

Program Endorsement Brief: 0799.00/Other Information Technology *Drone Technology*

Orange County Center of Excellence, September 2020

Summary Analysis

Program Endorsement:	Endorsed: All Criteria Met	<input checked="" type="checkbox"/>	Endorsed: Some Criteria Met	<input type="checkbox"/>	Not Endorsed	<input type="checkbox"/>
Program Endorsement Criteria						
Supply Gap:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>		
Living Wage: (Entry-Level, 25th)	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>		
Education:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>		
Emerging Occupation(s)						
Yes <input checked="" type="checkbox"/>			No <input type="checkbox"/>			

The Orange County Center of Excellence for Labor Market Research (COE) prepared this report to provide Los Angeles/Orange County regional labor market supply and demand data related to three middle-skill occupations **that employ the use of drones**: *Film and Video Editors (27-4032)*, *Fire Inspectors and Investigators (33-2021)* and *Police and Sheriff's Patrol Officers (33-3051)*. Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.¹ Since **drone technology** programs include drone piloting and image capture skills within the fields of photography, videography, and public safety, this report also includes an analysis of online job postings that request drone piloting knowledge and skills. This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from community college programs that align with the relevant occupations.”

Based on the available data, there appears to be a supply gap for these occupations that employ the use of drones. These occupations all have entry-level wages above the living wage in both Los Angeles and Orange Counties, and the education level is congruent with community college programming. **However, it is worth noting that while a certificate in drone technology may add to a student's skillset, this certificate alone most likely will not satisfy the entry-level educational requirement for these occupations. Due to all of the traditional LMI criteria being met, albeit overstated, the COE endorses this proposed program.** Reasons include:

Demand:

- **Supply Gap Criteria** - Over the next five years, there is projected to be **3,904 jobs available annually** in the LA/OC region due to new job growth and replacements,

¹ The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

which is more than the 110 awards conferred annually by educational institutions in the region.

- However, while the occupations in this report may employ the use of drones, they do not require drone technology; therefore, **the demand does not represent jobs in the LA/OC region that rely heavily on drone skills.**
- There were 537 online job postings that listed keywords related to drones in the past 12 months. The top titles for these job postings were: C/C++ Software Engineers, Videographers/Editors, Real Estate Photographers/Drone Operators, Drone Operators, Photographers, and UAV Pilots.
- **Living Wage Criteria** – Within Orange County, **all of the annual job openings** for these three occupations have entry-level **wages above the county’s living wage** (\$17.36).²
- **Educational Criteria** - Within the LA/OC region, **66% of the annual job openings** for these occupations typically **require a high school diploma.**
 - Furthermore, **47.8% of Police and Sheriff’s Patrol Officers (65% of the annual openings) working in the field have completed some college or an associate degree.**

Supply:

- Only **2 community colleges**, both in Los Angeles County, issue awards in Other Information Technology (0799.00), conferring an average of **10 awards annually** between 2016 and 2019.
 - It is worth noting that while a certificate in drone technology may add to a student’s skillset, **this certificate alone most likely will not satisfy the entry-level educational requirement for these occupations.**
 - However, there are 8 other TOP Codes that do train students specifically for the three occupations in this report (*Film and Video Editors* (27-4032), *Fire Inspectors and Investigators* (33-2021) and *Police and Sheriff’s Patrol Officers* (33-3051). Therefore, **the number of awards granted for programs related to these three occupations is understated.**
- Between 2014 and 2017, there was an average of **100 awards conferred annually** in programs related to Other Information Technology (0799.00) by **8 non-community college institutions** throughout the region.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for these three middle-skill occupations that employ the use of drones. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 3% through 2024. There will be more than 3,900 job openings per year through 2024 due to new job growth and replacements.

However, it is important to consider that additional educational awards may be necessary for employment within these occupations. For instance, a student who is pursuing a job as a Police or Sheriff’s Patrol Officer may need to complete an award in a TOP Code related to public safety,

² Living wage data was pulled from California Family Needs Calculator on 9/21/2020. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

such as Administration of Justice (2105.00) or Police Academy (2105.50). **While a certificate in Drone Technology may add to a student's skillset, this certificate alone may not satisfy the entry-level educational requirement for these occupations.** It is also important to note that these occupations do not require the use of drone technology; therefore, in terms of occupations that rely heavily on the use of drones, the demand data in Exhibit 1 is overstated.

This report includes employment projection data by Emsi which uses EDD information. Emsi's projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy, during the projection period, will be at approximately full employment. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, it may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Therefore, the projections included in this report do not take the impacts of COVID-19 into account.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties³

Geography	2019 Jobs	2024 Jobs	2019-2024 Change	2019-2024 % Change	Annual Openings
Los Angeles	39,210	40,447	1,237	3%	3,385
Orange	6,381	6,637	256	4%	519
Total	45,590	47,085	1,495	3%	3,904

Wages

The labor market endorsement in this report considers the entry-level hourly wages for these three middle-skill occupations that employ the use of drone technology in Orange County as they relate to the county's living wage. Los Angeles County wages are included below in order to provide a complete analysis of the LA/OC region. Detailed wage information, by county, is included in Appendix A.

Orange County—All of the annual openings for these occupations have entry-level wages above the California Family Needs Calculator hourly wage (living wage) for one adult (\$17.36 in Orange County).⁴ Typical entry-level hourly wages are in a range between \$18.53 and \$46.22. Experienced workers can expect to earn wages between \$54.35 and \$66.90, which are higher than the living wage estimate. Orange County's average wages are below the average statewide wage of \$49.08 for these occupations.

Los Angeles County—All of the annual openings for these occupations have entry-level wages above the living wage for one adult (\$15.04 in Los Angeles County). Typical entry-level hourly wages are in a range between \$23.47 and \$50.04. Experienced workers can expect to earn wages between \$59.62 and \$72.43, which are higher than the living wage estimate. Los Angeles

³ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

⁴ Living wage data was pulled from California Family Needs Calculator on 9/21/2020. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

County's average wages are above the average statewide wage of \$49.08 for these occupations.

Job Postings

There were 537 online job postings that listed drones in the job description over the past 12 months. The top occupations that listed drones in their job postings were: Software Developers, Applications; Photographers; Commercial Pilots; Camera Operators, Television, Video, and Motion Picture; and Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific. The top titles for these job postings were: C/C++ Software Engineers, Videographers/Editors, Real Estate Photographers/Drone Operators, Drone Operators, Photographers, and UAV Pilots. The top skills were: customer service, scheduling, software development, photography, and Linux. The top three employers, by number of job postings, in the region were: General Atomics, Northrop Grumman, and CoStar Group.

It is important to note that the job postings data included in this section reflects online job postings listed in the past 12 months and does not yet demonstrate the impact of COVID-19. While employers have generally posted fewer online job postings since the beginning of the pandemic, the long-term effects are currently unknown.

Educational Attainment

The Bureau of Labor Statistics (BLS) lists a bachelor's degree as the typical entry-level education for Film and Video Editors, and a high school diploma as the typical entry-level education for Detectives and Criminal Investigators and Police and Sheriff's Patrol Officers. Within the LA/OC region, the majority of annual job openings (66%) typically require a high school diploma.

The national-level educational attainment data indicates between 24% and 47.8% of workers in the field have completed some college or an associate degree. The majority of annual job openings in this report (65%) are for Police and Sheriff's Patrol Officers, and nearly half (47.8%) of those working in this occupation have completed some college or an associate degree.

Of the 45% of job postings that mentioned drones or related keywords listing a minimum education requirement in Los Angeles/Orange County, 66% (9,159) requested a Bachelor's degree, 31% (75) requested a high school diploma, and 3% (8) requested an associate degree.

Educational Supply

Community College Supply—Exhibit 3, on the following page, shows the three-year average number of awards conferred by community colleges in the requested TOP code: Other Information Technology (0799.00). While a certificate in drone technology may add to a student's skillset, this certificate alone most likely will not satisfy the entry-level educational requirement for these occupations. Over the past 12 months, there were no other program recommendation requests related to this TOP code from regional community colleges.

It is important to note that the three occupations in the report (*Film and Video Editors (27-4032)*, *Fire Inspectors and Investigators (33-2021)* and *Police and Sheriff's Patrol Officers (33-3051)*) are trained for by eight other TOP Codes, including: Radio and Television (0604.00), Television (including combined TV/film/video (0604.20), Film Production (0612.20), Animation (0614.40), Administration of Justice (2105.00), Police Academy (2105.50), Fire Technology (2133.00), and

Fire Academy (2133.50). Since these TOP Codes are not included in the supply data for drone technology, the supply total is greatly understated.

Exhibit 3: Regional community college awards (certificates and degrees), 2016-2019

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
0799.00	Other Information Technology	LA Harbor	1	1	-	1
		Mt San Antonio	9	5	13	9
		LA Subtotal	10	6	13	10
Supply Total/Average			10	6	13	10

Non-Community College Supply—It is important to consider the supply from four-year institutions in the region that provide training programs related to the Other Information Technology (0799.0) TOP Code. Exhibit 4 shows the annual and three-year average number of awards conferred by these institutions in the related Classification of Instructional Programs (CIP) Codes: Computer Software and Media Applications, Other (11.0899), Computer/Information Technology Services Administration and Management, Other (11.1099), and Computer and Information Sciences and Support Services, Other (11.9999). Due to different data collection periods, the most recent three-year period of available data is from 2014 to 2017. Between 2014 and 2017, other educational institutions in the region conferred an average of 100 awards annually in related training programs.

Exhibit 4: Regional non-community college awards, 2014-2017

CIP Code	Program	College	2014-2015 Awards	2015-2016 Awards	2016-2017 Awards	3-Year Award Average
11.0899	Computer Software and Media Applications, Other	Art Center College of Design	-	5	7	4
		Learnet Academy Inc	59	45	41	48
		ABCO Technology	3	9	4	5
11.1099	Computer/Information Technology Services Administration and Management, Other	Advanced Computing Institute	5	5	-	3
		California Intercontinental University	2	2	2	2
		Learnet Academy Inc	93	-	-	31
11.9999	Computer and Information Sciences and Support Services, Other	Brand College	1	-	1	1
		Mt Sierra College	9	4	2	5
		Pitzer College	-	-	1	0
Supply Total/Average			172	70	58	100

Appendix A: Occupational demand and wage data by county

Exhibit 5. Orange County

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Film and Video Editors (27-4032)	386	436	50	13%	50	\$18.53	\$31.20	\$58.14
Fire Inspectors and Investigators (33-2021)	53	58	5	9%	6	\$46.22	\$59.71	\$66.90
Police and Sheriff's Patrol Officers (33-3051)	5,942	6,144	202	3%	463	\$39.27	\$48.38	\$54.35
Total	6,381	6,637	256	4%	519			

Exhibit 6. Los Angeles County

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Film and Video Editors (27-4032)	12,284	12,588	304	2%	1,279	\$23.47	\$35.43	\$67.75
Fire Inspectors and Investigators (33-2021)	199	209	10	5%	21	\$50.04	\$64.66	\$72.43
Police and Sheriff's Patrol Officers (33-3051)	26,727	27,650	923	3%	2,085	\$43.08	\$53.08	\$59.62
Total	39,210	40,447	1,237	3%	3,385			

Exhibit 7. Los Angeles and Orange Counties

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings
Film and Video Editors (27-4032)	12,670	13,025	355	3%	1,330
Fire Inspectors and Investigators (33-2021)	252	266	14	6%	27
Police and Sheriff's Patrol Officers (33-3051)	32,669	33,793	1,124	3%	2,548
Total	45,590	47,085	1,495	3%	3,904

Appendix B: Keywords used in Burning Glass search

- UAV operator
- UAV pilot
- unmanned aircraft system operator
- unmanned aerial vehicle operator
- drone operator
- unmanned aerial system operator
- unmanned aircraft vehicle operator
- autonomous pilot
- drone operations
- aerial cinematography
- UAV technician
- UAS mechanic
- UAS Operator
- UAS pilot
- unmanned aircraft system pilot
- unmanned aerial vehicle pilot
- drone pilot
- unmanned aerial system pilot
- unmanned aircraft vehicle pilot
- drone technician
- drone photography
- UAS technician
- UAV mechanic
- drone videographer

Appendix C: Sources

- O*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (Emsi)
- Bureau of Labor Statistics (BLS)
- Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- California Family Needs Calculator, Insight Center for Community Economic Development
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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