

Technical Theater

Inland Empire/Desert Region (Riverside and San Bernardino counties)

This workforce demand report uses state and federal job projection data developed before the economic impact of COVID-19. The COE is monitoring the situation and will provide more information as it becomes available. Please consult with local employers to understand their current employment needs.

Summary

- Community college technical theater programs provide the knowledge, skills, and abilities that lead to two bachelor's degree-level, three community college-level, and two high school-level occupations. This summary and recommendations in this report focuses on the community college-level occupations.
- The community college-level occupations are projected to have 70 annual job openings through 2025, increasing employment by 6%.
- The 50th percentile hourly earnings for the community college-level occupations are between \$27.96 and \$35.75 per hour, above the regional \$24.36 per hour self-sustainable wage standard for a single adult with one child.
- Regional community colleges offering technical theater programs have issued four awards annually over the last three academic years.
- The COE does not recommend expanding technical theater programs due to the limited employment opportunities for community college-level occupations in the region. See the [recommendation section](#) for further detail.

Introduction

This report aims to quantify regional demand for the technical theater workers in the Inland Empire/Desert Region. California Community College technical theater (TOP 1006.00) programs prepare students for employment through an education related to the techniques for communicating information, idea, moods, and feelings through set design and construction and costuming with attention to stagecraft, function, and esthetics (Taxonomy of Programs, 2012). The occupations included in this report were selected based on their relationship to established technical theater programs offered at various colleges in Southern California. These programs prepare students for employment as live-event technicians that may work on scenic design, set construction, sound systems, video projection systems, projection design, lighting design, light board operation, stage lighting, scenery, costumes, props, and special effects (Chaffey College, Santa Monica College, 2021).

The knowledge, skills, and abilities trained by technical theater programs lead to seven distinct occupations, collectively referred to as the technical theater occupational group in this report. The technical theater

occupational group is separated into high school-level, community college-level, and bachelor's degree-level occupations to illuminate job opportunities for individuals with varying education levels.

The **high school-level technical theater occupations** in this report typically require a high school diploma or equivalent and one month or less of on-the-job training. These occupations may benefit from a community college certificate program to immerse students in technical theatre terminology and prepare them for various work tasks. Between 36% and 37% of incumbent workers in these occupations have a community college-level education, some college or an associate degree, as their highest level of educational attainment. The high school-level occupations included in the technical theater occupational group are:

- Costume Attendants (SOC 39-3092)
- Lighting Technicians and Media and Communication Equipment Workers, All Other (27-4098)

The **community college-level technical theater occupations** in this report typically require a postsecondary nondegree award and one month or less of on-the-job training. Between 37% and 50% of incumbent workers in these occupations have a community college-level education, some college or an associate degree, as their highest level of education. The community college-level occupations included in the technical theater occupational group are:

- Audio and Video Technicians (SOC 27-4011)
- Makeup Artists, Theatrical and Performance (39-5091)
- Sound Engineering Technicians (27-4014)

The **bachelor's degree-level technical theater occupations** included in this report typically require workers to obtain a bachelor's degree before employment. Students enrolled in a technical theater program may gain transferable skills. Between 18% and 29% of incumbent bachelor's degree-level occupations hold a community college-level of educational attainment. The bachelor's degree-level technical theater occupations included in this report are:

- Producers and Directors (SOC 27-2012)
- Set and Exhibit Designers (27-1027)

This report's educational supply and employment demand portions focus solely on the community college-level jobs students are likely to obtain after completing a community college technical theater program.

Job Counts and Projections

In 2020, there were 1,669 combined technical theater jobs in the region. Employment in the technical theater occupational group is expected to rise by 4% and have 177 annual job openings. The bachelor's degree-level technical theater occupations are projected to have 74 combined annual job openings, rising by 4%. The

community college-level occupations are projected to grow by 6% through 2025, with 70 combined job openings available annually. The high school-level occupations are expected to have 33 annual job openings combined, despite decreasing employment by 1% through 2025. Exhibit 1 displays the job counts, five-year projected job growth, job openings, and the share of incumbent workers age 55 years and greater working in the technical theater occupational group.

Exhibit 1: Five-year projections for the technical theater occupational group, 2020-2025

| Occupation | 2020 Jobs | 2025 Jobs | 5-Yr % Change (New Jobs) | 5-Yr Openings (New + Replacement Jobs) | Annual Openings (New + Replacement Jobs) | % of workers age 55+ |
|---|--------------|--------------|--------------------------|--|--|----------------------|
| Bachelor's Degree-level Occupations | | | | | | |
| Producers and Directors | 494 | 518 | 5% | 229 | 46 | 17% |
| Set and Exhibit Designers | 307 | 313 | 2% | 139 | 28 | 29% |
| Bachelor's Degree-level Total | 801 | 831 | 4% | 368 | 74 | 21% |
| Community College-level Occupations | | | | | | |
| Audio and Video Technicians | 506 | 530 | 5% | 280 | 56 | 16% |
| Sound Engineering Technicians | 99 | 112 | 12% | 64 | 13 | ~12% |
| Makeup Artists, Theatrical and Performance | 11 | 13 | 15% | 8 | 2 | Insf. Data |
| Community College-level Total | 617 | 655 | 6% | 352 | 70 | 15% |
| High School-level Total | | | | | | |
| Lighting Technicians and Media and Communication Equipment Workers, All Other | 183 | 188 | 3% | 99 | 20 | ~12% |
| Costume Attendants | 69 | 62 | (10%) | 68 | 14 | Insf. Data |
| High School-level Total | 252 | 250 | (1%) | 166 | 33 | ~12% |
| Total | 1,669 | 1,736 | 4% | 886 | 177 | 17% |

Source: Emsi 2021.3

Exhibit 2 shows the number of job ads posted during the last 12 months and the statewide average time filling each occupation. To ensure job advertisements were related to technical theater training programs, job advertisements have been restricted to technical theater-specific industries. The following are the industries likely to employ the technical theater occupations:

- Motion Picture and Video Industries (NAICS 5121)
- Radio and Television Broadcasting (NAICS 5151)

- Cable and Other Subscription Programming (NAICS 5152)
- Internet Publishing and Broadcasting and Web Search Portals (NAICS 519130)
- Performing Arts Companies (NAICS 7111)

Over the last 12 months, there were only six advertisements posted for the technical theater occupational group within technical theater industries in the region. To ensure there were sufficient advertisements from which to obtain generalizable job information, this job advertisement search was expanded to the state level. In California, there were 1,088 job ads posted for the technical theater occupational group over the last 12 months. The Los Angeles-Long Beach-Anaheim Metropolitan Statistical Area (MSA) accounted for approximately 55% of statewide advertisements, indicating that there are more job opportunities for individuals willing to commute out of the local region. On average, employers in California fill online job advertisements for the technical theater occupational group within 47 days.

Exhibit 2: Job ads and time to fill, California

| Occupation | Job Ads | Statewide Average Time to Fill (Days) |
|---|--------------|---------------------------------------|
| Producers and Directors | 928 | 48 |
| Set and Exhibit Designers | 4 | 43 |
| Sound Engineering Technicians | 89 | 42 |
| Audio and Video Technicians | 56 | 47 |
| Makeup Artists, Theatrical and Performance | 10 | 45 |
| Costume Attendants | 1 | 43 |
| Lighting Technicians and Media and Communication Equipment Workers, All Other | 0 | - |
| Total | 1,088 | 47 |

Source: Burning Glass – Labor Insights

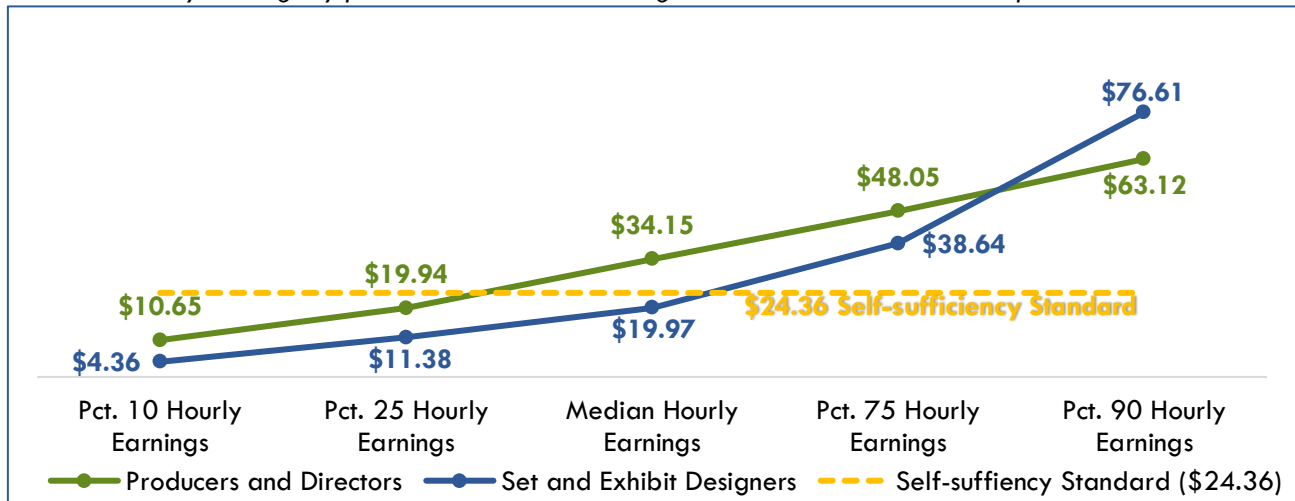
There were too few job advertisements for makeup artists, theatrical and performance, set and exhibit designers, costume attendants, and lighting technicians and media and communication workers, all other, posted in California over the last 12 months to provide generalizable information. As a result, job advertisement information for these occupations is not provided in this report.

Earnings and Benefits

Community colleges should ensure their training programs lead to employment opportunities that provide self-sustainable income. The University of Washington estimates that a self-sufficient hourly rate for a single adult with one school-age child is \$24.36 per hour or \$51,452 annually in Riverside County; \$23.73 per hour or \$50,119 annually in San Bernardino County (Pearce, 2021). For this study, the higher hourly earnings requirement in Riverside County is adopted as the self-sufficiency standard for the two-county region.

Exhibit 3 displays the hourly earnings for the bachelor's degree-level technical theater occupations. The median hourly earnings for producers and directors exceeds the self-sufficiency standard in the Inland Empire/Desert Region. The hourly earnings for set and exhibit designers do not surpass this threshold until the 75th percentile, indicating that only the top 25% of workers earn a self-sustainable wage.

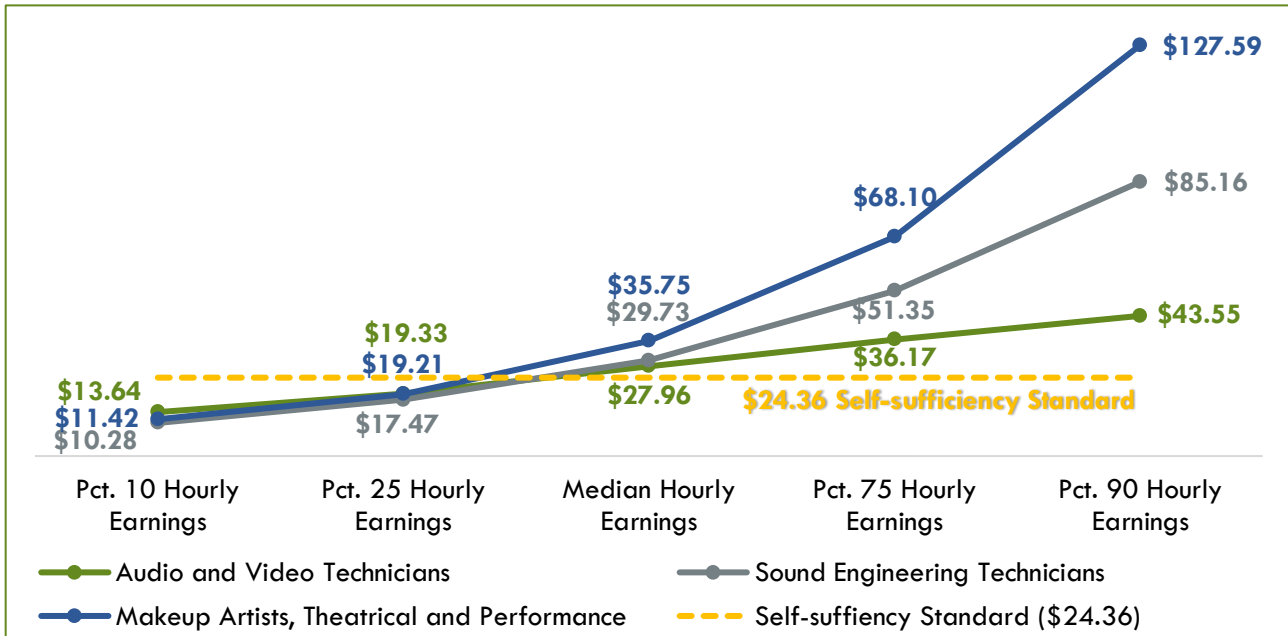
Exhibit 3: Hourly earnings by percentile for bachelor's degree-level technical theater occupations



Source: Emsi 2021.3

Exhibit 4 displays the hourly earnings for the community college-level technical theater occupations. The median hourly earnings for the community college-level technical theater occupations surpass the self-sufficiency, indicating that the top 50% of the workers in the field earn a self-sustainable wage.

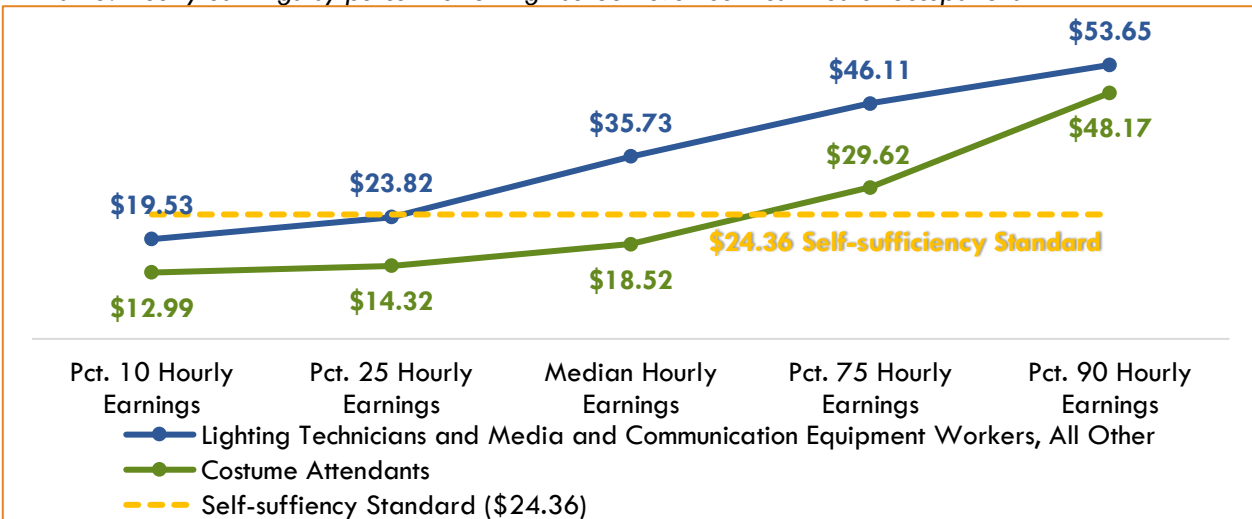
Exhibit 4: Hourly earnings by percentile for community college-level technical theater occupations



Source: Emsi 2021.3

Exhibit 5 displays the hourly earnings for the high school-level technical theater occupations. The median hourly earnings for lighting technicians and media and communication equipment workers, all other exceed the self-sufficiency standard. The hourly earnings for costume attendants do not surpass the self-sufficiency standard until the 75th percentile.

Exhibit 5: Hourly earnings by percentile for high school-level technical theater occupations



Source: Emsi 2021.3

Benefits information, typically provided by the California Labor Market Information Division's occupational guides, is not available for the technical theater occupational group (Detailed Occupational Guides, 2021).

Advertised Salary from Online Job Ads

Exhibit 6 displays online job ad salary data for the technical theater occupational group over the last 12 months in California. Online job ad salary information reveals that employers are willing to pay this occupational group between \$54,000 and \$67,000 annually, above the \$51,452 annual (\$24.36 hourly) self-sufficiency standard for the region. There were too few job advertisements for sound engineering technicians to provide reliable salary information. Consider the salary information with caution since only 23% (248 out of 1,073) of online job postings for these occupations provided salary information. The salary figures are prorated to reflect full-time, annual wage status.

Exhibit 6: Advertised salary information, California

| Occupations | Real-Time Salary Information | | | | | Average Annual Salary |
|-------------------------------|------------------------------|--------------------|----------------------|----------------------|--------------------|-----------------------|
| | Number of job postings | Less than \$35,000 | \$35,000 to \$49,999 | \$50,000 to \$74,999 | More than \$75,000 | |
| Producers and Directors | 207 | 2% | 21% | 49% | 28% | \$67,000 |
| Sound Engineering Technicians | 8 | N/A | N/A | N/A | N/A | N/A |
| Audio and Video Technicians | 33 | 15% | 43% | 30% | 12% | \$54,000 |

Source: Burning Glass – Labor Insights

Employers, Skills, Education, and Work Experience

Exhibit 7 displays the employers that posted the most job ads during the last 12 months in California. Displaying employer names provides some insight into where students may find employment after completing a program. Disney posted the most advertisements for the technical theater occupational group over the last 12 months.

Exhibit 7: Employers posting the most job ads for the technical theater occupational group, California

| Occupation | Top Employers | |
|---|--|--|
| Producers and Directors (n=855) | <ul style="list-style-type: none"> • Disney • NBC • Nexstar Media Group • Charter Communications, Inc. | <ul style="list-style-type: none"> • Tribune Publishing Company • Sinclair Broadcast Group, Inc. • Facebook, Inc. • CBS Broadcasting |
| Sound Engineering Technicians (n=78) | <ul style="list-style-type: none"> • Facebook, Inc. • Tribune Publishing Company • Disney | |
| Audio and Video Technicians (n=47) | <ul style="list-style-type: none"> • Legion AVS • Entertainment Partners • San Diego Audio Video • Aberdeen Broadcast Services | |

Source: Burning Glass – Labor Insights

Exhibit 8 lists a sample of specialized, employability, and software and programming skills employers seek when looking for workers to fill technical theater positions. Specialized skills are occupation-specific skills that employers request for industry or job competency. Employability skills are foundational skills that transcend industries and occupations; this category is often referred to as "soft skills." The skills requested in job postings may be utilized to guide curriculum development. Approximately 22% of job ads for the technical theater occupational group sought candidates with Adobe Creative Suite skills. The Adobe Creative Suite represents a suite of Adobe products, including Aftereffects, InDesign, Premiere, Photoshop, and others.

Exhibit 8: Sample of in-demand skills from employer job ads, California

| Occupation | Specialized skills | Employability skills | Software and Programming Skills |
|---|--|---|---|
| Producers and Directors (n=798) | <ul style="list-style-type: none"> Broadcast Industry Knowledge Social Media Journalism Editing Budgeting | <ul style="list-style-type: none"> Creativity Communication Skills Teamwork/Collaboration Writing Organizational Skills | <ul style="list-style-type: none"> Adobe Creative Suite |
| Sound Engineering Technicians (n=84) | <ul style="list-style-type: none"> Broadcast Industry Knowledge Editing Technical Support Digital Audio Cabling | <ul style="list-style-type: none"> Troubleshooting Communication Skills Detail-Oriented Problem Solving Creativity | <ul style="list-style-type: none"> N/A |
| Audio and Video Technicians (n=50) | <ul style="list-style-type: none"> Video Production Video Editing Broadcast Industry Knowledge Wiring Technical Support | <ul style="list-style-type: none"> Creativity Communication Skills Organizational Skills Troubleshooting Detail-Oriented | <ul style="list-style-type: none"> Adobe Creative Suite Final Cut Pro |

Source: Burning Glass – Labor Insights

Exhibit 9 displays the typical entry-level education, educational attainment, and minimum advertised education requirements for the technical theater occupational group. According to the Bureau of Labor Statistics, between 18%-37% of incumbent workers in this field hold a community college-level of educational attainment; "some college, no degree" and an "associate degree." Job advertisements indicate that the majority of employers sought candidates with a bachelor's degree or higher.

Exhibit 9: Typical entry-level education, educational attainment, and minimum advertised education requirements, California

| Occupation | Typical Entry-Level Education Requirement | CC-Level Educational Attainment* | Real-Time Minimum Advertised Education Requirement | | | |
|-------------------------------|---|----------------------------------|--|------------------------------------|------------------|-----------------------------|
| | | | Number of Job Ads | High school or vocational training | Associate degree | Bachelor's degree or higher |
| Producers and Directors | Bachelor's degree | 18% | 564 | 8% | 1% | 91% |
| Sound Engineering Technicians | Postsecondary nondegree award | 37% | 50 | 4% | 10% | 86% |
| Audio and Video Technicians | Postsecondary nondegree award | 37% | 30 | 23% | 7% | 70% |

Source: Emsi 2021.3, Burning Glass – Labor Insights

*Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework

Exhibit 10 displays the work experience typically required to enter each occupation and the real-time work experience requirements from employer job ads. Job advertisements indicate that previous work experience may be important to employers seeking technical theater workers. Approximately 53% of technical theater advertisements sought technical theater workers with three to five years of previous work experience.

Exhibit 10: Work experience required and real-time work experience requirements, California

| Occupation | Work Experience Typically Required | Real-Time Work Experience | | | |
|-------------------------------|------------------------------------|---------------------------|-------------|-------------|----------|
| | | Number of job postings | 0 – 2 years | 3 – 5 years | 6+ years |
| Producers and Directors | Less than 5 years | 670 | 34% | 52% | 14% |
| Sound Engineering Technicians | None | 72 | 18% | 53% | 29% |
| Audio and Video Technicians | None | 30 | 27% | 73% | - |

Source: Emsi 2021.3, Burning Glass – Labor Insights

Student Completions for Technical Theater Programs

Exhibit 11 displays completion data for California Community College technical theater (TOP 1006.00) programs between 2017 and 2020. Over the last three academic years, regional community colleges issued four awards annually in technical theater programs. The student completion and outcome methodology are available on page 16.

Exhibit 11: 2017-20, Annual average community college awards for the technical theater programs in the Inland Empire/Desert Region

| TOP 1006.00 – Technical Theater (Local Program Title) | Associate Degree | Certificate requiring 30 to <60 semester units | Certificate requiring 16 to <30 semester units | Total CC Annual Average Awards, Academic Years 2017-20 |
|--|-------------------------|--|--|---|
| Chaffey (Technical Theatre) | - | - | 2 | 2 |
| Crafton Hills (Technical Theater Entertainment Technology Level 1 Skills) | - | - | - | 0 |
| Mt. San Jacinto (Technical Theater) | 1 | 1 | | 2 |
| Riverside (Technical Theatre) | - | - | - | 0 |
| San Bernardino (Design and Technical Theatre) | - | - | - | 0 |
| Total | 1 | 1 | 2 | 4 |

Source: MIS Data Mart

California program outcome data may provide a useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP code and region is provided in Exhibit 12. The outcome methodology is available in the appendix section of this report.

Exhibit 12: 1006.00 – Technical theater strong workforce program outcomes

| Strong Workforce Program Metrics: 1006.00 – Technical Theater Academic Year 2017-18, unless noted otherwise | Inland Empire/Desert Region | California |
|--|------------------------------------|-------------------|
| Unduplicated count of enrolled students (2018-19) | 359 | 4,951 |
| Completed 9+ career education units in one year (2018-19) | 11% | 19% |
| Perkins Economically disadvantaged students (2018-19) | 85% | 72% |
| Students who attained a noncredit workforce milestone in a year (2018-19) | - | 21% |
| Students who earned a degree, certificate, or attained apprenticeship (2018-19) | - | 84 |
| Transferred to a four-year institution (transfers) | 16 | 333 |
| Job closely related to the field of study (2016-17) | - | 57% |
| Median annual earnings (all exiters) | \$15,656 | \$19,370 |
| Median change in earnings (all exiters) | 55% | 43% |
| Attained a living wage (completers and skills-builders) | 25% | 23% |

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

California Baptist University offers a Technical Theatre/Theatre Design and Technology (CIP 50.0502) program. California Baptist University's technical theatre program has not issued any awards over the last three academic years.

Recommendation for Technical Theater Programs

The community college-level technical theater occupations are expected to have 70 annual job openings and increase employment by 6% over the next five years. The median hourly earnings for the community college-level technical theater occupational group surpass the \$24.36 per hour self-sustainable wage standard.

Job advertisements indicate that demand for technical theater workers is low in the Inland Empire/Desert Region. Over the last twelve months, there were 1,088 job advertisements posted for technical theater workers in the state. Approximately 85% of job advertisements were posted for the bachelor's degree-level occupation, producers and directors.

Community college technical theater (TOP 1006.00) programs have issued four awards annually over the last three academic years. The median annual earnings for technical theater program completers in the region is \$15,656.

The COE does not recommend expanding technical theater programs due to the limited employment opportunities for community college-level occupations in the region. Colleges considering a new program should consider that there were 359 community college program enrollments in the 2018-19 academic year across the region. More students are enrolled in this program than there are community college-level opportunities available (70 annual job openings). Statewide job advertisements indicate a concentration of employment opportunities in the neighboring Los Angeles and Orange counties (Los Angeles-Long Beach-Anaheim MSA). Students willing to travel outside of the region will have a greater opportunity of finding employment but may need to compete for jobs with incumbent workers and students exiting from local programs. Colleges considering this program should partner with relevant employers to verify demand for these workers and to ensure that students have the required knowledge, skills, and abilities to earn a wage that meets or exceeds the self-sustainable hourly wage of \$24.36 per hour after completing the program.

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Appendix: Occupation definitions, sample job titles, five-year projections, and earnings for technical theater occupations

Occupation Definitions (SOC code), Education and Training Requirement, Community College Education Attainment

Bachelor's Degree-Level Occupations

Set and Exhibit Designers (27-1027)

Design special exhibits and sets for film, video, television, and theater productions. May study scripts, confer with directors, and conduct research to determine appropriate architectural styles.

Sample job titles: Designer, Display Coordinator, Exhibit Coordinator, Exhibit Designer, Exhibit Preparator, Historical Society Window Dresser, Installations Designer, Projection Designer, Scenic Designer, Set Designer

Entry-Level Educational Requirement: Bachelor's degree

Training Requirement: None

Work Experience: None

Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 29%

Producers and Directors (27-2012)

Produce or direct stage, television, radio, video, or film productions for entertainment, information, or instruction. Responsible for creative decisions, such as interpretation of script, choice of actors or guests, set design, sound, special effects, and choreography.

Sample job titles: Artistic Director, Director, Executive Producer, News Producer, Newscast Producer, Producer, Radio Producer, Technical Director, Television News Producer, Television Producer (TV Producer)

Entry-Level Educational Requirement: Bachelor's degree

Training Requirement: None

Work Experience: Less than 5 years

Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 18%

Community College-Level Occupations

Audio and Video Technicians (27-4011)

Set up, maintain, and dismantle audio and video equipment, such as microphones, sound speakers, connecting wires and cables, sound and mixing boards, video cameras, video monitors and servers, and related electronic equipment for live or recorded events, such as concerts, meetings, conventions, presentations, podcasts, news conferences, and sporting events.

Sample job titles: Audio Technician, Audio Visual Specialist (AV Specialist), Audio Visual Technician (AV Technician), Media Technician, Operations Technician, Stagehand, Video Technician

Entry-Level Educational Requirement: Postsecondary nondegree award

Training Requirement: Less than one month on-the-job training

Work Experience: None

Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 37%

Sound Engineering Technicians (27-4014)

Assemble and operate equipment to record, synchronize, mix, edit, or reproduce sound, including music, voices, or sound effects, for theater, video, film, television, podcasts, sporting events, and other productions.

Sample job titles: Audio Engineer, Audio Operator, Mastering Engineer, Mixer, Mixing Engineer, Recording Engineer, Sound Editor, Sound Engineer, Sound Technician, Studio Engineer

Entry-Level Educational Requirement: Postsecondary nondegree award

Training Requirement: Less than one month on-the-job training

Work Experience: None

Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 37%

Makeup Artists, Theatrical and Performance (39-5091)

Apply makeup to performers to reflect period, setting, and situation of their role.

Sample job titles: Commercial Makeup Artist, Hair and Makeup Designer, Makeup Artist, Prosthetic Makeup Designer, Special Effects Makeup Artist, Special Makeup Effects Artist

Entry-Level Educational Requirement: Postsecondary nondegree award

Training Requirement: None

Work Experience: None

Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 50%

High School-Level Occupations

Lighting Technicians and Media and Communication Equipment Workers, All Other (27-4098)

All media and communication equipment workers not listed separately.

Sample job titles: N/A

Entry-Level Educational Requirement: High school diploma or equivalent

Training Requirement: Less than one month on-the-job training

Work Experience: None

Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 37%

Costume Attendants (39-3092)

Select, fit, and take care of costumes for cast members, and aid entertainers. May assist with multiple costume changes during performances.

Sample job titles: Costume Draper, Costume Seamstress, Costumer, Draper, Dresser, Wardrobe Assistant, Wardrobe Attendant

Entry-Level Educational Requirement: High school diploma or equivalent

Training Requirement: Less than one month on-the-job training

Work Experience: None

Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 36%

Appendix: Methodology

Exhibit 11 displays the average annual California Community College (CCC) awards conferred during the three academic years between 2017 and 2020, from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. Awards are the combined total of associate degrees and certificates issued during the timeframe, divided by three in this case to calculate an annual average. This is done to minimize the effect of atypical variation that might be present in a single year.

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from records provided by California's Employment Development Department's Unemployment Insurance database. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included for each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2021 a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS), administered by Santa Rosa Junior College (LaunchBoard, 2021 a).

Job advertisement data is limited to the information provided by employers and the ability of artificial intelligence search engines to identify this information. Additionally, preliminary calculations by Georgetown Center on Education and the Workforce found that "just 30 to 40 percent of openings for candidates with some college or an associate degree, and only 40 to 60 percent of openings for high school diploma holders appear online" (Carnevale et al., 2014). Online job advertisements often do not reveal employers' hiring intentions; it is unknown if employers plan to hire one or multiple workers from a single online job ad or collect resumes for future hiring needs. A closed job ad may not be the result of a hired worker.

Table 1. 2020 to 2025 job growth, wages, entry-level education, training, and work experience required for the technical theater occupational group

| Occupation (SOC) | 2020 Jobs | 5-Year Change (New Jobs) | 5-Year % Change (New Jobs) | Annual Openings (New + Replacement Jobs) | Entry-Experienced Hourly Wage (10 th to 90 th percentile) | Median Hourly Wage (50 th percentile) | Average Annual Earnings | Entry-Level Education & On-The-Job-Training | Work Experience Required |
|---|--------------|--------------------------|----------------------------|--|---|--|-------------------------|---|--------------------------|
| Producers and Directors (27-2012) | 494 | 24 | 5% | 46 | \$10.65 to \$63.12 | \$34.15 | \$86,300 | Bachelor's degree & None | Less than 5 years |
| Set and Exhibit Designers (27-1027) | 307 | 6 | 2% | 28 | \$4.36 to \$76.61 | \$19.97 | \$65,400 | Bachelor's degree & None | None |
| Bachelor's Degree Level Total | 801 | 30 | 4% | 74 | - | - | - | - | - |
| Audio and Video Technicians (27-4011) | 506 | 24 | 5% | 56 | \$13.64 to \$43.55 | \$27.96 | \$61,100 | Postsecondary nondegree award & 1 month | None |
| Sound Engineering Technicians (27-4014) | 99 | 12 | 12% | 13 | \$10.28 to \$85.16 | \$29.73 | \$88,800 | Postsecondary nondegree award & 1 month | None |
| Makeup Artists, Theatrical and Performance (39-5091) | 11 | 2 | 15% | 2 | \$11.42 to \$127.59 | \$35.75 | \$114,900 | Postsecondary nondegree award & none | None |
| Community College Level Total | 617 | 38 | 6% | 70 | - | - | - | - | - |
| Lighting Technicians and Media and Communication Equipment Workers, All Other (27-4098) | 183 | 6 | 3% | 20 | \$19.53 to \$53.65 | \$35.73 | \$77,200 | High school diploma or equivalent & 1 month | None |
| Costume Attendants (39-3092) | 69 | (7) | (10%) | 14 | \$12.99 to \$48.17 | \$18.52 | \$51,500 | High school diploma or equivalent & 1 month | None |
| High School Level Total | 252 | (2) | (1%) | 33 | - | - | - | - | - |
| Technical Theater Total | 1,669 | 67 | 4% | 177 | - | - | - | - | - |

Source: Emsi 2021.3