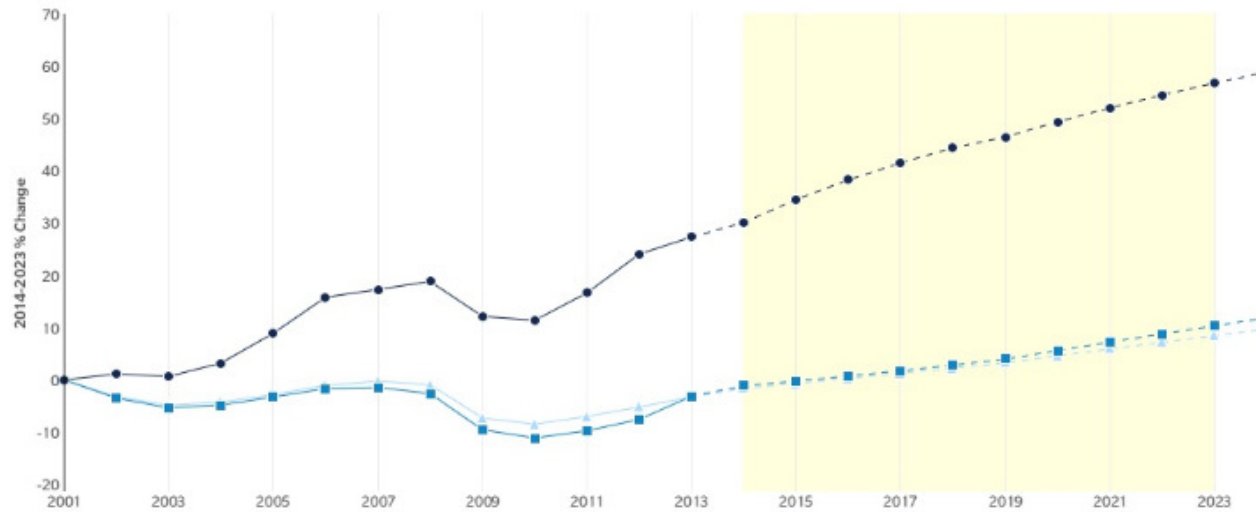
SOC	Occupation	2014 Jobs	Annual Openings 2014-2023	Median Hourly Earnings*
11	Operations Management	3,246	151	\$43
17	Technicians and Technologist-related	912	37	\$36
41	Sales Engineers	69	3	\$43
49	Industrial Electronics Maintenance	189	9	\$28
	TOTAL	4,416	200	\$41

EMSI DATA – BAKERSFIELD SERVICE AREA

* WEIGHTED AVERAGE

WHY A BAS IN INDUSTRIAL AUTOMATION?

Occupation Change Summary



Region	2014 Jobs	2023 Jobs	Change	% Change	Median Hourly Earnings
● BC Service Area DEMOGRAPHIC	4,417	5,323	906	21%	\$41.14
■ California	372,759	416,058	43,299	12%	\$46.60
▲ United States	2,913,462	3,212,311	298,849	10%	\$42.69

EMSI DATA – BAKERSFIELD SERVICE AREA
* WEIGHTED AVERAGE

WHY A BAS IN INDUSTRIAL AUTOMATION?

Existing Infrastructure

- Facilities & Equipment
- Lower Division Technical Curriculum
- Lower Division General Education
- Faculty
- Support Services



EDUCATIONAL PATHWAYS IN AUTOMATION

Certificates for
Electronics Technician
Training

A.S. Degree in
Industrial Technology,
Electronics Option

Automation

A.S. Degree in
Engineering
Technology

Baccalaureate

IDENTIFYING THE MISSION

To prepare individuals for technical management careers in industries which utilize automation, including the petroleum, manufacturing, logistics and agriculture industry sectors, in order to improve the regional economy.

IDENTIFYING THE OUTCOMES

Institutional Learning Outcomes	Programming Learning Outcomes
<p>Upon completion of a degree program at Bakersfield College, students will</p> <p>Think critically and evaluate sources and information for validity and usefulness.</p>	<p>Upon completion of this program, a student will be able to:</p> <p>Apply critical and analytical thinking skills to industry-related problems, related to safety, quality assurance and design of systems.</p>
<p>Upon completion of a degree program at Bakersfield College, students will</p> <p>Communicate effectively in both written and oral forms.</p>	<p>Upon completion of this program, a student will be able to:</p> <p>Display effective communication skills commonly used in industry, including presentation and technical writing skills.</p>
<p>Upon completion of a degree program at Bakersfield College, students will</p> <p>Demonstrate competency in a field of knowledge or with job-related skills.</p>	<p>Upon completion of this program, a student will be able to:</p> <p>Demonstrate a broad understanding of the mathematical and scientific principles utilized in industrial automation and manufacturing. Demonstrate competency in industrial automation and instrumentation, including relevant hardware and software utilized in industry.</p>
<p>Upon completion of a degree program at Bakersfield College, students will</p> <p>Engage productively in all levels of society—interpersonal, community, the state and nation, and the world.</p>	<p>Upon completion of this program, a student will be able to:</p> <p>Manage automation and manufacturing projects applying knowledge of budgetary and scheduling principles in an ethical environment.</p>

INTERNATIONAL SOCIETY FOR AUTOMATION CERTIFIED AUTOMATION PROFESSIONAL CRITERIA



1. Identify, scope, and justify automation projects.
2. Identify customer requirements and determine solutions to meet those requirements.
3. Perform a complete conceptual design of the control, information, and hardware systems.
4. Development of software solutions for automation applications.
5. Installation, checkout, and startup of systems
6. Operations & maintenance in long-term support of automated systems.



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