










# Transborder Environmental Design: Architectural and Engineering Managers

## Baccalaureate Labor Market Analysis

December 2024

### Summary

BDP PROGRAM RECOMMENDATION?	EVIDENCE OF A SUPPLY GAP?	JOB POSTINGS WITH BA/BS OFFER HIGHER WAGES THAN THOSE WITHOUT BA/BS?	EXPECTED EDUCATION FOR OCCUPATION ANALYZED
 <b>Proceed with New Program</b>	 	 	<b>Bachelor's Degree</b>
DOES A SIMILAR PROGRAM EXIST AT A UC OR CSU?	EXISTING ASSOCIATE DEGREE PROGRAM IN REGION?	NUMBER OF ANNUAL JOB OPENINGS	OCCUPATION PAYS LIVING WAGES FOR A...?
<b>YES, a UC or CSU currently offers a similar program</b>	 	 	<input checked="" type="checkbox"/> Single Adult <input checked="" type="checkbox"/> Adult with Child

The San Diego & Imperial Center of Excellence (COE) developed this brief to determine if an unmet workforce need exists for a baccalaureate degree program (BDP) for [Transborder Environmental Design](#). According to Assembly Bill No. 927, community college districts seeking approval for a BDP must 1) not offer “program curricula already offered by the California State University or the University of California” systems, 2) “continue to offer an associate degree program in the same academic subject”<sup>1</sup> of the proposed BDP, and 3) “provide evidence of unmet workforce needs.”<sup>2</sup>

This brief recommends that the San Diego & Imperial Counties Community Colleges proceed with developing a new BDP for [Transborder Environmental Design](#) because **1) a UC or CSU reported having similar programs, but did not have any completions regionally and only 19 statewide, leaving a significant supply gap of 262 and 2,453 annual job openings in San Diego County and California, respectively; 2) entry-level wages for the occupation to be trained (Architectural and Engineering Managers) are above the living wage; and 3) employers advertise higher salaries in job postings that require a bachelor’s degree than those that do not.**

<sup>1</sup> “The bill would require a community college district to continue to offer an associate degree program in the same academic subject for which a baccalaureate degree program has been approved, unless the community college district has received approval from the chancellor to eliminate the associate degree program, as specified.”

<sup>2</sup> “AB-927 Public postsecondary education: community colleges: statewide baccalaureate degree.” California Legislative Information. Accessed 09/05/2023. [leginfo.ca.gov/faces/billTextClient.xhtml?bill\\_id=202120220AB927](https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB927)

## Introduction

According to Assembly Bill No. 927, community college districts seeking approval to offer a baccalaureate degree program (BDP) must:<sup>3</sup>

1. Not offer a BDP or “program curricula already offered by the California State University or the University of California”
2. “Continue to offer an associate degree program in the same academic subject for which a baccalaureate degree program has been approved”
3. Identify and document unmet workforce needs “in the local community or region of the district”

To determine the need for a new BDP, this brief examines labor market information (LMI) for [Transborder Environmental Design](#) using the following Standard Occupational Classification (SOC)<sup>4</sup> code:

- **Architectural and Engineering Managers** (SOC 13-1199): Plan, direct, or coordinate activities in such fields as architecture and engineering or research and development in these fields.

According to available LMI, employers require that [Architectural and Engineering Managers](#) have a minimum educational attainment of a [bachelor’s degree](#) but [at least five years or more](#) of work experience. Entry-level hourly earnings for [Architectural and Engineering Managers](#) are [\\$74.52](#), which is above the [\\$26.01](#) per hour living wage for a single adult and above the [\\$46.49](#) per hour living wage for a single adult with a preschool child in San Diego County.<sup>5</sup>

SOC Title (SOC Code)	Entry-Level Hourly Earnings <sup>6</sup>	Median Hourly Earnings	Typical Entry-Level Education	Work Experience Required
Architectural and Engineering Managers (47-4011)	\$74.52	\$85.77	Bachelor's degree	5 years or more

The following sections “assess the workforce value of [a] proposed baccalaureate degree program” for [Architectural and Engineering Managers](#) in accordance with AB-927.<sup>7</sup>

<sup>3</sup> “AB-927 Public postsecondary education: community colleges: statewide baccalaureate degree.” California Legislative Information. Accessed 09/05/2023. [leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=202120220AB927](https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB927)

<sup>4</sup> The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. [bls.gov/soc](https://www.bls.gov/soc/).

<sup>5</sup> Center for Women’s Welfare, University of Washington. (2024). The self-sufficiency standard for California 2024. [selfsufficiencystandard.org/California](https://selfsufficiencystandard.org/California).

<sup>6</sup> 25th Percentile. Lightcast. 2024.03; QCEW, Non-QCEW, Self-Employed.

<sup>7</sup> “AB-927 Public postsecondary education: community colleges: statewide baccalaureate degree.” California Legislative Information. Accessed 09/05/2024. [leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=202120220AB927](https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB927)

## BDP Proposal Requirements

### UC and CSU Programs

According to AB-927, community colleges must not offer a BDP or program curricula already offered by the CSU or UC systems. To determine if a BDP already exists for [Architectural and Engineering Managers](#), the COE examined CSU and UC programs in related Classification of Instructional Programs (CIP)<sup>8</sup> codes and found two CIP codes that train<sup>9</sup> for this occupation:

- 04.0202 Architectural Design
- 04.0401 Environmental Design/Architecture

According to CIP data, the following institutions from the UC and CSU systems offer programs related to [Architectural and Engineering Managers](#) (Exhibit 1).

#### Exhibit 1: California UC and CSU Institutions with Related Programs by CIP Code (2022)<sup>10</sup>

CIP Code and Title
<a href="#">04.0202 Architectural Design</a>
<ul style="list-style-type: none"><li>• N/A</li></ul>
<a href="#">04.0401 Environmental Design/Architecture</a>
<ul style="list-style-type: none"><li>• University of California-Berkeley</li><li>• University of California-Davis</li><li>• University of California-Irvine</li></ul>






<sup>8</sup> CIP data comes from the Integrated Postsecondary Education Data System ([nces.ed.gov/ipeds/use-the-data](https://nces.ed.gov/ipeds/use-the-data)). The COE uses the national SOC-CIP crosswalk to determine which programs could potentially train for the occupation in question. [nces.ed.gov/ipeds/cipcode/post3.aspx?y=56](https://nces.ed.gov/ipeds/cipcode/post3.aspx?y=56)

<sup>9</sup> CIP code Architecture (04.0201) also trains for Architectural and Engineering Managers; however, the COE excluded CIP 04.0201 because it applies to multiple occupations and would introduce too much noise in the data.

<sup>10</sup> Lightcast. Q3 2024 Data Set. Program Overview. Completions by Institutions. Completions data for 2020 and 2022 to account for programs not captured after decline in enrollment from the COVID-19 pandemic.

## Existing Associate Degree Program(s)

AB-927 also states that districts should “continue to offer an associate degree program in the same academic subject for which a baccalaureate degree program has been approved.” To determine if an associate degree program in the same subject area exists, the COE reviewed the [California Community Colleges Chancellor’s Office’s official TOP-CIP crosswalk](#) and found that there is one TOP code and two CIP codes related to *Architectural and Engineering Managers* (Exhibit 2).

### Exhibit 2: Chancellor’s Office TOP-CIP Crosswalk for Baccalaureate Degree Programs

TOP Code	TOP Title	CIP Code	CIP Title
0201.00	Architecture and Architectural Technology	04.0202	Architectural Design
		04.0401	Environmental Design/Architecture

According to the [Chancellor’s Office Curriculum Inventory \(COCI\)](#), **four** regional community colleges offer an associate degree program for the CIP codes listed above (Exhibit 3).<sup>11</sup>

### Exhibit 3: San Diego Community Colleges with Associate Degree Programs in Related CIP Codes

CIP Code	CIP Title	Community College(s) with Program in CIP Code
04.0202	Architectural Design	<ul style="list-style-type: none"><li>• MiraCosta</li><li>• Palomar</li></ul>
04.0401	Environmental Design/Architecture	<ul style="list-style-type: none"><li>• San Diego Mesa</li><li>• Southwestern</li></ul>

<sup>11</sup> “Programs. California Community Colleges Curriculum Inventory (COCI).” Accessed 09/05/2024. [coci2.ccctechcenter.org/programs](http://coci2.ccctechcenter.org/programs).

## Workforce Needs Assessment: Supply vs. Demand

According to AB-927, community colleges must identify and document unmet workforce needs “in the local community or region of the district.” To assess the regional workforce need for [Architectural and Engineering Managers](#), this section compares educational supply with labor market demand.

### Educational Supply

Baccalaureate educational supply for an occupation can be estimated by analyzing the number of completions<sup>12</sup> in related CIP codes. According to CIP data, there were zero completions in San Diego County (Exhibit 4) and 19 completions in California (Exhibit 5) for [Architectural and Engineering Managers](#).

**Exhibit 4: Number of Completions by Postsecondary Institutions (San Diego County, 2022)**

CIP Code	CIP Title	Completions (2022)
04.0202	Architectural Design	0
04.0401	Environmental Design/Architecture	0
<b>Total</b>		<b>0</b>

**Exhibit 5: Number of Completions by Postsecondary Institutions (California, 2022)**

CIP Code	CIP Title	Completions (2022)
04.0202	Architectural Design	0
04.0401	Environmental Design/Architecture	19
<b>Total</b>		<b>19</b>

<sup>12</sup> Completion numbers include bachelor's degree programs or higher.

## Labor Market Demand

In 2018, there were 3,810 and 34,509 jobs for [Architectural and Engineering Managers](#) in San Diego County and California, respectively. In 2023, the number of jobs in San Diego County remained the same at 3,805. In California, the number of jobs for [Architectural and Engineering Managers](#) increased to 35,746, which was a three percent increase (Exhibit 6).

**Exhibit 6: Historical Employment Trend for Architectural and Engineering Managers<sup>13</sup>**

SOC Code	Occupational Title	2018 Jobs		2023 Jobs	
		San Diego	California	San Diego	California
11-9041	Architectural and Engineering Managers	3,810	34,509	3,805	35,746

Between 2023 and 2033, employers in San Diego County will need to hire 262 workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement for [Architectural and Engineering Managers](#) (Exhibit 7). Across California, the projected demand will be 2,453 annual job openings between 2023 and 2033.

**Exhibit 7: Labor Demand (Annual Job Openings) for Architectural and Engineering Managers<sup>14</sup>**

SOC Code	Occupational Title	Average Annual Job Openings		Total 10-Yr Demand (2023-2033)	
		San Diego	California	San Diego	California
11-9041	Architectural and Engineering Managers	262	2,453	262	2,453

<sup>13</sup> Lightcast. 2024.03; QCEW, Non-QCEW, Self-Employed.

<sup>14</sup> Lightcast. 2024.03; QCEW, Non-QCEW, Self-Employed.

## Demand vs. Supply

Comparing labor market demand (annual job openings) with educational supply (bachelor's degree completions) suggests that there is a **supply gap** for **Architectural and Engineering Managers** in San Diego County, with **262** annual openings and **zero** awards. Comparatively, there are **2,453** annual openings in California and **19** awards, suggesting that there is also a **supply gap** across the state <sup>15</sup> (Exhibit 8).

**Exhibit 8: Labor Demand (Job Openings) vs. Educational Supply (Completions)<sup>16</sup>**

	<b>Demand (Job Openings)</b>	<b>Supply (Completions)</b>	<b>Supply Gap or Oversupply</b>
San Diego County	262	0	<b>1,925</b>
California	2,453	19	<b>2,434</b>

<sup>15</sup> "Supply and Demand," Centers of Excellence Student Outcomes, [coeccc.net/our-resources](http://coeccc.net/our-resources)

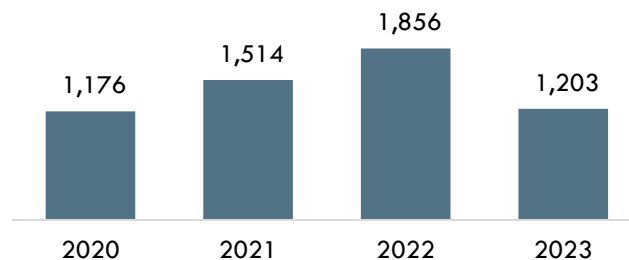
<sup>16</sup> This is a basic analysis of supply and demand of labor. The data does not include workers currently in the labor force who could fill these positions or workers who are not captured by publicly available data. This data should be used to discuss the potential gaps or oversupply of workers; however, it should not be the only basis for determining whether or not a program should be developed.

## Other LMI to Consider for Program Development

### Online Job Postings

This report analyzes not only historical and projected (traditional LMI) data, but also recent data from online job postings (real-time LMI). Online job postings may provide additional insight about recent changes in the labor market that are not captured by historical data. Between 2020 and 2023, there was an average of 1,437 online job postings per year for **Architectural and Engineering Managers** in San Diego County (Exhibit 9). Please note that online job postings do **not** equal labor market demand; demand is represented by annual job openings (see Exhibit 6). While this brief includes online jobs postings data to help with curriculum development, the community colleges should note that this type of data is impacted by several variables: employers may post a position multiple times to increase the pool of applicants; a job posting can remain posted after a business decides not to fill a position; or an employer may use one posting to fill multiple positions, for example.

**Exhibit 9: Number of Online Job Postings for Architectural and Engineering Managers in San Diego County (2020-2023)<sup>17</sup>**



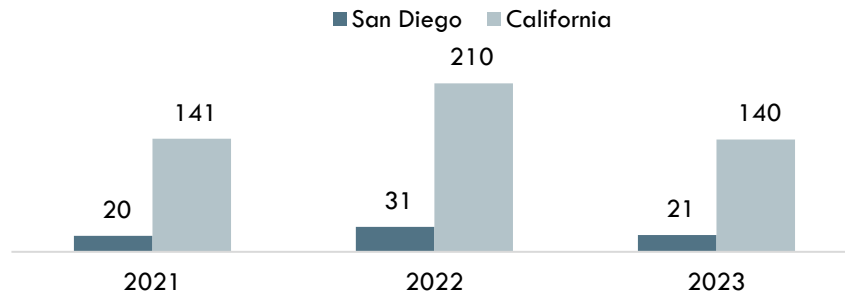
Because the proposed program focuses on a “transborder” specialization within this occupation, the COE also examined online job postings for the following key terms and found that there was a stable number of online job postings for transborder knowledge between January 2021 and December 2023:

- Binational
- Calibaja
- Cross Border
- Fronterizo
- Mexico
- Transborder

<sup>17</sup> Lightcast; “Job Posting Analytics.” 2020-2023.

Between January 1, 2021 and December 31, 2023, there was an average of 24 online job postings per year related to transborder knowledge in San Diego County and 164 across California (Exhibit 10).

**Exhibit 10: Number of Online Job Postings with Keywords Related to Transborder Knowledge in San Diego County and California (2021-2023)<sup>18</sup>**



<sup>18</sup> Lightcast; "Job Posting Analytics." 2021-2023.

While labor market demand cannot be determined for “Transborder” roles, the COE estimates that approximately 1.6 percent of the occupation in San Diego County and 1.0 percent in California have roles in “Transborder” based on the percentage of online job postings that listed “Transborder” keywords (Exhibit 11). Based on this information, there is an estimated labor market demand of four and 39 annual job openings for “Transborder” in San Diego County and California, respectively (Exhibit 12).

**Exhibit 11: Online Job Postings for Selected SOC Code and “Transborder” Keywords (January 2021 - December 2023)<sup>19</sup>**

	Online Job Postings (San Diego)	Online Job Postings (California)
Occupation listed in Exhibit 5	4,570	47,732
Occupation listed in Exhibit 5 and filtered by “Transborder” Keywords	72	491
<b>% of online job postings with job titles above</b>	<b>1.6%</b>	<b>1.0%</b>

**Exhibit 12: Number of Annual Job Openings (Labor Market Demand) by SOC Code, 2023-2033<sup>20</sup>**

SOC Code	Occupational Title	Average Annual Job Openings		Estimated Annual Job Openings for “Transborder” <sup>21</sup>	
		San Diego	California	San Diego	California
11-9041	Architectural and Engineering Managers	262	2,453	4	39

<sup>19</sup> Lightcast. 2024.03 – QCEW Employees, Non-QCEW Employees, and Self-Employed data set. “Job Postings Analytics” for selected SOC codes Numbers in the exhibit reflect “unique postings” or de-duplicated online job postings. Keywords include: “binational,” “calibaja,” “cali-baja,” “cross-border,” “crossborder,” “fronterizo,” “Mexico” “transborder,” “trans-border.”  
<sup>20</sup> Lightcast. 2024.03 – QCEW Employees, Non-QCEW Employees, and Self-Employed data set. Numbers in the “Estimated Annual Job Openings for “Transborder” roles reflect the 1.6% (% of online job postings with ‘Transborder’ keywords) multiplied against the average annual job openings for each occupation.

## SAN DIEGO & IMPERIAL COUNTIES COMMUNITY COLLEGES

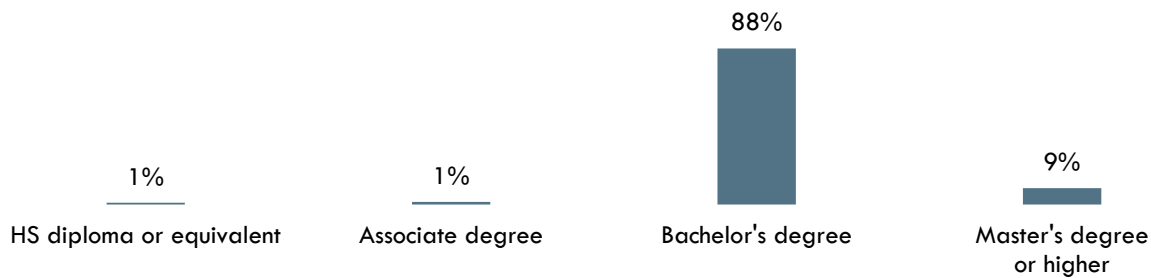
Between January 1, 2023, and December 30, 2023, employers in California advertised hourly wages of \$20.00 for online job postings with “transborder” requiring less than a bachelor's degree. For positions requiring a bachelor's degree, the advertised wages were \$64.74 per hour. This suggests a notable increase in entry-level wages for those holding a bachelor's degree (Exhibit 13).

**Exhibit 13: Entry-Level Advertised Wages in Online Job Postings with Keywords Related to Transborder Knowledge by Education Level in California (2023)<sup>22</sup>**

Minimum Required Education	Advertised Wages at the 25 <sup>th</sup> Percentile (2023)
Bachelor's degree	\$64.74
Below a Bachelor's degree	\$20.00 <sup>23</sup>

Based on online job postings between January 1, 2021 and December 31, 2023 in California, employers posted a bachelor's degree as the minimum educational requirement for positions with “transborder” knowledge (Exhibit 14).<sup>24</sup>

**Exhibit 14: Educational Requirements in Online Job Postings with Keywords Related to Transborder Knowledge in California<sup>25</sup>**



\*May not total 100 percent due to rounding

<sup>22</sup> Lightcast; “Job Posting Table.” 2023.

<sup>23</sup> Lightcast will apply a default value of \$20.00 in instances where no job postings are available based on the filtered criteria.

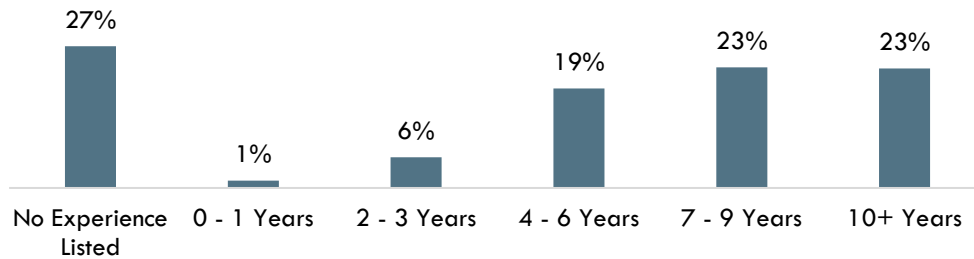
<sup>24</sup> Lightcast; “Job Posting Analytics.” 2021-2023.

<sup>25</sup> Lightcast; “Job Posting Analytics.” 2021-2023.

## Work Experience

Based on online job postings, 27 percent of job postings for “transborder” do not list an experience requirement and 23 percent require that candidates have 7-9 or 10+ years of experience (Exhibit 15).

**Exhibit 15: Work Experience Requirement with Keywords Related to Transborder Knowledge in California<sup>26</sup>**



## Top Employers

Between January 1, 2021 and December 31, 2023, the top five employers in San Diego County were Ware Malcomb, Providence, Elevance Health, Virgin Galactic, and eBay based on online job postings (Exhibit 16).

**Exhibit 16: Top Employers with Keywords Related to Transborder Knowledge in San Diego County<sup>27</sup>**

Top Employers	
<ul style="list-style-type: none"><li>• Ware Malcomb</li><li>• Providence</li><li>• Elevance Health</li><li>• Virgin Galactic</li><li>• eBay</li></ul>	<ul style="list-style-type: none"><li>• Safran</li><li>• Stratolaunch</li><li>• Ripple Group</li><li>• Oportun</li><li>• FM Global</li></ul>

<sup>26</sup> Lightcast; “Job Posting Analytics.” 2021-2023.

<sup>27</sup> Lightcast; “Job Posting Analytics.” 2021-2023.

## Skills and Certifications

Exhibit 17 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2021 and December 31, 2023 for this occupation.

### Exhibit 17: Top Skills with Keywords Related to Transborder Knowledge in California<sup>28</sup>

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> <li>• Project Management</li> <li>• New Product Development</li> <li>• Computer Science</li> <li>• Engineering Management</li> <li>• Continuous Improvement Process</li> <li>• Automation</li> <li>• Marketing</li> <li>• Agile Methodology</li> </ul>	<ul style="list-style-type: none"> <li>• Leadership</li> <li>• Management</li> <li>• Communication</li> <li>• Operations</li> <li>• Planning</li> <li>• Problem Solving</li> <li>• Mentorship</li> <li>• Program Management</li> <li>• Influencing Skills</li> <li>• Presentations</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>

Exhibit 18 lists the top certifications that appeared in online job postings between January 1, 2021 and December 31, 2023.

### Exhibit 18: Top Certifications with Keywords Related to Transborder Knowledge in California<sup>29</sup>

Top Certification in Online Job Postings
<ol style="list-style-type: none"> <li>1. Project Management Professional Certification</li> <li>2. Professional Engineer (PE) License</li> <li>3. Architecture License</li> <li>4. Security Clearance</li> <li>5. Certified In Production And Inventory Management</li> <li>6. Six Sigma Black Belt</li> <li>7. Six Sigma Green Belt</li> <li>8. Lean Certification</li> <li>9. AWS Certified Solutions Architect</li> <li>10. Project Management Certification</li> </ol>

<sup>28</sup> Lightcast; "Job Posting Analytics." 2021-2023. Skills must populate in at least 10% of job postings to be listed.

<sup>29</sup> Lightcast; "Job Posting Analytics." 2021-2023.

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### **Important Disclaimers**

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Regional Centers of Excellence (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.