

## **Appliance Technology Program**

The field of appliance service technology deals with repairing major household appliances. Technicians inspect, troubleshoot and repair major appliances such as refrigerators, ranges, dishwashers, microwave ovens, washers and dryers. Los Medanos Appliance Service Technology Program offers instruction for two career options. The Appliance Technician I option prepares students for entry-level positions as appliance installers or shop technician trainees. Students selecting the Appliance Technician II option will be prepared for entry-level positions in the appliance service field.

### **Job Outlook for Appliance Technicians**

Based on market research conducted by IBISWorld, Appliance Repair was identified as an industry that has remained in flux since the recession and is considered one of the riskiest industries in which to succeed. Factors contributing to their high risk are expected to keep declining over the next five years. Appliance Repair in the United States received an overall risk score of 7.17 (Risk scores referenced were on a scale of one to nine, where one represents lowest risk and nine represents highest) with industry revenue expected to fall an annualized 1.5%.

According to Industry Insider, "Strong external competition has been forcing this industry into a decline over the past decade. The biggest threat is from appliance manufacturers and large retailers that offer warranties for repair services, which undercuts demand for industry services. Consumer preferences for reliable brand names, such as the Home Depot and Best Buy, tend to drive business away from independently owned specialty repair shops. In addition, technological advances are improving the lifespan of appliances, reducing the need for repairs. And as incomes rise in line with the improving economy, consumers will begin purchasing new appliances, which will further diminish repair demand. New technologies, such as built-in diagnostic tools, will allow consumers to fix minor problems on their own and go longer before requiring major repairs". (Exhibit 1)

Additional labor market analysis by region shows a declining industry. The region, defined as Contra Costa, Solano and Alameda Counties, posted the following net changes for Home Appliance Repairers (SOC Code 49-9031) according to data analytics using EMSI modeling tool:

Table1

Year	Percentage of Change	Timeframe
2015	-8.3%	2013-2020
2016	-10%	2016-2020
2017	-6%	2016-2020

Data gathered September 14, 2018 using O\*Net online indicate a 4% decline nationwide and zero percent change for the forecasted period of 2016-2026. (Exhibits 2, 3, 4, 5)

### **Decline in Programs Offering Appliance Technology Programs**

Over the past twenty years, Appliance Repair Programs have declined steadily. According to the California Community Colleges Chancellor's Office, six colleges offered a comprehensive Appliance Technician Program in 1992. Three of the six programs were offered by Contra Costa Community College District. In 2002, four programs existed with LMC and CCC offering a comprehensive program and the two other institutions only offering skill-builder type courses. By 2008, LMC was the only California Community College program offering any type of comprehensive and/or skill-builder courses. To date, only one other program exists in California. Hacienda La Puente Adult Education offers a two semester program in Major Appliance Service and Repair. (Exhibits 6 and 7)

The Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation (BEARHFTI) is California's regulatory agency under the Department of Consumer Affairs. The Bureau provides consumer protection by enforcing the provisions of the Electronic and Appliance Repair Law. Currently, the Bureau licenses businesses and not individuals, there are no formal education or experience requirements for licensure. According to BEARHFTI's 2017 Sunset Report, "most electronic product and appliance manufacturers offer training to their authorized repair agents and certify the repair dealers and/or their technicians for their line of products. . . . As the businesses are licensed, and not their technicians, it is the business owner's responsibility to ensure their employees are adequately trained to repair the products they service". (Exhibit 8 and 9)

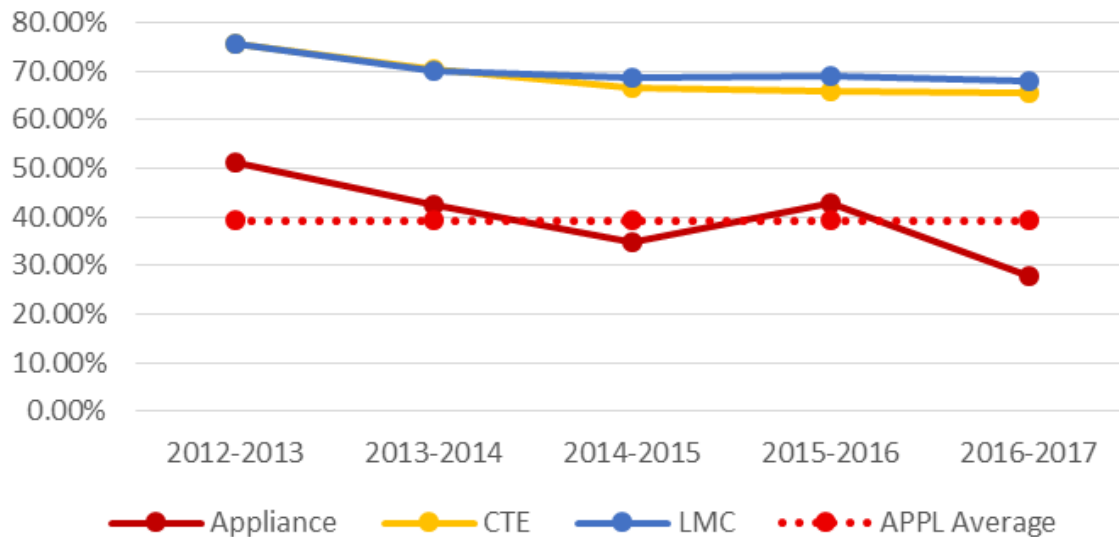
In minutes from BEARHFTI's November 15, 2016 meeting, Bureau members discussed the two appliance programs currently offered in the State of California. At one time "12 community colleges offered appliance training but it is a challenging and expensive program for schools to maintain with a dwindling job market and the programs have been cut". (Exhibit 10)

### **Curriculum Management**

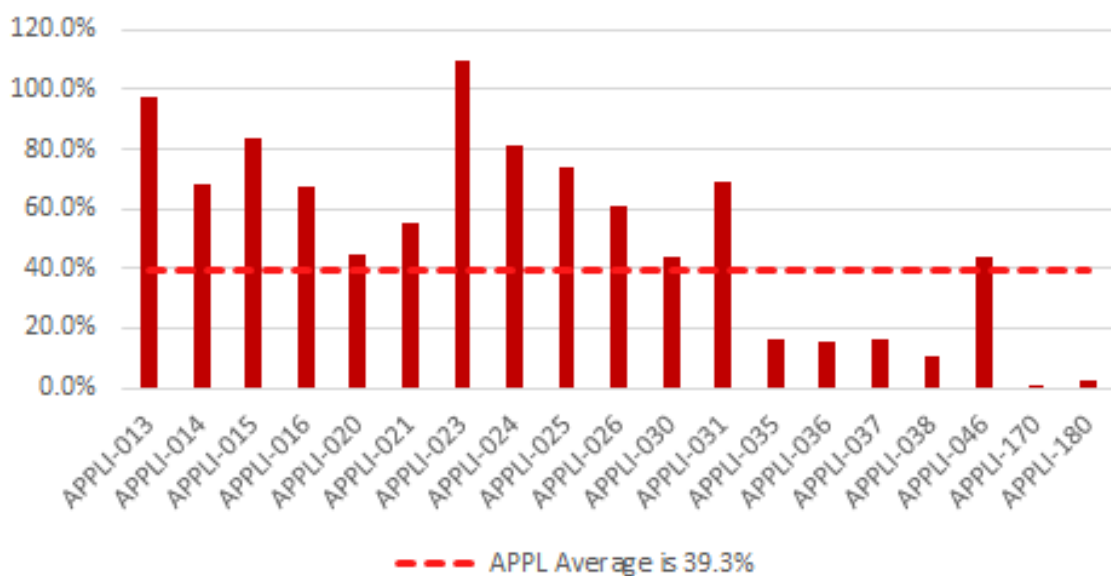
All course outlines of record for Appliance Technology were updated in September 2008. Non-substantial changes have been submitted regularly to ensure compliance with Title 5 regulations. During a recent review of the marketing materials for the Appliance Technology Program, it was discovered that the APPLI courses for the Certificate of Achievement in Appliance Technology Technician I are interchangeable with the Certificate of Achievement in Appliance Technology Technician II. The course outlines of records show the CSLOs, PSLOs, and Course Content are identical to one another. The Certificates were designed to cater to students who are able to attend during the day or night. The Technician I courses are offered primarily during the evening, while the Technician II courses are offered primarily during the day. An air conditioning and refrigeration course (ACREF-045) was added to the Technician I Certificate. If a student does not want to take the ACREF course, the student will be awarded the Technician II Certificate. (Exhibit 11 and 12)

## Historic and Current Enrollment Rates at Los Medanos College

APPL fill rates already average **30%** below CTE and LMC overall, and are ***decreasing even more***



### APPL Average Fill Rates By Section for 2012-2017

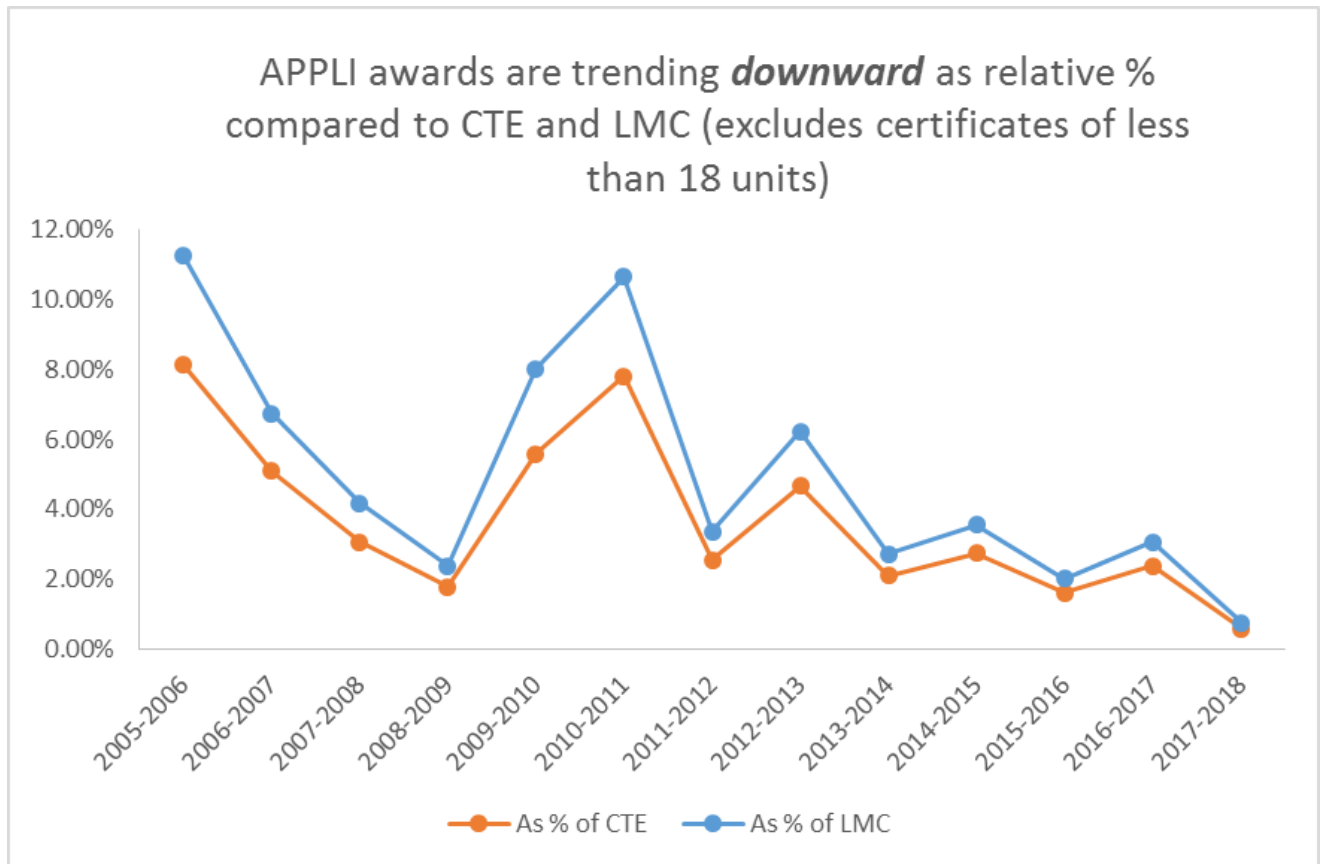


### Fill Rates by Section and Year

	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
APPL-013		82.5%		112.5%	
APPL-014	77.5%		57.5%		70.0%
APPL-015		100.0%		67.5%	
APPL-016	92.5%		67.5%		42.5%
APPL-020	53.8%	70.0%	32.5%	37.5%	22.5%
APPL-021		75.0%	35.0%	82.5%	30.0%
APPL-023		112.5%		107.5%	
APPL-024	92.5%		85.0%		67.5%
APPL-025	95.0%		72.5%		55.0%
APPL-026		62.5%		60.0%	
APPL-030	66.7%	27.5%	42.5%	27.5%	37.5%
APPL-031		87.5%	57.5%	87.5%	42.5%
APPL-035	18.7%	17.5%	16.3%	13.8%	11.3%
APPL-036	21.9%	16.3%	15.0%	12.5%	8.8%
APPL-037		10.0%	22.5%	8.8%	22.5%
APPL-038		1.3%	11.3%	15.0%	13.8%
APPL-046	57.5%	52.5%	42.5%	45.0%	22.5%
APPL-170			2.5%		0.0%
APPL-180		2.5%			
<i>Heat Map</i>					

	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
APPL-013		▲82.5%		▲112.5%	
APPL-014	▲77.5%		■57.5%		■70.0%
APPL-015		▲100.0%		■67.5%	
APPL-016	▲92.5%		■67.5%		■42.5%
APPL-020	■53.8%	■70.0%	▼32.5%	■37.5%	▼22.5%
APPL-021		■75.0%	▼35.0%	▲82.5%	▼30.0%
APPL-023		▲112.5%		▲107.5%	
APPL-024	▲92.5%		▲85.0%		■67.5%
APPL-025	▲95.0%		■72.5%		■55.0%
APPL-026		■62.5%		■60.0%	
APPL-030	■66.7%	▼27.5%	■42.5%	▼27.5%	■37.5%
APPL-031		▲87.5%	■57.5%	▲87.5%	■42.5%
APPL-035	▼18.7%	▼17.5%	▼16.3%	▼13.8%	▼11.3%
APPL-036	▼21.9%	▼16.3%	▼15.0%	▼12.5%	▼8.8%
APPL-037		▼10.0%	■22.5%	▼8.8%	▼22.5%
APPL-038		▼1.3%	▼11.3%	▼15.0%	▼13.8%
APPL-046	■57.5%	■52.5%	■42.5%	■45.0%	▼22.5%
APPL-170			▼2.5%		▼0.0%
APPL-180		▼2.5%			
<i>Fill Bars and Trends</i>					

## Historic and Current Degrees and Certificates Awarded



### Revitalization Efforts

In fall of 2016, lead faculty and the department chair were alerted to low enrolled courses, and in spring 2017 during the annual program review feedback, the program was further alerted to declining productivity, and declining head and seat counts. (Exhibit 13). Recognizing the program needed assistance and direction, a series of meetings were conducted between fall 2016 and summer 2018 that included the faculty, dean, department chair, DVC faculty member with knowledge of the program, Deputy Sector Navigator for Energy & Utilities (which encompasses this program along with HVAC), and the Prop. 39 grant director who had curricular expertise. Topics for these meetings included: analysis of current curriculum, ideas for revamping curriculum, labor market information and industry trends. Faculty began mapping out curriculum for appliance and HVAC, but the data around appliance technology continued to show low or negative growth. The conversations with industry experts held between 2016 and 2018 provided anecdotal support to what labor market data was indicating, which was, appliance repair technology was declining and HVAC and commercial refrigeration were on the rise. (Exhibit 14)

## Cost Analysis

Los Medanos College has continually supported the Appliance Technology Program. Faculty replacement of a 42 year veteran of the program occurred in fall 2016. The retiring faculty remained available/accessible through the transition and continues to teach part-time as a substitute when needed. In 2016, the Dean and Department Chair began working with the new faculty to examine the curriculum and revise the curriculum because course enrollments were low. The Workforce Development unit provided support by providing labor market information/data, and support for forming an effective advisory committee. Faculty from neighboring DVC were brought in to assist/advise the program, as well as the Deputy Sector Navigator (regional resource) from the Bay Area Community College Consortium. Lastly, the program has been supported through professional development and conference attendance at assist the faculty in making a relevant program. (Exhibit 15)

### Cost Analysis:

	2013-14	2014-15	2015-16	2016-17	2017-18
<b>Revenue</b>					
FTES	317,046 (59.820 FTES)	262,774 (49.580 FTES)	266,007 (50.190 FTES)	202,142 (38.14 FTES)	147,340 (27.80 FTES)
<b>Expense</b>					
Salary & Benefits	166,179	178,108	258,746	116,888	121,910
Operating Budget (Actual)	15,239.46	17,482.97	11,696.02	8,977.56	12,103.85
	135,627.54	67,183.03	<4,435.02>	76,276.44	13,326.15

## Recommendation to President's Cabinet

Based on the bleak labor market data, course enrollments rates, number of degrees and certificates awarded, and efforts put forth over the past two years to revitalize the Appliance Program, it is recommended that the Appliance Technology Program be discontinued effective Spring 2020.

## Teach Out Plan

Course offerings for the Appliance Technology Program for the 2018-2019 academic year are geared towards students completing Year 2 of the program. Year one courses have not been offered since Fall 2017. It is recommended that the Appliance Technology Program offer Year 2 courses during the 2019-2020 academic year to allow students who may have completed Year 1 courses. This would allow students to complete their Certificate of Achievement or higher in Appliance Service Technology Technician I or II.

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10 Riskiest Industries

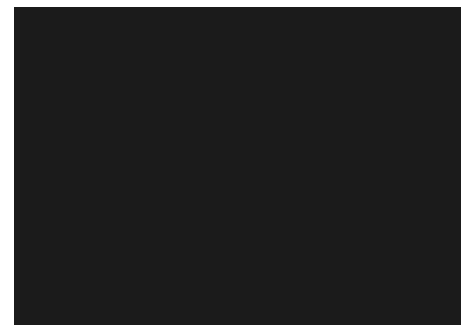
### 10 Riskiest Industries

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Every industry has a certain level of risk, but the success of an industry depends on how its operators manage their risk and adapt for the future. In turbulent times, like during the recession and slow recovery that has characterized the past five years, the companies that survive are the movers and shakers, restructuring their operations and

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identified as the riskiest, most are in flux and still adjusting to the changing market conditions that resulted from the recession. Although opportunities for growth do exist for each of the industries, the factors contributing to their high risk are expected to keep most in decline over the next five years. By looking closely at the developments that are expected to take place over the period, lenders will be able to target companies that are adapting to the changing market and position themselves to benefit now and in the future. The risk scores referenced are on a scale of one to nine, where one represents the lowest risk and nine represents the highest.

Industry	Risk Overall Score	Risk Level	2018 revenue (\$m)	2013-2018 CAGR
Recordable Media Manufacturing in the US	7.24	Very high	3166.6	-3.90%
Apparel Knitting Mills in the US	5.99	High	412	-3.10%
Fuel Dealers in the US	6.54	High	51285.4	2.20%
Leather Tanning & Finishing in the US	6.65	High	1664.8	-1.90%
Business Certification & IT Schools in the US	6.16	High	2083.2	-5.60%
Commercial Banking in the US	6.33	High	725000	7.40%
Gasoline & Petroleum Wholesaling	6.05		439532.4	2.50%

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This month,  
we caught  
up with Jose  
Martinez,  
Chicago

Market Lead



in the US		High		
Major Household Appliance Manufacturing in the US	6.25	High	17715.2	2.80%
Appliance Repair in the US	7.17	Very high	3402.5	-1.50%
Newspaper Publishing in the US	5.95	High	27687.5	-3.70%

## Recordable Media Manufacturing

*Risk Score 7.24*

Recordable media is becoming obsolete in the face of digital media formats and online streaming. Instead of purchasing CDs or DVDs, consumers are downloading or streaming movies, TV shows, music and software. Businesses are consolidating company IT services onto the internet, making cloud computing the likely future of business IT solutions. These new online services will reduce companies' need to purchase physical software, thereby undercutting industry revenue. During the next five years, the popularity of substitutes will continue to rise. As a result, **Recordable Media Manufacturing industry** revenue is expected fall at an average annual rate of 3.9% to \$3.2 billion in the five years to 2018.

Providing some light at the end of the tunnel is the film industry. Movie studios earn a significant profit on disc sales and, in turn, are working to popularize new formats. In particular, 3-D films require large data files that cannot be easily streamed through the internet. In conjunction, companies like Sony have gaming consoles with 3-D capabilities in the works. Consequently, industry operators will profit from improving disc sales, especially as demand for 3-D films increases over the next five years.

## Appliance Repair

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*Risk score 7.17*

Strong external competition has been forcing this industry into a decline over the past decade. The biggest threat is from appliance manufacturers and large retailers that offer warranties for repair services, which undercuts demand for industry services. Consumer preferences for reliable brand names, such as the Home Depot and Best Buy, tend to drive business away from independently owned specialty repair shops. In addition, technological advances are improving the lifespan of appliances, reducing the need for repairs. And as incomes rise in line with the improving economy, consumers will begin purchasing new appliances, which will further diminish repair demand. New technologies, such as built-in diagnostic tools, will allow consumers to fix minor problems on their own and go longer before requiring major repairs. Consequently, **Appliance Repair industry** revenue is expected to fall an annualized 1.5% to \$3.4 billion in the five years to 2018.

Some growth opportunities do exist for the industry, though. Prices for appliances are forecast to outpace disposable income growth, so some consumers will refrain from new appliance purchases and instead rely on repair services while income growth remains sluggish. As retail sales of new appliances inevitably grow over the next five years, the industry will benefit from an increasing stock of appliances that will need repairs in the future.

## **Leather Tanning & Finishing**

*Risk score: 6.65*

The primary factors affecting risk for US tanners are revenue volatility and high import activity. Low disposable incomes during the recession pushed consumers to reduce their spending, which flowed on as lower demand for leather goods. Demand from downstream industries, including **automobile** and **household furniture manufacturers**, fell as well, leading industry revenue to plummet 11.3% and 31.3% in 2008 and 2009, respectively.

Because automakers and household furniture manufacturers are key industry customers, the return to spending on these discretionary items has been benefiting the industry, starting with a 61.9% jump in

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2010. Rising disposable incomes over the period will encourage consumers to return to purchasing new cars and household furniture, which will boost demand for leather goods from these industries.

Nonetheless, competition from imports is high and increasing: By 2018, imports are expected to make up 83.3% of domestic demand. Tanners overseas have cheaper operating and labor expenses, which allows them to provide cheaper leather and tanning services. Over the next five years, US firms will increasingly relocate to lower-cost countries to be closer to downstream manufacturers, many of which have moved abroad as well. Consequently, revenue for the **Leather Tanning and Finishing industry** is anticipated to fall an annualized 1.9% to \$1.7 billion in the five years to 2018.

## **Fuel Dealers**

*Risk score 6.54*

Revenue volatility over the past five years has made this industry risky. Because the **Fuel Dealers industry** sells heating oil, propane and other fuels directly to end users, revenue depends on fuel prices, which have closely followed the wildly fluctuating prices of crude oil and natural gas. When world crude oil and natural gas prices plummeted 36.3% and 39.9%, respectively, during the recession in 2009, industry revenue followed suit and fell 14.5% for the year.

During the next five years, firms will face increasing competition from natural gas companies as investment into natural gas pipeline infrastructure rises. As this infrastructure becomes more widely available, customers are expected to switch from the industry's propane and heating oil products to natural gas. To combat this threat, operators will expand their geographic footprint to access new customers and retain existing ones. Luckily, as the economic recovery picks up during the next five years, consistently rising fuel prices will be a boon to operators. Consequently, revenue is projected to increase an annualized 2.2% to \$51.3 billion in the five years to 2018.

## **Commercial Banking**

*Risk score: 6.33*

Despite being a mature industry that provides services with wide market acceptance, high regulation and increasing external competition make the **Commercial Banking industry** a risky one. New regulation following the recession has increased industry oversight and raised operators' compliance costs. Recent legislation limits the fees banks can charge consumers and forces banks to hold higher capital reserves in case of defaults. Higher capital reserves then leaves banks with less money for lending, making credit more difficult for consumers to access. At the same time, reduced bank fees also impede banks' ability to grow profit.

Competition from nontraditional financiers is also rising. Large external competitors like Walmart are marketing prepaid debit cards and microloans to consumers, allowing an underserved market to participate in banking activities outside of the traditional banking realm. In addition, nonbank organizations such as commercial and manufacturing companies often offer financial services to their customers to facilitate their purchases.

During the next five years, the landscape for commercial banks is forecast to drastically improve, with revenue rising an annualized 7.4% to \$725.0 billion. Larger banks will use their wider array of service offerings to attract retail depositors, thereby helping boost industry revenue. In addition, banks will increasingly use new technology to attract Gen Y clients (i.e. consumers aged 30 and younger). This age group relies heavily on mobile technology to pay bills and make deposits. So companies with well-developed mobile platforms will likely retain more young adults, thereby ensuring future deposit growth and lending capabilities.

## **Major Household Appliance Manufacturing**

*Risk score 6.25*

The major drivers affecting the **Major Household Appliance Manufacturing industry's** risk are high input costs, such as those of steel and plastic, and rising imports. In the five years to 2018, world steel prices are projected to increase an annualized 1.8%, while the domestic price of plastic materials and resin is anticipated to rise an annualized 1.3%. Manufacturers have been increasing product prices in an attempt to keep pace with higher costs, but with consumer

demand and incomes still recovering from the recession, sales have been weak. Rising input prices have been encouraging operators to offshore manufacturing to countries with lower labor costs, which has caused import competition to rise. In the next five years, imports are forecast to rise an average 1.1% annually, eventually making up 47.5% of domestic demand by 2018.

In the next five years, a rebounding housing market will spur industry growth, with revenue rising an annualized 2.8% to \$17.7 billion by 2018. New energy-efficient products, such as smart appliances that activate when electricity is most abundant and least expensive, will help propel the industry's growth. These products are not yet on the market, but are expected to make their appearance during the period. As disposable incomes and the price of electricity continue to rise, consumers will demand these energy-efficient products, boosting industry revenue.

## **Business Certification & IT Schools**

### *Risk score 6.16*

This industry faces rising competition from junior colleges, trade schools and universities. Demand for industry schools has declined because more students are choosing degree programs to boost their chances in an increasingly competitive job market. Additionally, declining demand has caused operators to lower prices for courses, which has eaten into industry profit margins. To remain relevant and reduce costs, operators are offering online courses that allow students to attend classes remotely. Although these strategies will help profit improve moderately during the next five years, **Business Certification and IT Schools industry** revenue is expected to continue declining at an average annual rate of 5.6% to \$2.1 billion as competition from other educational institutions rises.

Schools that offer online classes attract more students by appealing to a broader demographic. In particular, growth opportunities exist for operators that provide training and online course for the medical professions. During the next five years, **business certification and IT schools** will expand their range of classes to include higher-growth industries.

## **Gasoline & Petroleum Wholesaling**

*Risk Score 6.05*

The **Gasoline and Petroleum Wholesaling industry's** revenue and risk level depend heavily on global crude oil prices: The recession-induced price declines contributed significantly to volatility and risk, with revenue falling 34.6% in 2009 as oil prices plummeted.

Although the volatile crude oil prices resulting from the recession are unlikely to recur, there is always the potential for natural disasters or political events that could impact prices. Protests and regime changes in the Middle East, which includes some of the most prolific oil-producing nations, may cause more spikes in oil prices. In addition, a legislative push for fuel efficiency, including higher miles per gallon required for cars and light trucks, will weaken domestic demand and slow the growth in the volume of petroleum products wholesalers sell.

Despite the risks involved, wholesalers have a vital role in the petroleum product supply chain. Slim profit margins and the already-established relationships many customers have with wholesalers make it not worthwhile for oil companies to set up their own wholesaling operations. In addition, some downstream industries lack the infrastructure to purchase petroleum products directly from manufacturers. Combined with recovering product prices, wholesalers' key role will help revenue grow at an annualized rate of 2.5% to \$439.5 billion in the five years to 2018.

## **Apparel Knitting Mills**

*Risk score: 5.99*

Very little knitting activity takes place in the United States, with most operators outsourcing labor-intensive production to countries with lower labor costs, which is the main contributor to the industry's high risk. Instead, domestic firms focus on designing and branding to earn profit. Because the majority of production takes place overseas, import competition is constantly rising. Consequently, **Apparel Knitting Mills industry** revenue is forecast to continue falling over the next five years at an annualized rate of 3.1% to \$412.0 million in 2018.

Nevertheless, there is room for growth for domestic operators. US mills that successfully switch to higher value-added activities will benefit from increasing revenue and profit. In particular, successful firms will carve out a niche in the market and fulfill rising demand for differentiated and high-quality knits as demand for apparel rebounds over the next five years. In addition, companies that can incorporate designing and marketing activities will be able to grab a larger piece of the pie.

## **Newspaper Publishing**

*Risk score 5.95*

Over the past decade, newspapers have been facing high and rising competition from other forms of media, particularly digital outlets. Publishers depend on business advertising expenditure for their funding, so because consumers prefer the real-time access to information that online news and social media provide, advertisers have less incentive to spend money on print campaigns. Also, online platforms are generally less expensive and allow advertisers to reach a wider audience and create targeted ads to reach a specific market.

Despite declining overall readership, newspapers tend to attract a more affluent demographic, making advertisers reluctant to desert the industry altogether. To slow the exodus of advertising dollars, publishers will increasingly implement paywall systems to raise revenue, as well as online and mobile platforms to increase accessibility and potentially boost readership. The New York Times Company recently rolled out a platform to incorporate newspapers with mobile devices like tablets. The company has also implemented a successful paywall that allows readers to access a certain number of free articles each month before requiring payment for more content. These online platforms will also allow advertisers to use newspapers as means to target a specific audience. Similar to the past five years, **Newspaper Publishing industry** revenue will continue to fall through 2018, albeit at a slower annualized rate of 3.7%, to \$27.7 billion.

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## **EXHIBIT 2**

# **Occupation Overview**

EMSI Q2 2015 Data Set

## **Contra Costa Community College District**



500 Court Street  
Martinez, California 94553  
925.229.1000

# Parameters

## Occupations

Code	Description
49-9031	Home Appliance Repairers

## Regions

Code	Description
6001	Alameda County, CA
6013	Contra Costa County, CA
6095	Solano County, CA

## Timeframe

2013 - 2020

## Datarun

2015.2 – QCEW Employees, Non-QCEW Employees, and Self-Employed

# Home Appliance Repairers in 3 Counties

Home Appliance Repairers (SOC 49-9031):

Repair, adjust, or install all types of electric or gas household appliances, such as refrigerators, washers, dryers, and ovens.

Sample of Reported Job Titles:

Appliance Technician

Washer Repairman

Vacuum Repairer

Service Technician

Service Manager

Repair Technician

Refrigerator Repairman

Appliance Service Technician

Household Appliance Installer

Electrical Appliance Servicer Apprentice

Related O\*NET Occupation:

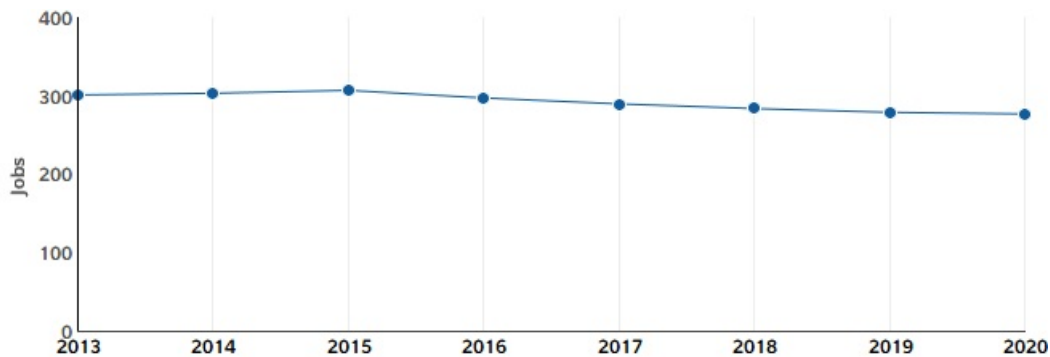
Home Appliance Repairers (49-9031.00)

## Occupation Summary for Home Appliance Repairers

<div>308</div> <div>Jobs (2015)</div> <div>17% <b>below</b> National average</div>	<div>-8.0%</div> <div>% Change (2013-2020)</div> <div>Nation: +1.4%</div>	<div>\$17.93/hr</div> <div>Median Hourly Earnings</div> <div>Nation: \$16.28/hr</div>
------------------------------------------------------------------------------------	---------------------------------------------------------------------------	---------------------------------------------------------------------------------------

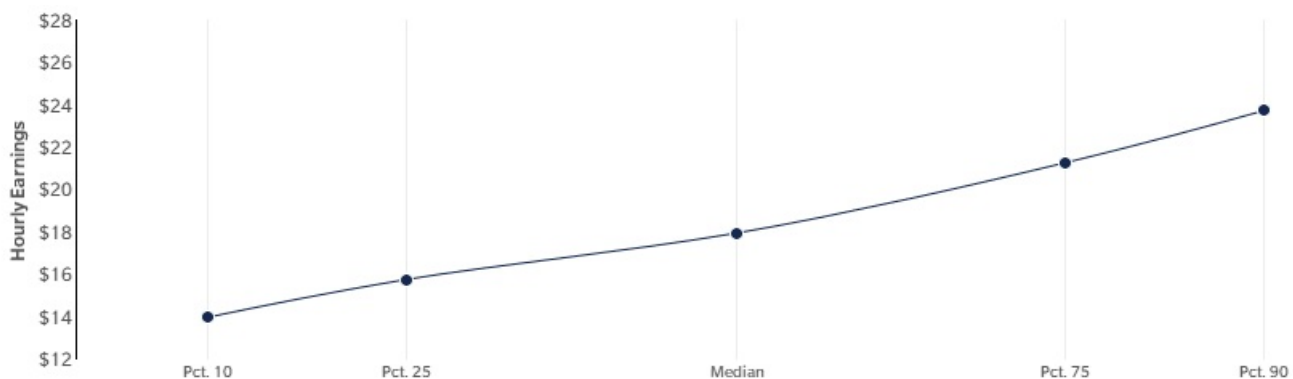
## Growth for Home Appliance Repairers (49-9031)

<b>302</b> 2013 Jobs	<b>277</b> 2020 Jobs	<b>-24</b> Change (2013-2020)	<b>-8.0%</b> % Change (2013-2020)
-------------------------	-------------------------	----------------------------------	--------------------------------------

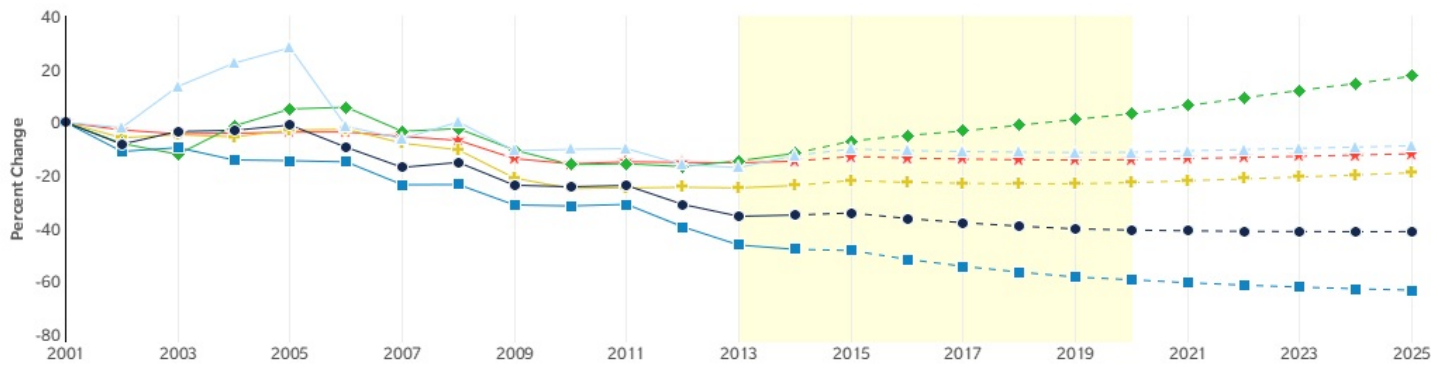


## Percentile Earnings for Home Appliance Repairers (49-9031)

<b>\$15.74/hr</b> 25th Percentile Earnings	<b>\$17.93/hr</b> Median Earnings	<b>\$21.27/hr</b> 75th Percentile Earnings
-----------------------------------------------	--------------------------------------	-----------------------------------------------



## Regional Trends




Region	2013 Jobs	2020 Jobs	Change	% Change
● Region	302	277	-25	-8.3%
■ Alameda County, CA	160	121	-39	-24.4%
▲ Contra Costa County, CA	106	114	8	7.5%
◆ Solano County, CA	35	43	8	22.9%
+ California	3,982	4,086	104	2.6%
★ United States	41,384	41,980	596	1.4%

## Regional Breakdown



County	2020 Jobs
Alameda County, CA	121
Contra Costa County, CA	114
Solano County, CA	43

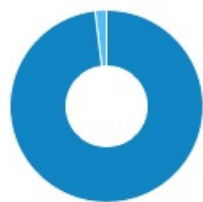
## Job Postings Summary

<div>24</div> <div>Unique Postings (Jul 2015)</div> <div>94 Total Postings</div>	<div>4 : 1</div> <div>Posting Intensity (Jul 2015)</div> <div><div>Regional Average: 5 : 1</div></div>
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There were 94 total job postings for *Home Appliance Repairers* in July 2015, of which 24 were unique. These numbers give us a Posting Intensity of 4-to-1, meaning that for every 4 postings there is 1 unique job posting.

This is lower than the Posting Intensity for all other occupations and companies in the region (5-to-1), indicating that companies may not be trying as hard to hire this position.

# Occupation Gender Breakdown



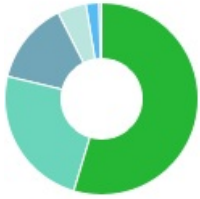
Gender	2015 Jobs	2015 Percent	
Males	302	98.1%	
Females	6	1.9%	

# Occupation Age Breakdown



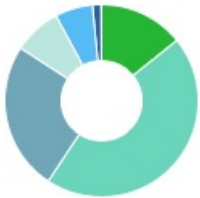
Age	2015 Jobs	2015 Percent	
14-18	1	0.2%	
19-24	18	5.8%	
25-34	54	17.6%	
35-44	85	27.7%	
45-54	76	24.8%	
55-64	56	18.3%	
65+	17	5.6%	

## Occupation Race/Ethnicity Breakdown



Race/Ethnicity	2015 Jobs	2015 Percent	
White	168	54.6%	
Hispanic or Latino	74	24.1%	
Asian	43	13.8%	
Black or African American	15	4.8%	
Two or More Races	7	2.1%	
Native Hawaiian or Other Pacific Islander	1	0.3%	
American Indian or Alaska Native	1	0.2%	

## National Educational Attainment



Education Level	2015 Percent	
Less than high school diploma	14.2%	
High school diploma or equivalent	45.0%	
Some college, no degree	24.9%	
Associate's degree	8.0%	
Bachelor's degree	6.3%	
Master's degree	1.4%	
Doctoral or professional degree	0.1%	



## Occupational Programs

<div>2</div> <div>Programs (2014)</div>		<div>11</div> <div>Completions (2014)</div>	<div>15</div> <div>Openings (2014)</div>
CIP Code	Program	Completions (2014)	
47.0106	Appliance Installation and Repair Technology/Technician	11	
19.0605	Home Furnishings and Equipment Installers	0	

## Industries Employing Home Appliance Repairers

Industry	Occupation Jobs in Industry (2015)	% of Occupation in Industry (2015)	% of Total Jobs in Industry (2015)
Electronics Stores	83	26.9%	1.7%
Other Personal and Household Goods Repair and Maintenance	75	24.4%	9.4%
Appliance Repair and Maintenance	28	9.0%	9.9%
Natural Gas Distribution	24	7.8%	0.5%
Reupholstery and Furniture Repair	13	4.3%	10.6%

# Appendix A - Data Sources and Calculations

## Occupation Data

EMSI occupation employment data are based on final EMSI industry data and final EMSI staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level EMSI earnings by industry.

## Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

## Job Postings Data

In partnership with EMSI's parent company CareerBuilder and other third party aggregators, EMSI collects its job postings data by scraping approximately 30,000 websites. EMSI then cleans the data and applies a two-step deduplication process to present an estimate of total unique postings. Normalization of data fields is performed using machine-learning technologies, which leverage not just job postings data but also CareerBuilder's extensive database of résumés and profiles.

## Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## Completers Data

The completers data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## Staffing Patterns Data

The staffing pattern data in this report are compiled from several sources using a specialized process. For QCEW and Non-QCEW Employees classes of worker, sources include Occupational Employment Statistics, the National Industry-Occupation Employment Matrix, and the American Community Survey. For the Self-Employed and Extended Proprietors classes of worker, the primary source is the American Community Survey, with a small amount of information from Occupational Employment Statistics.

## Industry Data

EMSI industry data have various sources depending on the class of worker. (1) For QCEW Employees, EMSI primarily uses the QCEW (Quarterly Census of Employment and Wages), with supplemental estimates from County Business Patterns and Current Employment Statistics. (2) Non-QCEW employees data are based on a number of sources including QCEW, Current Employment Statistics, County Business Patterns, BEA State and Local Personal Income reports, the National Industry-Occupation Employment Matrix (NIOEM), the American Community Survey, and Railroad Retirement Board statistics. (3) Self-Employed and Extended Proprietor classes of worker data are primarily based on the American Community Survey, Nonemployer Statistics, and BEA State and Local Personal Income Reports. Projections for QCEW and Non-QCEW Employees are informed by NIOEM and long-term industry projections published by individual states.

## State Data Sources

This report uses state data from the following agencies: California Labor Market Information Department

## **EXHIBIT 3**

# Occupation Overview

Emsi Q4 2016 Data Set

November 2016

## **Contra Costa Community College District**

LOS MEDANOS  
COLLEGE

500 Court Street  
Martinez, California 94553  
925.229.1000

# Parameters

## Occupations

Code	Description
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers
49-9031	Home Appliance Repairers
51-9082	Medical Appliance Technicians

## Regions

Code	Description
6001	Alameda County, CA
6013	Contra Costa County, CA
6095	Solano County, CA

## Timeframe

2016 - 2020

## Datarun

2016.4 – QCEW Employees, Non-QCEW Employees, and Self-Employed

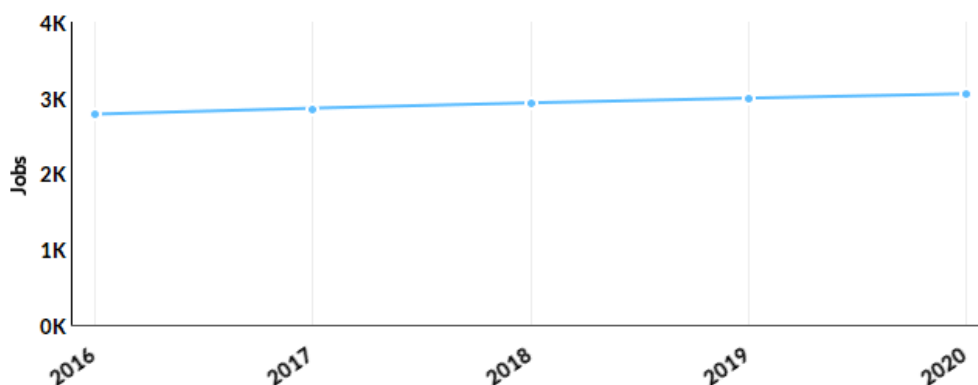
## 3 Occupations in 3 Counties

### Occupation Summary for 3 Occupations

<b>2,781</b> Jobs (2016) 19% <b>below</b> National average	<b>+9.7%</b> % Change (2016-2020) Nation: <b>+4.4%</b>	<b>\$23.37/hr</b> Median Hourly Earnings Nation: \$20.79/hr
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### Growth

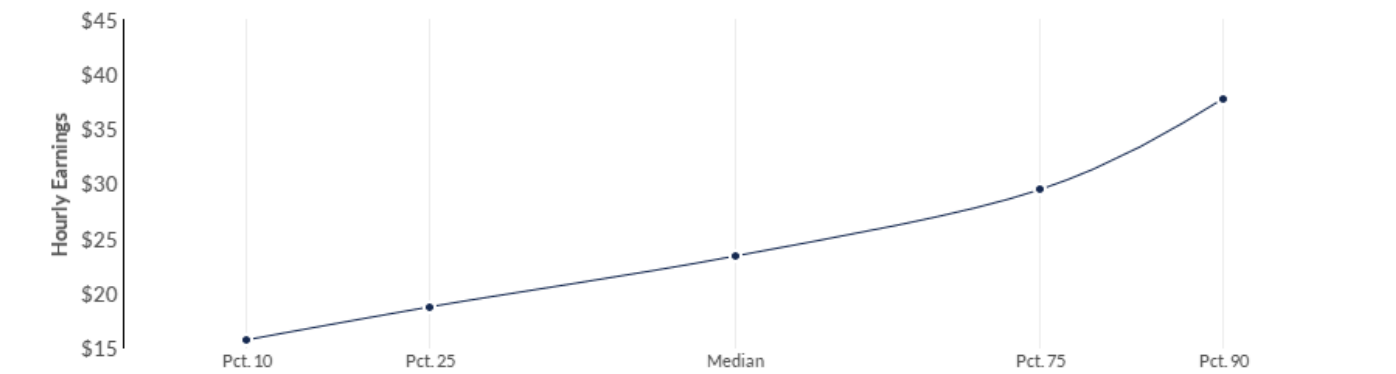
<b>2,781</b> 2016 Jobs	<b>3,050</b> 2020 Jobs	<b>269</b> Change (2016-2020)	<b>9.7%</b> % Change (2016-2020)
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Occupation	2016 Jobs	2020 Jobs	Change	% Change
Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021)	2,180	2,476	296	14%
Home Appliance Repairers (49-9031)	404	365	-39	-10%
Medical Appliance Technicians (51-9082)	197	209	12	6%

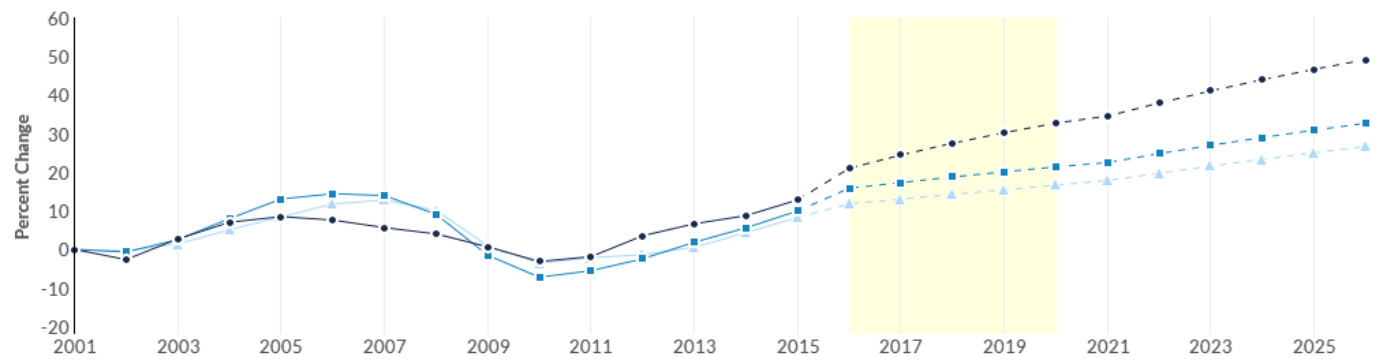
# Percentile Earnings

<div>\$18.72/hr</div> <div>25th Percentile Earnings</div>	<div>\$23.37/hr</div> <div>Median Earnings</div>	<div>\$29.47/hr</div> <div>75th Percentile Earnings</div>
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Occupation	25th Percentile Earnings	Median Earnings	75th Percentile Earnings
Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021)	\$19.64	\$24.73	\$30.95
Home Appliance Repairers (49-9031)	\$15.96	\$18.16	\$21.68
Medical Appliance Technicians (51-9082)	\$14.69	\$19.81	\$29.89

# Regional Trends



Region	2016 Jobs	2020 Jobs	Change	% Change
Region	2,781	3,050	269	9.7%
California	35,378	37,071	1,693	4.8%
United States	387,353	404,209	16,856	4.4%




## Regional Breakdown



County	2020 Jobs
Alameda County, CA	1,867
Contra Costa County, CA	828
Solano County, CA	356

## Job Postings Summary

<div>865</div> <div>Unique Postings (Jan 2016 - Sep 2016)</div> <div>4,668 Total Postings</div>	<div>5 : 1</div> <div>Posting Intensity (Jan 2016 - Sep 2016)</div> <div> Regional Average: 7 : 1</div>
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There were 4,668 total job postings for your selection from January 2016 to September 2016, of which 865 were unique. These numbers give us a Posting Intensity of 5-to-1, meaning that for every 5 postings there is 1 unique job posting.

This is lower than the Posting Intensity for all other occupations and companies in the region (7-to-1), indicating that they may not be trying as hard to hire for this position.

## Job Postings vs. Hires

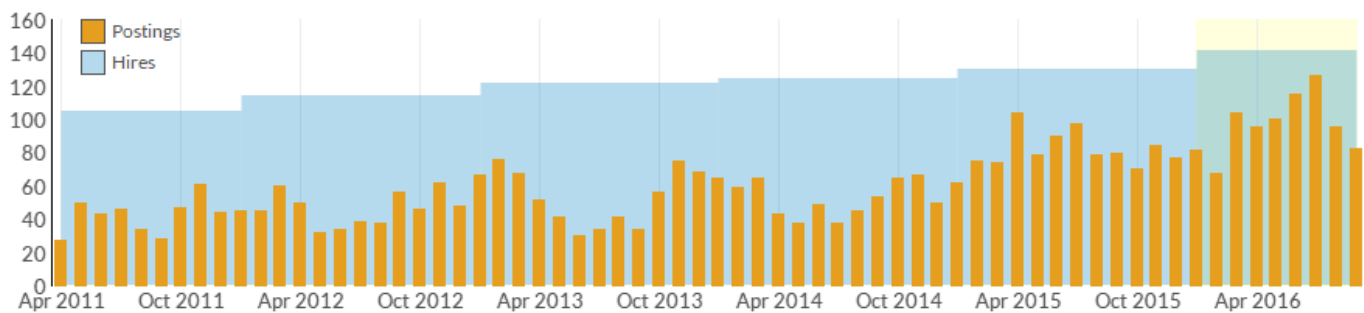
96

Avg. Monthly Postings (Jan 2016 - Sep 2016)

142

Avg. Monthly Hires (Jan 2016 - Sep 2016)

In an average month, there were 96 unique job postings for 3 Occupations, and 142 actually hired. This means there was approximately 1 hire for 3 Occupations for every 1 unique job posting.



Occupation	Avg Monthly Postings (Jan 2016 - Sep 2016)	Avg Monthly Hires (Jan 2016 - Sep 2016)
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	55	120
Home Appliance Repairers	29	17
Medical Appliance Technicians	12	4

## Occupation Gender Breakdown



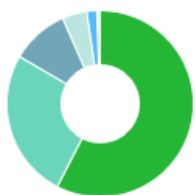
Gender	2016 Jobs	2016 Percent
● Males	2,648	95.2%
● Females	132	4.8%

## Occupation Age Breakdown



Age	2016 Jobs	2016 Percent	
14-18	6	0.2%	I
19-24	161	5.8%	■
25-34	658	23.7%	■
35-44	740	26.6%	■
45-54	703	25.3%	■
55-64	420	15.1%	■
65+	94	3.4%	■

## Occupation Race/Ethnicity Breakdown



Race/Ethnicity	2016 Jobs	2016 Percent	
White	1,601	57.6%	■
Hispanic or Latino	718	25.8%	■
Asian	278	10.0%	■
Black or African American	119	4.3%	■
Two or More Races	49	1.7%	■
American Indian or Alaska Native	9	0.3%	I
Native Hawaiian or Other Pacific Islander	8	0.3%	I

## Occupational Programs

<div>4</div> <div>Programs (2015)</div>		<div>82</div> <div>Completions (2015)</div>	<div>238</div> <div>Openings (2015)</div>
CIP Code	Program	Completions (2015)	
15.0501	Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/Technician	39	
47.0106	Appliance Installation and Repair Technology/Technician	27	
47.0201	Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician	16	
19.0605	Home Furnishings and Equipment Installers	0	

## Industries Employing 3 Occupations

Industry	Occupation Group Jobs in Industry (2016)	% of Occupation Group in Industry (2016)	% of Total Jobs in Industry (2016)
Plumbing, Heating, and Air-Conditioning Contractors	1,533	55.1%	11.8%
Electronics Stores	109	3.9%	2.4%
Other Personal and Household Goods Repair and Maintenance	94	3.4%	11.9%
Surgical and Medical Instrument Manufacturing	76	2.7%	2.5%
Residential Remodelers	64	2.3%	0.7%

# Appendix A - Data Sources and Calculations

## Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

## Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level Emsi earnings by industry.

## CareerBuilder/Emsi Job Postings

Job postings are collected from various sources and processed/enriched by Careerbuilder to provide information such as standardized company name, occupation, skills, and geography. Emsi performs additional filtering and processing to improve compatibility with Emsi data.

## Completers Data

The completers data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## State Data Sources

This report uses state data from the following agencies: California Labor Market Information Department

## **EXHIBIT 4**

# Occupation Overview

Emsi Q3 2017 Data Set

November 2017

## Contra Costa Community College District



# Parameters

## Occupations

Code	Description
49-9031	Home Appliance Repairers
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers

## Regions

Code	Description
6001	Alameda County, CA
6013	Contra Costa County, CA
6095	Solano County, CA

## Timeframe

2016 - 2020

## Datarun

2017.3 – QCEW Employees, Non-QCEW Employees, and Self-Employed

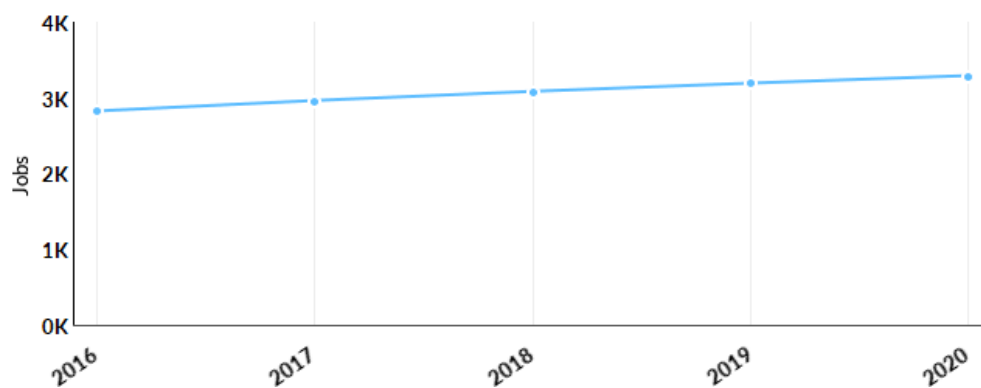
## 2 Installation, Maintenance, and Repair Occupations in 3 California Counties

### Occupation Summary for 2 Installation, Maintenance, and Repair Occupations

2,823 Jobs (2016) 17% <b>below</b> National average	+16.5% % Change (2016-2020) Nation: +6.3%	\$22.18/hr Median Hourly Earnings Nation: \$20.42/hr
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### Growth

2,823 2016 Jobs	3,289 2020 Jobs	466 Change (2016-2020)	16.5% % Change (2016-2020)
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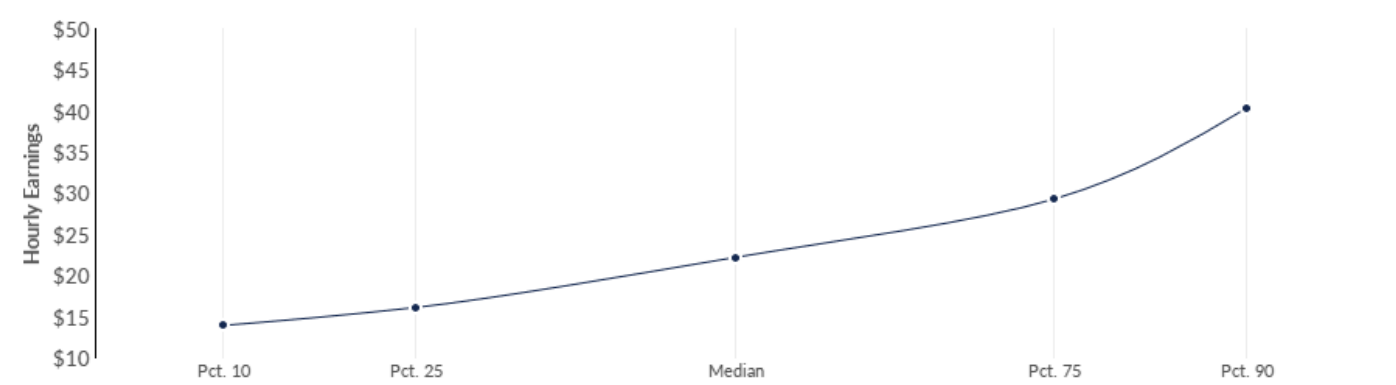


Occupation	2016 Jobs	2020 Jobs	Change	% Change
Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021)	2,280	2,779	499	22%
Home Appliance Repairers (49-9031)	542	510	-32	-6%



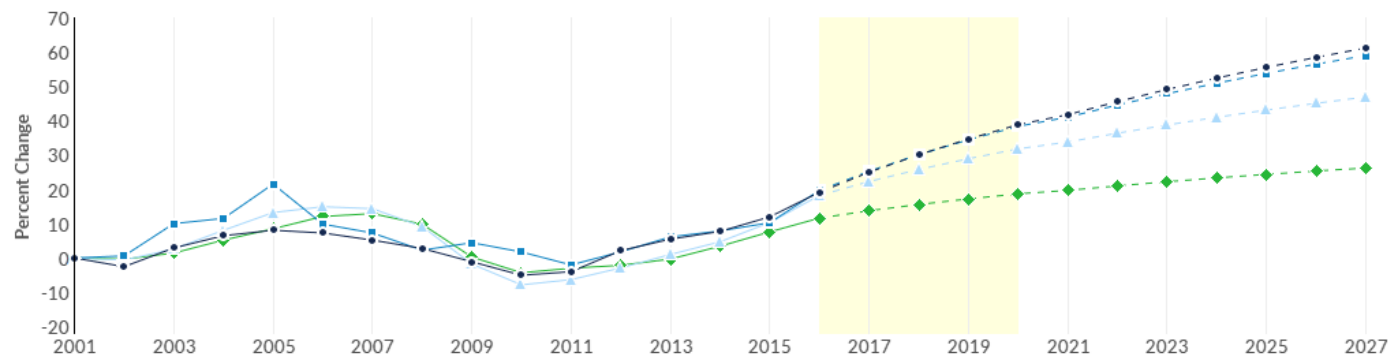
# Percentile Earnings

<div>\$16.09/hr</div> <div>25th Percentile Earnings</div>	<div>\$22.18/hr</div> <div>Median Earnings</div>	<div>\$29.29/hr</div> <div>75th Percentile Earnings</div>
-----------------------------------------------------------	--------------------------------------------------	-----------------------------------------------------------



Occupation	25th Percentile Earnings	Median Earnings	75th Percentile Earnings
Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021)	\$16.40	\$22.79	\$31.00
Home Appliance Repairers (49-9031)	\$15.40	\$19.65	\$25.74

Regional Trends




Region	2016 Jobs	2020 Jobs	Change	% Change
Region	2,823	3,289	466	16.5%
East County	209	241	32	15.3%
California	35,701	39,800	4,099	11.5%
United States	378,551	402,503	23,952	6.3%

## Regional Breakdown



County	2020 Jobs
Alameda County, CA	1,915
Contra Costa County, CA	937
Solano County, CA	438

## Job Postings Summary

<div>1,702</div> <div>Unique Postings (Jan 2016 - Sep 2017)</div> <div>10,498 Total Postings</div>	<div>6 : 1</div> <div>Posting Intensity (Jan 2016 - Sep 2017)</div> <div></div> <div>Regional Average: 7 : 1</div>
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There were 10,498 total job postings for your selection from January 2016 to September 2017, of which 1,702 were unique. These numbers give us a Posting Intensity of 6-to-1, meaning that for every 6 postings there is 1 unique job posting.

This is lower than the Posting Intensity for all other occupations and companies in the region (7-to-1), indicating that they may not be trying as hard to hire for this position.

## Job Postings vs. Hires

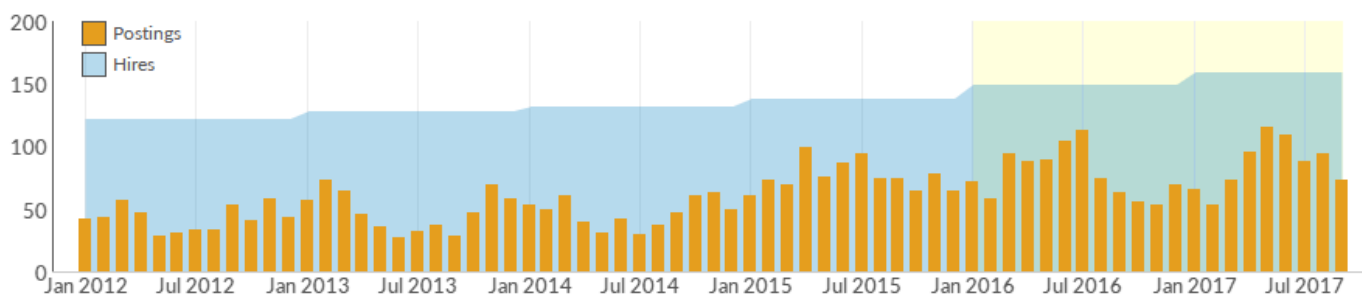
81

Avg. Monthly Postings (Jan 2016 - Sep 2017)

153

Avg. Monthly Hires (Jan 2016 - Sep 2017)

In an average month, there were 81 unique job postings for 2 *Occupations*, and 153 actually hired. This means there were approximately 2 hires for 2 *Occupations* for every 1 unique job posting.



Occupation	Avg Monthly Postings (Jan 2016 - Sep 2017)	Avg Monthly Hires (Jan 2016 - Sep 2017)
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	59	130
Home Appliance Repairers	22	23

## Occupation Gender Breakdown



Gender	2016 Jobs	2016 Percent
● Males	2,779	98.5%
● Females	44	1.5%

## Occupation Age Breakdown



Age	2016 Jobs	2016 Percent	
14-18	7	0.2%	I
19-24	173	6.1%	■
25-34	668	23.7%	■
35-44	753	26.7%	■
45-54	700	24.8%	■
55-64	426	15.1%	■
65+	96	3.4%	■

## Occupation Race/Ethnicity Breakdown



Race/Ethnicity	2016 Jobs	2016 Percent	
White	1,637	58.0%	■
Hispanic or Latino	783	27.7%	■
Asian	212	7.5%	■
Black or African American	123	4.4%	■
Two or More Races	51	1.8%	■
American Indian or Alaska Native	10	0.4%	I
Native Hawaiian or Other Pacific Islander	7	0.3%	I

## Occupational Programs

4 Programs (2016)		71 Completions (2016)	415 Openings (2016)
CIP Code	Program	Completions (2016)	
15.0501	Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/Technician	38	
47.0106	Appliance Installation and Repair Technology/Technician	17	
47.0201	Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician	16	
19.0605	Home Furnishings and Equipment Installers	0	

## Industries Employing 2 Installation, Maintenance, and Repair Occupations

Industry	Occupation Group Jobs in Industry (2016)	% of Occupation Group in Industry (2016)	% of Total Jobs in Industry (2016)
Plumbing, Heating, and Air-Conditioning Contractors	1,644	58.2%	12.1%
Electronics Stores	157	5.6%	3.2%
Other Personal and Household Goods Repair and Maintenance	120	4.2%	14.3%
Natural Gas Distribution	83	2.9%	1.4%
Residential Remodelers	67	2.4%	0.8%

# Appendix A - Data Sources and Calculations

## Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

## Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level Emsi earnings by industry.

## CareerBuilder/Emsi Job Postings

Job postings are collected from various sources and processed/enriched by Careerbuilder to provide information such as standardized company name, occupation, skills, and geography. Emsi performs additional filtering and processing to improve compatibility with Emsi data.

## Completers Data

The completers data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## State Data Sources

This report uses state data from the following agencies: California Labor Market Information Department

## **EXHIBIT 5**

### **Projected Employment for Home Appliance Repairers in CALIFORNIA**

<b>National</b>	<b>Employment</b>		<b>Percent Change</b>	<b>Projected Annual Job Openings*</b>
	<b>2016</b>	<b>2026</b>		
United States	46,600	44,700	-4%	4,000

<b>State</b>	<b>Employment</b>		<b>Percent Change</b>	<b>Projected Annual Job Openings*</b>
	<b>2016</b>	<b>2026</b>		
California	4,200	4,200	+0%	390



**California Community Colleges Chancellor's Office**  
**Fall 1992 - Course Details Report**

**EXHIBIT 6**

District	College	Course ID	Control Number	Course Title	Sections Count	TOP Code	Maximum Units	Minimum Units	Term
Contra Costa CCD	Diablo Valley	REFRG 130	CCC000024285	REFRIGERATION THEORY I	1	Appliance Repair-093510	03.00	03.00	Fall 1992
Contra Costa CCD	Contra Costa	REFRG 224	CCC000028926	RESISTANCE HEATING EQUIPMENT AND MICROWAVE	1	Appliance Repair-093510	03.00	03.00	Fall 1992
Contra Costa CCD	Contra Costa	REFRG 121	CCC000031454	REFRIGERATION LABORATORY	1	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Diablo Valley	REFRG 132	CCC000118445	BASIC REFRIGERATION LABORATORY-132	1	Appliance Repair-093510	01.00	01.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 20	CCC000154659	ELECTRICAL APPLIANCE SHOP PRACTICE	1	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 46	CCC000180317	PRINCIPLES AND REPAIR OF MICROWAVE OVENS	1	Appliance Repair-093510	00.50	00.50	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 36	CCC000225933	APPLIANCE AND REFRIGERATION SHOP PRACTICE ADVANCED	2	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 35	CCC000225936	APPLIANCE SHOP PRACTICE INTERMEDIATE	2	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 41	CCC000227996	"GAS, ELEC & REFRIG APPLI SHOP PRAC-ADV"	1	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 40	CCC000236622	"GAS, ELEC & REFRIG APPLI SHOP PRAC-INT"	2	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Contra Costa	REFRG 122	CCC000261184	MAJOR ELECTRICAL APPLIANCES	1	Appliance Repair-093510	03.00	03.00	Fall 1992
Contra Costa CCD	Contra Costa	REFRG 221	CCC000266014	ADVANCED REFRIGERATION AND GAS FIRED EQUIPMENT	1	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Contra Costa	REFRG 225	CCC000266111	ADVANCED HEATING EQUIPMENT AND MICROWAVE	1	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Contra Costa	REFRG 120	CCC000267153	BASIC REFRIGERATION	1	Appliance Repair-093510	03.00	03.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 26	CCC000287806	REFRIGERATION II	1	Appliance Repair-093510	04.00	04.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 70	CCC000299011	INDUSTRIAL REFRIGERATION	1	Appliance Repair-093510	04.00	04.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 30	CCC000308227	REFRIGERATION SHOP PRACTICE	1	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 16	CCC000324883	ELECTRICAL APPLIANCES II	1	Appliance Repair-093510	04.00	04.00	Fall 1992
San Francisco CCD	San Francisco Ctrs	TIRT 9667	CCC000349023	TV SERVICE/REPAIR-ADVANCED+VCR	1	Appliance Repair-093510	00.00	00.00	Fall 1992
San Francisco CCD	San Francisco Ctrs	TIRT 9666	CCC000379724	TV SERVICE/REPAIR - ADVANCED AND VCR	1	Appliance Repair-093510	00.00	00.00	Fall 1992
Santa Barbara CCD	Santa Barbara Cont	909151	CCC000396308	VCR MAINTENANCE AND TROUBLESHOOTING	1	Appliance Repair-093510	00.00	00.00	Fall 1992
Southwestern CCD	Southwestern	AMR 15	CCC000004900	ELECTROMECHANICAL SERVOCONTROL	1	Appliance Repair-093510	03.00	03.00	Fall 1992
Southwestern CCD	Southwestern	AMR 293	CCC000077839	AMR WORK EXPERIENCE IV	2	Appliance Repair-093510	04.00	01.00	Fall 1992
Southwestern CCD	Southwestern	AMR 292	CCC000091416	AMR WORK EXPERIENCE III	2	Appliance Repair-093510	04.00	01.00	Fall 1992
Southwestern CCD	Southwestern	AMR 291	CCC000106102	AMR WORK EXPERIENCE II	2	Appliance Repair-093510	04.00	01.00	Fall 1992
Southwestern CCD	Southwestern	AMR 5	CCC000179990	PRIN ELECTRICITY & ELECTRICAL CIRCUITS	1	Appliance Repair-093510	04.00	04.00	Fall 1992
Southwestern CCD	Southwestern	AMR 290	CCC000183897	AMR WORK EXPERIENCE I	2	Appliance Repair-093510	04.00	01.00	Fall 1992
Southwestern CCD	Southwestern	AMR 60	CCC000212163	REFR SYS ASSEMBLED MAINT	1	Appliance Repair-093510	03.00	03.00	Fall 1992
Southwestern CCD	Southwestern	AMR 70	CCC000299034	AIR CON ASSEM & MAIN	1	Appliance Repair-093510	03.00	03.00	Fall 1992

**California Community Colleges Chancellor's Office**  
**Fall 2002 - Course Details Report**

District	College	Course ID	Control Number	Course Title	Sections Count	TOP Code	Maximum Units	Minimum Units	Term
Contra Costa CCD	Contra Costa	REFRG-121	CCC000031454	REFRIGERATION LABORATORY	1	Appliance Repair-093510	05.00	01.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-020	CCC000154659	ELECTRICAL APPLIANCE SHOP PRACTICE	1	Appliance Repair-093510	05.00	01.00	Fall 2002
Contra Costa CCD	Los Medanos	REFRG-909	CCC000179829	BASIC REFRIGERATION TECH 1C ELEC. CNTRL	1	Appliance Repair-093510	02.00	02.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-046	CCC000180317	PRINCIPLES AND REPAIR OF MICROWAVE OVENS	1	Appliance Repair-093510	00.50	00.50	Fall 2002
Contra Costa CCD	Los Medanos	REFRG-908	CCC000190612	BASIC HVAC TECH 2D RESDNTL TEST & RPR	1	Appliance Repair-093510	01.50	01.50	Fall 2002
Contra Costa CCD	Los Medanos	REFRG-907	CCC000199939	BASIC HVAC TECH 2C HEAT PUMP	1	Appliance Repair-093510	02.00	02.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-036	CCC000225933	APPLIANCE AND REFRIGERATION SHOP PRACTICE ADVANCED	2	Appliance Repair-093510	05.00	01.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-035	CCC000225936	APPLIANCE SHOP PRACTICE INTERMEDIATE	2	Appliance Repair-093510	05.00	01.00	Fall 2002
Contra Costa CCD	Contra Costa	REFRG-221	CCC000266014	ADVANCED REFRIGERATION AND GAS FIRED EQUIPMENT	1	Appliance Repair-093510	05.00	01.00	Fall 2002
Contra Costa CCD	Contra Costa	REFRG-120	CCC000267153	BASIC REFRIGERATION	1	Appliance Repair-093510	03.00	03.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-024	CCC000306464	ADVANCED REFRIGERATION TECH I	1	Appliance Repair-093510	03.00	03.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-030	CCC000308227	REFRIGERATION SHOP PRACTICE	1	Appliance Repair-093510	05.00	01.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-016	CCC000324883	ELECTRICAL APPLIANCES II	1	Appliance Repair-093510	04.00	04.00	Fall 2002
San Francisco CCD	San Francisco Ctrs	TIRT9667	CCC000349023	TV SERVICE/REPAIR-ADVANCED+VCR	1	Appliance Repair-093510	00.00	00.00	Fall 2002
San Francisco CCD	San Francisco Ctrs	TIRT9666	CCC000379724	TV SERVICE/REPAIR - ADVANCED AND VCR	1	Appliance Repair-093510	00.00	00.00	Fall 2002
Santa Barbara CCD	Santa Barbara Cont	909332	CCC000401505	JUST FIX IT	1	Appliance Repair-093510	00.00	00.00	Fall 2002

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**California Community Colleges Chancellor's Office**  
**Fall 2008 - Course Details Report**

District	College	Course ID	Control Number	Course Title	Sections Count	TOP Code	Maximum Units	Minimum Units	Term
Contra Costa CCD	Los Medanos	APPLI-020	CCC000154659	Electrical Appliance Shop Practice	1	Appliance Repair-093510	05.00	01.00	Fall 2008
Contra Costa CCD	Los Medanos	APPLI-046	CCC000180317	Principles and Repair of Microwave Ovens	1	Appliance Repair-093510	00.50	00.50	Fall 2008
Contra Costa CCD	Los Medanos	APPLI-036	CCC000225933	Appliance and Refrigeration Shop Practice Advanced	2	Appliance Repair-093510	05.00	01.00	Fall 2008
Contra Costa CCD	Los Medanos	APPLI-035	CCC000225936	Appliance Shop Practice-Intermediate	3	Appliance Repair-093510	05.00	01.00	Fall 2008
Contra Costa CCD	Los Medanos	APPLI-024	CCC000306464	Advanced Refrigeration Tech I	1	Appliance Repair-093510	03.00	03.00	Fall 2008
Contra Costa CCD	Los Medanos	APPLI-030	CCC000308227	Refrigeration Shop Practice	1	Appliance Repair-093510	05.00	01.00	Fall 2008
Contra Costa CCD	Los Medanos	APPLI-016	CCC000324883	Electrical Appliance II	1	Appliance Repair-093510	04.00	04.00	Fall 2008

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**California Community Colleges Chancellor's Office**  
**Fall 2002 - Course Details Report**

District	College	Course ID	Control Number	Course Title	Sections Count	TOP Code	Maximum Units	Minimum Units	Term
Contra Costa CCD	Contra Costa	REFRG-121	CCC000031454	REFRIGERATION LABORATORY	1	Appliance Repair-093510	05.00	01.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-020	CCC000154659	ELECTRICAL APPLIANCE SHOP PRACTICE	1	Appliance Repair-093510	05.00	01.00	Fall 2002
Contra Costa CCD	Los Medanos	REFRG-909	CCC000179829	BASIC REFRIGERATION TECH 1C ELEC. CNTRL	1	Appliance Repair-093510	02.00	02.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-046	CCC000180317	PRINCIPLES AND REPAIR OF MICROWAVE OVENS	1	Appliance Repair-093510	00.50	00.50	Fall 2002
Contra Costa CCD	Los Medanos	REFRG-908	CCC000190612	BASIC HVAC TECH 2D RESDNTL TEST & RPR	1	Appliance Repair-093510	01.50	01.50	Fall 2002
Contra Costa CCD	Los Medanos	REFRG-907	CCC000199939	BASIC HVAC TECH 2C HEAT PUMP	1	Appliance Repair-093510	02.00	02.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-036	CCC000225933	APPLIANCE AND REFRIGERATION SHOP PRACTICE ADVANCED	2	Appliance Repair-093510	05.00	01.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-035	CCC000225936	APPLIANCE SHOP PRACTICE INTERMEDIATE	2	Appliance Repair-093510	05.00	01.00	Fall 2002
Contra Costa CCD	Contra Costa	REFRG-221	CCC000266014	ADVANCED REFRIGERATION AND GAS FIRED EQUIPMENT	1	Appliance Repair-093510	05.00	01.00	Fall 2002
Contra Costa CCD	Contra Costa	REFRG-120	CCC000267153	BASIC REFRIGERATION	1	Appliance Repair-093510	03.00	03.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-024	CCC000306464	ADVANCED REFRIGERATION TECH I	1	Appliance Repair-093510	03.00	03.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-030	CCC000308227	REFRIGERATION SHOP PRACTICE	1	Appliance Repair-093510	05.00	01.00	Fall 2002
Contra Costa CCD	Los Medanos	APPLI-016	CCC000324883	ELECTRICAL APPLIANCES II	1	Appliance Repair-093510	04.00	04.00	Fall 2002
San Francisco CCD	San Francisco Ctrs	TIRT9667	CCC000349023	TV SERVICE/REPAIR-ADVANCED+VCR	1	Appliance Repair-093510	00.00	00.00	Fall 2002
San Francisco CCD	San Francisco Ctrs	TIRT9666	CCC000379724	TV SERVICE/REPAIR - ADVANCED AND VCR	1	Appliance Repair-093510	00.00	00.00	Fall 2002
Santa Barbara CCD	Santa Barbara Cont	909332	CCC000401505	JUST FIX IT	1	Appliance Repair-093510	00.00	00.00	Fall 2002

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**California Community Colleges Chancellor's Office**  
**Fall 2008 - Course Details Report**

District	College	Course ID	Control Number	Course Title	Sections Count	TOP Code	Maximum Units	Minimum Units	Term
Contra Costa CCD	Los Medanos	APPLI-020	CCC000154659	Electrical Appliance Shop Practice	1	Appliance Repair-093510	05.00	01.00	Fall 2008
Contra Costa CCD	Los Medanos	APPLI-046	CCC000180317	Principles and Repair of Microwave Ovens	1	Appliance Repair-093510	00.50	00.50	Fall 2008
Contra Costa CCD	Los Medanos	APPLI-036	CCC000225933	Appliance and Refrigeration Shop Practice Advanced	2	Appliance Repair-093510	05.00	01.00	Fall 2008
Contra Costa CCD	Los Medanos	APPLI-035	CCC000225936	Appliance Shop Practice-Intermediate	3	Appliance Repair-093510	05.00	01.00	Fall 2008
Contra Costa CCD	Los Medanos	APPLI-024	CCC000306464	Advanced Refrigeration Tech I	1	Appliance Repair-093510	03.00	03.00	Fall 2008
Contra Costa CCD	Los Medanos	APPLI-030	CCC000308227	Refrigeration Shop Practice	1	Appliance Repair-093510	05.00	01.00	Fall 2008
Contra Costa CCD	Los Medanos	APPLI-016	CCC000324883	Electrical Appliance II	1	Appliance Repair-093510	04.00	04.00	Fall 2008

Report Run Date As Of : 9/4/2018 9:17:03 AM

**California Community Colleges Chancellor's Office**  
**Fall 1992 - Course Details Report**

District	College	Course ID	Control Number	Course Title	Sections Count	TOP Code	Maximum Units	Minimum Units	Term
Contra Costa CCD	Diablo Valley	REFRG 130	CCC000024285	REFRIGERATION THEORY I	1	Appliance Repair-093510	03.00	03.00	Fall 1992
Contra Costa CCD	Contra Costa	REFRG 224	CCC000028926	RESISTANCE HEATING EQUIPMENT AND MICROWAVE	1	Appliance Repair-093510	03.00	03.00	Fall 1992
Contra Costa CCD	Contra Costa	REFRG 121	CCC000031454	REFRIGERATION LABORATORY	1	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Diablo Valley	REFRG 132	CCC000118445	BASIC REFRIGERATION LABORATORY-132	1	Appliance Repair-093510	01.00	01.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 20	CCC000154659	ELECTRICAL APPLIANCE SHOP PRACTICE	1	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 46	CCC000180317	PRINCIPLES AND REPAIR OF MICROWAVE OVENS	1	Appliance Repair-093510	00.50	00.50	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 36	CCC000225933	APPLIANCE AND REFRIGERATION SHOP PRACTICE ADVANCED	2	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 35	CCC000225936	APPLIANCE SHOP PRACTICE INTERMEDIATE	2	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 41	CCC000227996	"GAS, ELEC & REFRIG APPLI SHOP PRAC-ADV"	1	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 40	CCC000236622	"GAS, ELEC & REFRIG APPLI SHOP PRAC-INT"	2	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Contra Costa	REFRG 122	CCC000261184	MAJOR ELECTRICAL APPLIANCES	1	Appliance Repair-093510	03.00	03.00	Fall 1992
Contra Costa CCD	Contra Costa	REFRG 221	CCC000266014	ADVANCED REFRIGERATION AND GAS FIRED EQUIPMENT	1	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Contra Costa	REFRG 225	CCC000266111	ADVANCED HEATING EQUIPMENT AND MICROWAVE	1	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Contra Costa	REFRG 120	CCC000267153	BASIC REFRIGERATION	1	Appliance Repair-093510	03.00	03.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 26	CCC000287806	REFRIGERATION II	1	Appliance Repair-093510	04.00	04.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 70	CCC000299011	INDUSTRIAL REFRIGERATION	1	Appliance Repair-093510	04.00	04.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 30	CCC000308227	REFRIGERATION SHOP PRACTICE	1	Appliance Repair-093510	05.00	01.00	Fall 1992
Contra Costa CCD	Los Medanos	APPLI 16	CCC000324883	ELECTRICAL APPLIANCES II	1	Appliance Repair-093510	04.00	04.00	Fall 1992
San Francisco CCD	San Francisco Ctrs	TIRT 9667	CCC000349023	TV SERVICE/REPAIR-ADVANCED+VCR	1	Appliance Repair-093510	00.00	00.00	Fall 1992
San Francisco CCD	San Francisco Ctrs	TIRT 9666	CCC000379724	TV SERVICE/REPAIR - ADVANCED AND VCR	1	Appliance Repair-093510	00.00	00.00	Fall 1992
Santa Barbara CCD	Santa Barbara Cont	909151	CCC000396308	VCR MAINTENANCE AND TROUBLESHOOTING	1	Appliance Repair-093510	00.00	00.00	Fall 1992
Southwestern CCD	Southwestern	AMR 15	CCC000004900	ELECTROMECHANICAL SERVOCONTROL	1	Appliance Repair-093510	03.00	03.00	Fall 1992
Southwestern CCD	Southwestern	AMR 293	CCC000077839	AMR WORK EXPERIENCE IV	2	Appliance Repair-093510	04.00	01.00	Fall 1992
Southwestern CCD	Southwestern	AMR 292	CCC000091416	AMR WORK EXPERIENCE III	2	Appliance Repair-093510	04.00	01.00	Fall 1992
Southwestern CCD	Southwestern	AMR 291	CCC000106102	AMR WORK EXPERIENCE II	2	Appliance Repair-093510	04.00	01.00	Fall 1992
Southwestern CCD	Southwestern	AMR 5	CCC000179990	PRIN ELECTRICITY & ELECTRICAL CIRCUITS	1	Appliance Repair-093510	04.00	04.00	Fall 1992
Southwestern CCD	Southwestern	AMR 290	CCC000183897	AMR WORK EXPERIENCE I	2	Appliance Repair-093510	04.00	01.00	Fall 1992
Southwestern CCD	Southwestern	AMR 60	CCC000212163	REFR SYS ASSEMBLED MAINT	1	Appliance Repair-093510	03.00	03.00	Fall 1992
Southwestern CCD	Southwestern	AMR 70	CCC000299034	AIR CON ASSEM & MAIN	1	Appliance Repair-093510	03.00	03.00	Fall 1992

# HACIENDA LA PUENTE

ADULT EDUCATION  
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## Catalog of Classes | Fall 2018

August 13 - December 21, 2018



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PRE-REGISTRATION  
DATES, SEE PAGE 5.



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## COMPUTER REPAIR & SUPPORT

### COMPUTER REPAIR & NETWORKING

**ORIENTATION:** July 30 from 11 am - 1 pm in Room 107.

The course is divided into components in which a student may earn a certificate of completion. (1080 hours)

#### Computer Repair Component

The Computer Repair component provides an introduction that includes: assemble components based on customer requirements, install, configure and maintain devices, PCs and Windows 7, 8 and 10 OS installation for end users, understand the basics of networking and security/forensics, properly and safely diagnose, resolve and document common hardware and software issues while applying troubleshooting skills. Successful candidates will also provide appropriate customer support; understand the basics of virtualization, desktop imaging, and deployment. Students will be involved in troubleshooting and repairing and will learn to build their own computer as a part of the curriculum. Students will be prepared for A Plus (A+) certification by the end of the course. This class has added 3D printer activities in hands on work by students. Students will also work with Media objectives that include Home Theatre set up activities.

#### Network Component

The Networking Component includes: instructor-led hands-on training to familiarize students with the topics of the Network+ certification examination, and will help students prepare for the Network+ test. This component includes: OSI Layer Concept, TCP/IP, "topologies" physical and network hardware, various network structures, the major network operating systems, Microsoft Windows Server Systems. Students will handle and install a simple network system which includes: preparing Cat5/Cat6 cables, routing cable, TCP/IP configuration; creating user lists, identifying full and half-duplexing, WAN and LAN, server, workstation, and host server-based networking and troubleshooting networking. Students will work on Cable, NIC, and router Broadband and Gateway, as both a default IP router and as a method to connect dissimilar systems or protocols. Students will enhance the knowledge of Android OS and iOS 5 and iCloud using Tablet and Apple iPad2. Students will learn troubleshooting of network problems, network maintenance and upgrade, and security applicable to prepare for Network+ certification.

**Cost:** \$513 (includes registration \$495 and insurance \$18) + Books per semester. For additional information, please call (626) 934-2832.

**Students provide:** One 16GB flash drive (must bring this flash drive on the first day of class).

60610.019 M - Th 8 am - 4 pm Willow, 107 S. Sengupta  
08/13/18 - 12/20/18

### INTRODUCTION TO ELECTRICAL POWER SYSTEMS

#### MAJOR APPLIANCE SERVICE AND REPAIR

Partners with Whirlpool & Maytag, KitchenAid, Sears, LG, WASH, Best Buy, Coast Appliance Parts, Reliable Parts, K-W Sam-Sung

Theory and practical training for job entry including refrigerators, ice makers, freezers, washing machines, dryers, microwave ovens, and stoves. Learn to read wiring diagrams and sequence charts for appliance electrical diagnoses. Prepare for the E.P.A. (Environmental Protection Agency) Type 1 certification test, to work with refrigeration systems of 5 lbs. or less. **Call:** (626) 934-2936 (Total hours: 1080.)

##### Session I: Fall Semester

Theory & Practical Training for Job Entry Refrigeration  
Session I: Prepare for E.P.A. Plus Refrigeration theory (540 hours).

##### Session II: Spring Semester

Theory & Practical Training for Job Entry Washing Machines, Dryers, Microwaves, Ovens/ Stoves (540 hours).

**Day Class Cost:** \$956 per semester (includes registration \$700, materials \$100, insurance \$18, and books \$138). Shirt fee \$10. Safety Glasses \$10 (Takes 2 semesters to complete.)

60300.019 M - Th 8 am - 4:00 pm Willow G. Cenicerros  
08/13/18 - 12/20/18

**Evening Class Cost:** \$421 per semester (includes registration \$275, materials \$50 and insurance \$18, and books \$78) (504 hours per semester. Takes approximately 3 semesters to complete.)

60300.013 M - Th 5:30 pm - 9 pm Willow Staff  
08/13/18 - 12/20/18



### WATER, LAND USE & THE ENVIRONMENT

#### PREPARATION FOR WATER AND DISTRIBUTION I AND TREATMENT I

Water Technology Program is designed to prepare students who wish to seek entry level employment in the public water supply industry. There is a growing need for certified and trained water technology professionals in the area of Water Treatment and Water Distribution. Water experts project that over the next few years the water industry will see extensive job growth. (300 hours)

**Cost:** \$300 per course + insurance \$18 (Training may be free for those who qualify. Attend orientation for more information).

60500.011 T-Th: 8:30 am - 12:30 pm & W: On-line  
08/14/18-11/08/18  
Willow, 112 G. King





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## Position Description

3 of 8



### **Field Appliance Repair Technician**

City **San Francisco**

State **California**

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Travel to customer location to diagnose, troubleshoot and repair Miele appliances utilizing factory training, service manuals and computerized tools.

### **Essential Functions**

- Travel to customer location to diagnose, troubleshoot and repair Miele equipment utilizing factory training, service manuals and computerized tools.
- Level and adjust equipment to include plumbing, gas and electrical connections
- Install and instruct customers on the proper use of equipment
- Organization and upkeep of company provided vehicle (tools, test equipment, computers and other company items)
- Complete all service calls and warranty documentation in an accurate and timely manner
- Maintain required parts inventory by ordering replacement parts as necessary and conducting inventories as required
- Maintain the delivery truck in safe and working order

### **Physical Demands**

- Ability to sit, walk and crawl occasionally
- Ability to stand, squat, kneel and dexterity to bend/twist neck and waist, frequently
- Ability to use hands repetitively and power/simple grasp constantly
- Ability for fine manipulation of hands as well as pushing, pulling and reaching above and below shoulder level constantly
- Physical ability to lift, pull and push products up to 50 pounds frequently
- Physical ability to lift, pull and push products that weigh in excess of 100+ pounds occasionally
- Ability to carry items up to 6 feet occasionally

### **Work Environment**

- Generally works in a customer's home but may be exposed to extremes in temperature, humidity or wetness when in transportation
- May occasionally walk on slippery or uneven surfaces
- May have exposure to dust, gas, fumes or chemicals
- On occasion, may use special visual or auditory protective equipment

- Will occasionally climb stairs and work off elevated surfaces
- Frequently work with bio-hazards for Commercial Technicians only

### **Requirements**

- 100% local daily travel required
- A valid driver's license
- High school diploma or general education degree (GED)
- Knowledge of basic plumbing and electrical skills
- Good computer skills with knowledge of Microsoft Office
- Ability to apply concepts of basic math
- Ability to read, write and comprehend instructions, correspondence, and memos in English
- Ability to multi-task
- Successful pre-employment screening process including drug screen and background investigation
- Ability to work professionally with colleagues and be a team player
- Ability to manage difficult customer situations
- Must be self-motivated, customer oriented person with excellent communication skills

### **Provisions by Miele include the following:**

- Competitive pay
- Bonus Incentive Program
- Miele vehicle provided as job is home dispatched
- Technicians are equipped with uniforms, tools, laptop and mobile phone
- Extensive product and Miele service training conducted by factory-trained team members
- Career Opportunities

### **Health & Wellness Benefits**

Medical, Dental, Vision, Prescription Plan, Flexible Spending Account

### **Financial Security Benefits**

401K, 529 Education Savings Plan, Long-Term Disability, Life Insurance, Affinity Credit Union, Corporate Mortgage Program, Employee Referral Program

### **Quality of Life Benefits**

Employee Assistance Program, Health Club Memberships, Paid Time Off, Personal Days, Vacation, Volunteer Time

Interested candidates that possess dedication, the skills to exceed our customer's expectations as detailed herein and the drive to join a growing appliance brand are encouraged to apply online at [www.mieleusa.com](http://www.mieleusa.com).

### **ABOUT MIELE**

There are only a few brands in the world that have sustained their vision, traditions and high-quality standard for more than a century. Fewer still that can claim consistent family ownership and international brand name integrity. And only one that is recognized for creating the world's most innovative appliances. Founded in Germany in 1899 with a single promise of Immer Besser, a phrase meaning Forever Better, Miele has dynamically grown to become the world's largest family-owned and operated appliance company with over 16,600 employees, 12 production facilities, representation in nearly 100 countries and annual turnover of USD\$3.62bn (2009/10).

As a premium appliance brand represented on all continents, Miele is steadfastly committed to the highest quality, performance and environmental standards. The company's innovative heritage, state-of-the-art design and engineering aesthetic have inspired comparison to other powerhouse German brands synonymous with innovation:

Mercedes-Benz and BMW.

Miele's range of exceptional consumer appliances includes: vacuum cleaners; laundry systems; rotary irons; dishwashers; built-in convection, speed, steam and combi-steam ovens; cooktops; ventilation hoods; refrigeration; wine storage and coffee systems. Additionally, Miele Professional (the commercial product division) offers dishwashers, washing machines, tumble dryers and rotary irons for commercial use as well as washer-disinfectors for medical, dental and laboratory applications.

To research further, we invite you to visit [mieleusa.com](http://mieleusa.com) for complete and detailed product information or [miele-sustainability.com](http://miele-sustainability.com) for our public communication regarding Miele's commitment to our environment and its employees.

**Miele is an Equal Opportunity Employer and supports and enforces a drug-free workplace. EOE/AA:M/F/D/V**

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**Bureau of  
Electronic and  
Appliance Repair,  
Home Furnishings  
and Thermal  
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# **SUNSET REVIEW**

DECEMBER 2017

STATE OF CALIFORNIA  
**dca**  
DEPARTMENT OF CONSUMER AFFAIRS

- Developing YouTube videos that will be posted to BEARHFTI's website and social media page to educate the industry on various topics such as licensing and registration requirements, law label requirements, and custom upholsterer requirements. The videos will be available in multiple languages, including Spanish, Mandarin, Ukrainian, and Russian.
- Scheduling and participating in more meet and greets with industry to improve lines of communication, understand their complications, and gather and respond to issues.

## Section 7 – Online Practice Issues

### **58. Discuss the prevalence of online practice and whether there are issues with unlicensed activity. How does the Bureau regulate online practice? Does the Bureau have any plans to regulate internet business practices or believe there is a need to do so?**

There is a significant online presence for certain license categories and activities, particularly retail furniture and bedding products and the offering of repair services and service contracts on products BEARHFTI regulates. Based on current law, BEARHFTI's authority over internet companies that offer to sell regulated products and services via the internet is deemed as equivalent to those products and services being offered in a brick and mortar location within the state. Thus, online companies are subject to the same licensing and business requirements and enforcement action as if they had a physical presence in the state (See Business and Professions Code Sections: 9830, 9830.5 and 19060.5). The Bureau actively seeks unlicensed activity of online practitioners and has brought a number of companies into compliance.

There are often challenges in locating a physical address behind the internet presence, however in one instance, BEARHFTI was able to disconnect a telephone number advertised on a company's website that was not a properly licensed business until they became compliant. In the spirit of consumer protection, equitable regulation, and a level playing field, BEARHFTI will continue to pursue unlicensed activity of unlicensed internet businesses.

## Section 8 – Workforce Development and Job Creation

### **59. What actions has the Bureau taken in terms of workforce development?**

The Bureau has met and continues to meet with vocational institutions and community colleges that offer repair courses. The Bureau conducts presentations to the students and faculty regarding the need for licensure and the relevant laws and regulations, in addition to disseminating educational materials. The Bureau also makes presentations and provides materials to industry associations for their membership and potential members. As the Bureau licenses businesses and not individuals, there are no formal education or experience requirements for licensure, the Bureau reaches out to other business licensing agencies, the Better Business Bureau, etc., to help notify current and future workplace candidates of the licensing requirements.

### **60. Describe any assessment the Bureau has conducted on the impact of licensing delays.**

The Bureau has not experienced any licensing delays or backlogs utilizing its current processes, but continually monitors processes to identify areas that can be improved upon to ensure a backlog does not occur.

**61. Describe the Bureau's efforts to work with schools to inform potential licensees of the licensing requirements and licensing process.**

While BEARHFTI does not have examination or experience requirements for any of its license types, BEARHFTI has conducted presentations at community colleges and trade schools, including Los Medanos (Pittsburg) and La Puente College (La Puente), to educate potential licensees about the application requirements and process. The Bureau also publishes pamphlets on guidelines for licensing and invoice regulations. These pamphlets are available on the Bureau's website and are distributed to educational facilities and industry organizations as a part of the Bureau's outreach efforts.

**62. Describe any barriers to licensure and/or employment the Bureau believes exist.**

The Bureau does not have any examination or experience requirements for any of its license types. Additionally, BEARHFTI licenses businesses rather than individuals so there are no barriers to licensure unless there have been prior criminal convictions related to the functions and duties of holding a license or if there has been prior disciplinary action that must be reviewed.

**63. Provide any workforce development data collected by the Bureau, such as:**

**a. Workforce shortages**

The Bureau does not have any feasible or accurate means of identifying workforce shortages due to the nature of the businesses. As there is no examination required, the Bureau does not have data on number of people seeking entry into these businesses and as there are no educational or experience requirements for license holders, there is no verifiable data to indicate the industry is lacking qualified individuals or there is an overpopulation of them.

**b. Successful training programs.**

Most electronic product and appliance manufacturers offer training to their authorized repair agents and certify the repair dealers and/or their technicians for their line of products. In addition, there is the A+ certification program for computer repair offered by a number of public and private educational institutions. As the businesses are licensed, and not their technicians, it is the business owner's responsibility to ensure their employees are adequately trained to repair the products they service.

**Section 9 –  
Current Issues**

**64. What is the status of the Bureau's implementation of the Uniform Standards for Substance Abusing Licensees?**

The Uniform Standards do not apply to BEARHFTI since it is not a healing arts program.

**65. What is the status of the Bureau's implementation of the Consumer Protection Enforcement Initiative (CPEI) regulations?**

The BEARHFTI strives to achieve consistency with the CPEI initiative and the performance measures outlined in the initiative and reports its status in meeting the enforcement goals to the

9	Other sales	\$382	2.0%
<b>Totals</b>		<b>\$19,190</b>	<b>100.0%</b>

Source: Appliance Magazine, US Census and other federal statistics

Key industry financial metrics indicate cost of goods average 51%, gross profit averages 46% and net profits average 7%. The largest expenditures are for labor, rent and parts.

The following Table 12 shows the average median salary for industry occupations. Management positions average \$97,830 (highest) and office and administrative support positions average \$29,980 (lowest). Sales positions average \$44,820 while technical staff (installers and repairers) average from \$35,000 to \$39,000.

**Table 12  
Median Salary by Industry Occupation**

<b>Job Position</b>	<b>Avg. Median Salary</b>
Management positions	\$97,830
Computer and mathematical positions	\$56,470
Sales and related positions	\$44,820
Installer, M&R positions	\$38,930
Office & administrative support positions	\$29,980

Source: Appliance Magazine, US Census and other federal statistics

### Industry Association Feedback

CPS HR learned the following through interviews with the National Electronic Service Dealers Association (NESDA) and the Association of Home Appliance Manufacturers (AHAM):

- The industry matches the economy. Last year it started to tick up after falling in 2008. According to Appliance Magazine who tracks industry statistics, the industry was up about 5%.
- Older owners of maintenance and repair (M&R) companies are retiring and phasing out. They often lack the interest to learn the new technologies and can't afford to change. In addition, it's difficult to find qualified workers and getting parts is a problem because of a changing "replace" instead of "fix" mentality.
- Warranty issues and service contracts get most people in the industry excited or agitated. Typically consumers are upset with the performance of repair people and waiting extended periods of time.
- There are no lemon laws for appliances anywhere in the country but legislation is usually initiated on a single personal experience, not an industry systemic problem. Someone, like a legislator, has a bad experience so they try to fix the problem through legislation alone, perhaps without root cause analysis. As product life decreases, the manufacturer's incentive is to reduce the warranty as they would prefer to sell new appliances instead of repairing them. That's why rebates need to be high enough to incentivize buying over repairing. This hurts the repair industry. However, given the high cost of new products it's often less expensive to repair than buy new.



# EXHIBIT 10



BUSINESS, CONSUMER SERVICES, AND HOUSING AGENCY • GOVERNOR EDMUND G. BROWN JR.

**Bureau of Electronic and Appliance Repair,  
Home Furnishings and Thermal Insulation**  
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## **Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation November 15, 2016 – Advisory Council Meeting Minutes**

### Attendees:

- Council Members:** Sharron Bradley, Industry  
Burt Grimes, Industry  
Judy Levin, Public  
Donald Lucas, Public  
Joanne Mikami, Public  
Leonard Price, Public  
David Spears, Industry (teleconference)  
David Velazquez, Industry  
David Yarbrough, Industry
- Stakeholders:** Mo Anooshah, Kolcraft Enterprises  
Pascal Benyamini, Drinker Biddle  
Jimmy Fremgen, CA Asm. Business & Professions Committee  
Jim Groulx, BIFMA  
Mike Robson, American Chemistry Council
- Govt. Personnel:** Carrie Cathalifaud, Bureau Laboratory Supervisor  
Dale Chasse, Deputy Bureau Chief  
Richard DiGirolamo, Bureau Investigations Manager  
Nicole Dragoo, Bureau Enforcement Analyst  
Yeaphana LaMarr, DCA Legislative & Review Division  
Michelle Linton-Shedd, Bureau Licensing Analyst  
Justin Paddock, Bureau Chief  
Terri Rice, Bureau Policy Analyst  
Karen Skelton, Bureau Licensing & Policy Manager  
Avra Wallace-Schoell, Bureau Licensing Technician  
Donald Watts, Bureau Licensing Analyst
- Teleconference:** Several stakeholders intermittently listening in by phone.

### Agenda Item #1 – Welcome and Introductions

Meeting commenced shortly after 9:00 AM.

Bureau Chief Paddock opened the meeting and thanked everyone for their attendance. He added that David Yarbrough flew across the country to be present, and Tim Hawkins resigned from the Advisory Council due to a conflict issue. He stated that Mr. Hawkins may join the Advisory Council again once the conflict is resolved.



Agenda Item #2 – 2017 Meeting Dates

Mr. Paddock said that he would like to hold an Advisory Council meeting in the Northern California Bay Area in 2017. The Council discussed several different dates and decided on the following tentative schedule:

- February 23, 2017 in Los Angeles, CA.
- July 20, 2017 in Bay Area, CA.
- November 9, 2017 in Sacramento, CA.

Agenda Item #3 – Licensing and Enforcement Update

Please reference pages 3 – 8 of the Materials Packet

Licensing Analyst Linton-Shedd opened the topic by discussing licensing statistics. She referenced the table on page 4 of the materials packet and stated that the Electronic and Appliance Repair (EAR) and Home Furnishings and Thermal Insulation (HFTI) statistics were both steady with slight increases. Mr. Paddock mentioned he had read information that suggested new furniture retail locations will steadily open with new residential construction. Burt Grimes and Sharron Bradley agreed that new construction helps the economy. Ms. Bradley asked if the Bureau issues furniture retail licenses per location or specific retailer. Mr. Paddock clarified by stating each retail store must have an individual license.

Deputy Bureau Chief Chasse reviewed the table on Page 6. He said cases that have been forwarded to the Attorney General's (AG) Office take time to finalize and the number of pending cases should soon be reduced. Mr. Grimes asked if individuals with pending AG cases are still in business, and Mr. Paddock clarified they are still in business until their case is adjudicated. Mr. Chasse added the Bureau attempts to mitigate any potential consumer harm during pending cases. He said once a case is finalized, the Bureau will grant a probationary license to a business that requires special attention to ensure they are compliant.

Mr. Chasse said the \$0 citation has been an invaluable enforcement tool, as has the telephone disconnect process through California Public Utilities Commission (CPUC). He added that disconnecting a business telephone number often produces a quick reaction and compliance from a business.

Joanne Mikami asked if all of the statistics on page 6 were current through September 30, 2016. Mr. Paddock affirmed that the fiscal year for state agencies begins July 1, so the current 2016-2017 statistics are only for the first quarter. He asked if there were any questions regarding statistics for Mr. Chasse.

Mr. Paddock mentioned the Bureau has received three Department of Toxic Substances Control (DTSC) failures. He explained in one situation, the listed manufacturer did not manufacture the procured product and the Bureau is attempting to locate the counterfeiter. The Bureau is beginning to utilize the Shared Responsibility statute (Business and Professions Code Section 19079) to implement enforcement and/or disciplinary action on associated importers instead of

solely on the manufacturer. Mr. Paddock said as a result some new citations will be issued, and once their appeal processes have been exhausted, he will report the information. He added that another manufacturer has gone out of business and the Bureau is now securing citations against the manufacturer's owner. He stated the Bureau is anticipating sending another 10 samples to DTSC this year. He added the Bureau will be re-negotiating fees with DTSC in a Memorandum of Understanding. Mr. Paddock said that in the future he will provide percentages of passes versus failures, but will not be releasing specific numbers. Mr. Grimes asked how many failed samples were domestic versus imports. Mr. Paddock stated that one was domestic, and two were imports.

Investigations Manager DiGirolamo joined the Bureau prior to the previous Advisory Council Meeting. He said the Bureau has new standard operating procedures which will be reported during the Sunset Review process to Legislature. He added that moving forward, general consumer complaints will take precedence over complaints of unlicensed activity.

Mr. DiGirolamo referenced the table on page 8. He said that the 2015 Southern California sweep was an effective way to cover a lot of territory, so the Bureau decided to conduct a Northern California sweep in early September to follow-up on complaints, delinquent licenses, and unlicensed businesses. He said the Bureau also attended several outreach events with field staff. Mr. DiGirolamo mentioned that the Bureau is currently down one Field Representative in Northern California and is looking forward to hiring a new full-time employee. He said the examination for the position closes on November 18<sup>th</sup>, and he anticipates the Bureau will hire a new employee in mid-to late January. Donald Lucas asked how long it takes to conduct 15 site visits. Mr. DiGirolamo said the sweeps took between four and five days, and the time will be reduced once another Field Representative is on board. Mr. Chasse mentioned that he and Mr. DiGirolamo worked four 10-hour days, and that complaints and infractions take more time than delinquent and unlicensed activity. Mr. Paddock clarified that if a potential licensee receives an infraction, they must appear before a judge and explain why they have not applied for a Bureau license. The Bureau Representative must also attend the court date. Judy Levin asked if any of the delinquent businesses had gone out of business at the time of follow-up. Mr. Chasse clarified by stating the Bureau performed a database clean-up and research to confirm whether or not they were still in business prior to conducting a field visit. Ms. Mikami inquired how many Field Representative vacancies the Bureau currently had. Mr. DiGirolamo stated two individuals retired, but the Bureau will currently be hiring one replacement who will cover Northern California to the Oregon border. Mr. Paddock asked if there were any further questions. David Spears asked if most businesses were brick and mortar or residential-based, and Mr. DiGirolamo said there is a mix of both. He added that a lot of EAR businesses are residential based, and it can be difficult to contact business owners at home to issue an infraction. Mr. Spears said it sounds as if many business owners may state they are out of business when, in fact, they are still operating. Mr. DiGirolamo affirmed this, and stated he attempts to obtain a declaration from all business owners who state they are no longer in business. Mr. Paddock said once a declaration is signed, the Bureau will place a cold-call and seek a repair. Mr. Grimes asked if the enforcement sweep was both EAR and HFTI. Mr. DiGirolamo stated that because there are more HFTI Field Representatives, the inspections were primarily EAR.

Mr. Grimes asked how many EAR and HFTI Field Representatives there are. Mr. Chasse said there are three EAR Field Representatives and six HFTI Field Representatives. The Bureau will be fully staffed with five EAR Field Representatives. Mr. Velazquez asked if in the future the number of residential businesses versus brick and mortar can be included in statistics. Mr. Chasse affirmed that the Mr. DiGirolamo will track that statistic in the future.

#### Agenda Item #4- Legislative Update

Legislative and Policy Analyst LaMarr opened the topic by stating Senate Bill (SB) 1046 authored by Senator Hill was signed and will be effective January 1, 2017. She summarized the bill and explained that it authorizes BEARHFTI and the Bureau of Automotive Repair (BAR) to cite, suspend, revoke, or place on probation the registration of an automotive repair dealer or service dealer who installs, calibrates, services, maintains, or monitors ignition interlock devices (IID) if the automotive repair dealer or service dealer is not in compliance with specified provisions relating to payment for the costs of an IID and would require an automotive repair dealer or a service dealer to provide that information to an individual receiving IID services. She said the Department of Consumer Affairs (DCA) is currently setting a meeting with the Department of Motor Vehicles (DMV), BEARHFTI and BAR to discuss particulars. She stated the bill does not provide much guidance.

Ms. LaMarr then discussed SB 763 which defines juvenile products, and requires the same testing and labeling requirements as SB 1019. She said she was contacted by Senator Hill's office and the bill may be reintroduced in the upcoming legislative session, which reconvenes on December 5, 2016. She said Senator Hill's office questioned the history of the bill, and if the bill would be effective. She said she informed the office it is a policy issue and the Department does not currently have an approved position from the Governor's Office.

#### Agenda Item #5 – Regulatory Update

Please reference page 9 of the Materials Packet.

Policy Analyst Rice summarized the table presented on Page 9. There were no further questions.

#### Agenda Item #6 – Budget Update

Mr. Paddock opened the topic by stating that the Bureau was in danger of becoming insolvent when he was first appointed as Chief. The Bureau's "months in reserve" have since increased to five months for both EAR and HFTI. The "months in reserve" is equal to the amount of months the Bureau can operate on a day-to-day basis without additional revenue. He said he would prefer to increase the Bureau's reserve to nine months. Mr. Paddock stated the Bureau was able to work with the Department to bring the Complaint Resolution Program to the Bureau as an in-house unit. The addition of the Complaint Resolution Unit and an increase in licensing fees are improving the Bureau's fiscal outlook. Mr. Paddock added he plans to provide a budget update at future Advisory Council Meetings. He asked if there were any questions, and Ms. Mikami asked the annual budget amount for both HFTI and EAR. Mr. Paddock stated that

the annual budget for HFTI is approximately six million dollars, and the annual budget for EAR is approximately three million dollars. There were no further questions.

#### Agenda Item #7 – Bureau Outreach Update

Please reference pages 13-15 of the Materials Packet

Mr. Chasse discussed the table presented in the materials packet with the exception of social media development, which Enforcement Analyst Dragoo discussed. Mr. Chasse stated that the Bureau attended at least 20 different functions in 2016. Bureau representatives talked to students at community colleges and vocational schools, which he said was very well received. Ms. Bradley asked if she could have some brochures to distribute, and Mr. Chasse stated he will order some more brochures in the near future. Ms. Levin said that the flammability label in the brochure should have the box “Does Not Contain Flame Retardants” checked.

Mr. Paddock stated that in regard to Thermal Insulation, the Bureau typically corresponds with manufacturers. He said that Chemist Fischer is able to answer most questions that licensees have, and asked Mr. Grimes if he believes there needs additional outreach. Mr. Yarbrough said there are new product concepts and ways of taking measurements. Mr. Paddock agreed that new roofing shingles are a good example and the laboratory is currently trying to determine the appropriate tests in order to certify it in the Bureau registry. He acknowledged that testing standards do not keep up with innovation, and that he would like to chat with Dr. Fischer and Mr. Yarbrough after the meeting.

#### Agenda Item #8 – Bureau Operations Update

Please reference page 17 of the Materials Packet

Mr. Chasse introduced the topic by reviewing the bullets in the Bureau Operation Update. He elaborated by stating that a lot of Bureau enforcement is able to be accomplished at headquarters in order to keep costs down. Mr. Paddock mentioned that in the past, field reports were faxed to the Bureau, but they are now scanned by the purchased combination units and e-mailed to the Bureau. This enables enforcement analysts to receive paperwork regarding cases in a more timely fashion.

Mr. Paddock stated the Bureau has signed many contracts to enable laboratory instrument calibration to be performed on-site by contractors. He also said the laboratory should be accredited by the American Association for Laboratory Accreditation (A2LA) within the next week. Ms. Mikami mentioned that the laboratory had already been certified for insulation, and asked if this new accreditation would differ. Mr. Paddock stated as a part of Title 24, the laboratory must be accredited. He elaborated by saying that A2LA accreditation across-the-board will save money, and the laboratory has reformed all of its standard operations procedures. There were no further questions.

Agenda Item #9 – Service Contract Working Group Report

Please reference the following link for the full Service Contract Working Group Report:

[http://bearhfti.ca.gov/forms\\_pubs/service\\_contract\\_working\\_group\\_r1.pdf](http://bearhfti.ca.gov/forms_pubs/service_contract_working_group_r1.pdf)

Ms. Skelton opened the topic by stating that the purpose of the Service Contract Working Group is to help overhaul laws and regulations which have not been updated since 1999. She gave recognition to all members, attorneys, retailers, colleagues at the Department of Insurance, and the Department's legal counsel Spencer Walker for the extensive amount of time and effort put forth toward the report. Ms. Skelton then discussed the timeline of service contract history in California. She said the Service Contract Working Group discussed whether or not current regulations are relevant, up to date, and capturing issues in today's market. Consumer surveys were conducted to gauge whether or not consumers know what they're paying for when they purchase service contracts, and whether or not they believe service contracts are worthwhile. Ms. Skelton said the consensus was formed that consumers still believe service contracts are valuable, and the Bureau must ensure consumer protection. Taking all of the above into consideration, the Service Contract Working Group developed a number of recommendations which can be referenced on pages 19-33 of the Report.

Licensing Analyst Watts discussed the first five recommendations of the Service Contract Working Group. The second recommendation mentioned that Song-Beverly has two separate cancellation "free-look" periods. The "free-look" period for electronics, appliances, and vehicles is 30 days, whereas all other consumer products have a 60 day "free-look" period. Mr. Watts stated the Service Contract Working Group recommends making the "free-look" period uniform throughout coverage and reduce it to 30 days. Judy Levin asked why the Service Contract Working Group recommends to reduce the "free-look" period instead of increasing it to 60 days. Mr. Paddock explained the Bureau does not have an official position on the report, other than potentially providing technical expertise to the legislature. Ms. Levin reiterated that a reduction in the "free-look" period is concerning, and Mr. Paddock stated he believes the concern is shared. He added that the Report will be prepared and submitted in November of 2017 and he will collect comments from the Council in July.

Mr. Watts finished reviewing the first five recommendations, and Ms. Skelton reviewed the final five. There were no further questions or comments.

Agenda Item # 10 – 2016 Vocational School Report

Mr. Paddock opened the topic by stating that once the Bureau visited Los Medanos College in Pittsburg, California and became acquainted with Leonard Price, an interest was sparked in vocational schools providing appliance and electronic repair programs. Mr. Paddock said in addition to Mr. Chasse and Mr. DiGirolamo visiting Los Medanos College, he visited Hacienda La Puente Adult Education in Southern California and became acquainted with Mr. Sengupta

and Mr. Cenicerros who lead the appliance and electronic programs, respectively. He mentioned the only two colleges that offer an appliance repair program are Los Medanos and Hacienda La Puente Adult Education.

Ms. Mikami inquired about correctional facilities offering appliance or electronic repair programs. Mr. Paddock said he contacted Folsom Prison and confirmed they do not offer appliance or electronic repair programs. Mr. Price mentioned a lot of manufacturers require criminal background checks which may limit the size of the industry. He added that when he first became employed with Los Medanos College, about 12 community colleges offered appliance training, but it is a challenging and expensive program for schools to maintain with a dwindling job market and the programs have been cut. Mr. Velazquez stated the growth for appliance retail sales has climbed 25% the past few years, and the industry is challenged for the capacity of those who can perform timely service. He used a broken refrigerator as an example; food can last for three or four days, but food loss will occur after that timeframe.

Mr. Paddock said he believes promoting that educational institutions offer an appliance program may help increase the number of available technicians as retail sales of appliances increase. He said he visited a few other campuses in Southern California, and would like to revisit advocating the addition of appliance programs to these schools in the future. He added that a criminal conviction does not necessarily mean an applicant will be denied licensure by the Bureau. Mr. Paddock stated that the Bureau reviews an applicant's rehabilitation record prior to denial, and considers probationary terms as an alternative to a license denial whenever possible. He said the Bureau takes criminal reviews seriously and wants to help individuals rehabilitate.

Mr. Spears added that there used to be 70 appliance repair programs in California, but funding was taken away from vocational programs and given to the public school system. This, in turn, caused many vocational school programs to close their doors. He said local school counselors did not recognize the importance of appliance courses and referred students to automotive and plumbing programs. He added he has read the annual wage reports for appliance repair technicians are extremely low compared to other industries. Mr. Paddock asked the appropriate annual wage of an appliance service dealer. Mr. Spears and Mr. Velazquez concurred that the average wage should be within \$70,000-\$90,000 per year depending on the location in California.

There were no further questions or comments.

#### Agenda Item # 11 – Law Label Update

Please reference pages 19-21 of the Materials Packet

Laboratory Supervisor Cathalifaud stated that the Bureau is planning on implementing overdue updates to its law label requirements in order to make them more consistent with the rest of the country. She reviewed the points that are outlined in the materials packet. A Business and Institutional Furniture Manufacturers Association (BIFMA) representative questioned the printing of text on the SB 1019 label. He said according to specifications, the spacing between words

may be the same as between letters. Ms. Cathalifaud agreed she has seen labels with print spaced in this manner. She elaborated by stating California regulation states print must be 1/8" in either lower case or capital letters.

The BIFMA representative also mentioned that seating product may have a plywood base of fiberboard and everything may be printed on a cover stapled to the fiberboard. He stated the material does tear, and questioned whether or not California regulation allows the specific cover material. Ms. Cathalifaud clarified by stating that California regulation does allow the printing of labels on slip seats, but it must be a white background with black print and be difficult to tear.

Mr. Yarbrough said informing a word processor that print must be 1/8" in height is confusing. Ms. Cathalifaud mentioned the California regulation does not specify the font or print type, just that it be 1/8" in height. She agreed that labels may be printed in creative fashion to meet the required specifications. Mr. Paddock stated the Bureau is attempting to make California regulation similar to sister state agencies across the nation, so long as there is not a consumer protection issue. Ms. Mikami added that at the time of the implementation of law labels, computers were not yet in use and the print needed to be specified by measurement. Mr. Paddock mentioned that he can suggest a specific font type and size at the International Association of Bedding and Furniture Law Officials (IABFLO) Conference.

A teleconference participant inquired whether or not product had been purchased online for laboratory evaluation. Mr. Paddock stated that the Bureau will start making online purchasing in 2017. Ms. Levin asked if the law states the label print must be a minimum of 1/8", or exactly 1/8". Ms. Cathalifaud stated that it is a minimum regulation and the print can be larger. Mr. Grimes mentioned he is glad the Bureau is updating its law label regulations, and added a friend who has been a manufacturer for 30 years was unaware that there are both Type 1 and Type 2 labels.

#### Agenda Item # 12 – Furniture Reimbursement

Mr. Paddock stated that the Bureau is currently at a five month turn-around for furniture reimbursement, which he prefers to be reduced to just under four months. He stated that the Bureau laboratory accreditation has slowed down the furniture reimbursement process, but he anticipates the laboratory will earn full accreditation and be fully functional by January 1, 2017. Mr. Grimes asked how long it currently takes the Bureau to report laboratory testing results, and Mr. Paddock stated it takes approximately 60 days but hopes to reduce in-house reports to 45 days. He mentioned that it will take longer to obtain test results of furniture that is sent to Department of Toxic Substances Control (DTSC).

#### Agenda Item 13 – TB 117-2013 and SB 1019 Compliance

Please reference page 23 of the Meeting Materials packet.

Mr. Paddock opened the topic by stating the Bureau is trying to reduce DTSC failures and has been learning through investigation. He said when the Bureau cannot make contact with

overseas manufacturers through enforcement action, once the citation appeal process has expired, the Bureau will contact the furniture retailer. He stated the Bureau usually receives a positive response which results in the retailer removing the non-compliant product from their inventory. Mr. Paddock said Cost Plus recently removed a product from their sales floors in California immediately after they were notified that it was non-compliant.

Mr. Paddock said the Bureau laboratory lists the components layer-by-layer in an upholstered furniture product in its reports. He said when he requests formal documentation from a manufacturer, the company will often send in declarations from their component suppliers or test documentation stating their components contain no flame retardant chemicals. He added that test reports need to be very specific, and if they are not then he also requires a signed declaration. He stated the declaration must specify both density of the foam and/or color of the cover fabric. Jim asked if the color of fabric is tied into pattern, and Mr. Paddock clarified that cover fabrics with patterns are more difficult to delineate than foams. He said they may have several different suppliers who use a code to specify what is treated with flame retardant chemicals vs. what is not.

There were no additional questions.

#### Agenda Item 14 – Technical Bulletin 133 Proposal Review

Mr. Paddock stated after the Bureau reviewed data from multiple sources and concluded the current standard of TB 133 is not necessary. He is still reviewing information pertaining to national standards, and would like to gather more information from field experts in regards correctional facilities, mental institutions, nursing homes, board and care, convalescent hospitals, stadiums, etc.

Mr. Paddock said he recognizes that a phasing-in period was necessary for the adoption of TB 117-2013 to ensure manufactured product was meeting the new flammability test, and asked if there are any industry concerns in regards to the repeal of TB 133.

A teleconference participant asked if a final adoption of TB 133 would be available within three to four months. Mr. Paddock stated that the formal part of the process will begin in May or June of 2017, and a 45 day comment period will follow. He stated that if the repeal moves forth, it would likely go into effect January 1, 2018.

#### Agenda Item 15 – Barrier Research Study

Mr. Paddock opened the topic by stating that the Bureau's contract has been finalized with Duke University, and Ms. Cathalifaud is currently packaging barriers to be sent to the University for testing. He stated that the Bureau should receive flame retardant results on the barriers by early 2017. Mr. Paddock added he is finalizing the scope of a recent project with a professor at California State University, Sacramento who works with state agencies of cost effectiveness studies. He said he hopes to move into a contract process in early December and projects the study will be completed by spring of 2017.



Agenda Item #16 – Home Furnishings Retail Advertisement Survey

Please reference page 25 of the Materials Packet.

Licensing Technician Wallace-Schoell reviewed the points outlined on page 25. Ms. Bradley stated she agrees that retailers should be allowed to ask for a request for extension for a “special sale” to last more than three months. Mr. Paddock agreed, and added that the three-month rule is a baseline. Ms. Bradley inquired if the definition for special sale would be changed, and Mr. Paddock stated it will be updated. Mr. Paddock said the Bureau will create a form that allows retailers to inform the Bureau when they are holding a special sale. Ms. Wallace-Schoell specified that special sales will include long term sales and not yearly holiday sales. Mr. Spears asked if this topic included both appliances and furniture, and Mr. Paddock clarified that it is only applicable to home furnishings.

Mr. Paddock added this is to help ensure there is truth in advertising, and the Bureau will confirm the truth in advertisement by assessing the store’s inventory.

Mr. Grimes asked how many survey responses had been obtained, and Mr. Paddock said that 26 responses were included in the results, but 9 more will be added.

Agenda Item #17 – Bureau Work Plan

Mr. Paddock stated the Bureau had been working with the Consumer Product Safety Commission (CPSC) based on TB 117-2013 smolder standards. He added that experts questioned several technical concerns, and a lot of those concerns can be alleviated by having staff visit the Bureau and to run tests. Mr. Paddock said in the early part of 2017 a few cubicles will be placed in the laboratory for this purpose.

Mr. Paddock mentioned that DTSC will be modifying current SB 1019 test procedures. He added in March the Bureau will ensure test protocol is published to allow time for feedback. He said as the Bureau enters summer and fall of 2017, his attention will be directed toward the Bureau’s Sunset Review Report which must be submitted by November of 2017. Mr. Paddock added one of the topics addressed in the Sunset Review Report will be transitioning to an annual licensing fee schedule. Current licensing fees would be halved. Mr. Spears asked if advertising and handyman services would be covered in the Report, and Mr. Paddock said they will be. Mr. Spears also asked if advertisement in a web domain will be addressed, and Mr. Paddock said the Bureau does not have jurisdiction on the issue, but he will be able to include the Bureau license number being present on business cards and advertisements.

There were no further questions.

Agenda Item 18 – Public Comment on Any Items not on the Agenda

Ms. Bradley asked if the standard formula mentioned in the Truth in Advertising for Furniture Retailers Survey Summary would be a recommended or required formula. Mr. Paddock stated it will be a required formula set in place to define prevailing market price.

There were no further questions.

Agenda Item 19 – Adjournment

Mr. Paddock adjourned the meeting at approximately 11:50 AM.

# LOS MEDANOS COLLEGE



## APPLIANCE TECHNOLOGY PROGRAM

### The Curriculum

#### Certificate of Achievement in Appliance Service Technology Technician I

Primarily an evening program, this option prepares students for entry-level positions as appliance installers or shop technician trainees. Students will have the opportunity to take the EPA certification exam on campus by the instructor. There is a cost of \$50 to take the exam and they are not required to take it.

Fall (4 units)

APPLI 023 Basic Refrigeration Tech 1 . . . . . (3 units)

APPLI 037 Inter Appliance & Refrig Lab: Tech 1 . . . . . (1 units)

Spring (4 units)

APPLI 013 Beginning Electrical Appliances Tech 1 . . . . . (3 units)

APPLI 038 Adv Appliance & Refrig Lab: Tech 1. . . . . (1 units)

Summer (2 units)

ACREF 045-Basic Heating and Cooling Technology . . . . . (2 units)

Fall (4.5 units)

APPLI 024 Advanced Refrigeration Tech 1 . . . . . (3 units)

APPLI 031 Refrigeration Lab: Tech 1 . . . . . (1 units)

Spring 2016 (4 units)

APPLI 014 Advanced Electrical Appliances Tech 1 . . . . . (3 units)

APPLI 021 Electrical Appliance Lab: Tech 1. . . . . (1 units)

. . . . . **Total Units 18.5**

#### Certificate of Achievement Appliance Service Technology Technician II

Primarily a day program, the Technician II option prepares students for entry-level positions in the appliance service field. Working through the program internships provides successful students with a rapid transition to the field as a service technician.

Fall (9 units)

APPLI 015 Electrical Appliances I . . . . . (4 units)

APPLI 035 Appliance Shop Practice-Intermediate . . . . . (5 units)

Spring (9 units)

APPLI 026 RefrigerationI . . . . . (4 units)

APPLI 036 Appliance Shop Practice-Advanced . . . . . (5 units)

Fall (9 units)

APPLI 016 Electrical Appliances II . . . . . (4 units)

APPLI 020 Electrical Appliance Shop Practice . . . . . (5 units)

Spring (9 units)

APPLI 025 Refrigeration I . . . . . (4 units)

APPLI 030 Refrigeration Shop Practice . . . . . (5 units)

. . . . . **Total Units 36**

### Careers in Appliance Technology

Does technology interest you? Do you like to tinker with mechanics? Do you find satisfaction in helping people? Are you an independent self-starter? These talents can lead you into a career as an appliance service technician. The field of appliance service technology deals with repairing major household appliances. Technicians inspect, troubleshoot and repair major appliances such as refrigerators, ranges, dishwashers, microwave ovens, washers and dryers. The latest in computer and electronics technology is applied to home appliances. This is an excellent mechanical and technical career for both men and women.

LMC's Appliance Service Technology Program offers instruction for two career options. The Appliance Technician I option prepares students for entry-level positions as appliance installers or shop technician trainees. Students selecting the Appliance Technician II option will be prepared for entry-level positions in the appliance service field, with sufficient background to support a rapid transition to the field technician level.

The job outlook for appliance technicians is very good, especially for those with the right training. There is a serious shortage of skilled appliance service technicians. LMC graduates work for repair companies, appliance manufacturers and retailers. Many have advanced to management positions, moved into sales and marketing, or started their own appliance repair business.

#### Appliance Salary Averages in California:

Home Appliance Repairer: \$12.64-\$29.42/hour

HVAC Mechanic & Installer: \$14.41-\$38.86/hour

Stationary Engineer & Boiler Operator: \$25.90-\$45.50/hour

Information gathered from onetonline.org, which is sponsored by the Department of Labor, 2017

### Certificate of Achievement

The Certificate of Achievement in Appliance Service Technology (Appliance Technician 1 & 2), complete the coursework listed to the left.

### Associate of Science Degree,

The Associate of Science Degree in Appliance Service Technology requires 60 degree-applicable units including major courses as well as General Education Requirements and electives. To complete the AS degree, consult the LMC Catalog for the list of major courses and General Education Requirements at [www.losmedanos.edu/catalog](http://www.losmedanos.edu/catalog).

### Want to know more?

Visit [www.losmedanos.edu/appliance](http://www.losmedanos.edu/appliance) or contact

Debra Winckler at [DWinckler@losmedanos.edu](mailto:DWinckler@losmedanos.edu), (925) 473-7737.

### Want to become an LMC student?

Visit [www.losmedanos.edu/registration](http://www.losmedanos.edu/registration) to apply and more.

Consult with a Los Medanos College counselor to develop your education plan.



# Appliance Service Technology

## DEGREE—Associate of Science

Appliance Service Technology

## CERTIFICATES OF ACHIEVEMENT

### Appliance Technology

Appliance Technician I

Appliance Technician II

## COLLEGE SKILLS CERTIFICATES

### Appliance Technology

Heating, Ventilation & Air Conditioning Specialist

Electrical Appliance Technician

Refrigeration Technician

The program in Appliance Service Technology offers instruction for two career options. The Appliance Technician I option prepares students for entry-level positions as appliance installers or shop technician trainees. Students selecting the Appliance Technician II option will be prepared for entry-level positions in the appliance service field, with sufficient back-ground to support a rapid transition to the field technician level.

## ASSOCIATE OF SCIENCE DEGREE

### APPLIANCE SERVICE TECHNOLOGY

For the Associate of Science Degree in Appliance Service Technology, complete the coursework listed below as well as the LMC General Education and Graduation requirements. Consult a Los Medanos College counselor to develop your education plan.

### Job Opportunities

The program in Appliance Service Technology offers instruction for two career options. The Appliance Technician I option prepares students for entry-level positions as appliance installers or shop technician trainees.

REQUIRED COURSES:		UNITS
APPLI-013 or APPLI-015	Beginning Electrical Appliances Tech I Electrical Appliances I	3 4
APPLI-014 or APPLI-016	Advances Electrical Appliances Tech I Advanced Electrical Appliances II	3 4
APPLI-020 or APPLI-021	Electrical Appliance Shop Practice Electrical Appliance Lab: Tech I	5 1
APPLI-023 or APPLI-025	Basic Refrigeration Tech I Refrigeration I	3 4
APPLI-024 or APPLI-026	Advanced Refrigeration Tech I Advanced Refrigeration II	3 4
APPLI-030 or APPLI-031	Refrigeration Shop Practice Refrigeration Lab: Tech I	5 1

APPLI-035 or APPLI-037	Intermediate Appliance Lab Intermediate Appliance & Refrigeration Lab	5 1
APPLI-036 or APPLI-038	Advanced Appliance and Refrigeration Lab Advanced Appliance & Refrigeration Lab	5 1
APPLI-046	Principles and Repair of Microwave Ovens	.5
ACREF-045	Basic Heating & Cooling Technology	2
TOTAL UNITS FOR THE MAJOR		18.5-38.5
TOTAL UNITS FOR THE DEGREE		60

### Program Student Learning Outcomes

Demonstrate problem solving techniques used in troubleshooting appliances and make an estimate of what will have to be done to complete the repair.

1. Use written or oral service directions used in the appliance field to locate service information, demonstrate mechanical knowledge by diagnosing the failure and replacing the proper component.
2. Demonstrate the skills and knowledge necessary to take and pass the federal EPA exam required for employment in the Appliance field.
3. Demonstrate skills needed for entry level employment in the appliance field by passing an industry employment test (Certified Appliance Professional) and obtaining a job in that field.

## CERTIFICATES OF ACHIEVEMENT

### APPLIANCE SERVICE TECHNOLOGY

For the Certificate of Achievement in Appliance Service Technology, complete the coursework listed below. Consult a Los Medanos College counselor to develop your education plan.

### Certificate of Achievement in Appliance Technician I (primarily an evening program)

### Job Opportunities

The program in Appliance Service Technology offers instruction for two career options. The Appliance Technician I option prepares students for entry-level positions as appliance installers or shop technician trainees.

REQUIRED COURSES:		UNITS
APPLI-013	Beginning Electrical Appliances Tech I	3
APPLI-014	Advanced Electrical Appliances Tech I	3
APPLI 021	Electrical Appliances Lab Tech I	1
APPLI-023	Basic Refrigeration Tech I	3
APPLI-024	Advanced Refrigeration Tech I	3
APPLI-031	Refrigeration Lab Tech I	1
APPLI-037	Intermediate Appliance & Refrigeration Lab	1
APPLI-038	Advanced Appliance & Refrigeration Lab	1
APPLI-046	Principles and Repair of Microwave Ovens	.5
ACREF-045	Basic Heating & Cooling Technology	2
TOTAL UNITS FOR THIS CERTIFICATE		18.5

# EXHIBIT 13

## PROGRAM REVIEW Feedback-Appliance Repair Technology 2016-2017

Unit Profile		Incomplete		Satisfactory		Exemplary
Description of Unit and description of target audience		Description is incomplete or has inaccuracies.		Description is complete and accurate; includes how the program prepares students for further study and/ or for career.		Description is complete, accurate, includes how students are prepared for further study and/or career, and addresses the target audience- who might be interested in the program and why.
Mission		Mission is unclear and/or does not align with college mission.		Aligns clearly with college mission; clearly written.		Mission statement is well grounded in the purpose and nature of the discipline, demonstrating alignment with college mission.
Unit Members		Incomplete and/or inaccurate list. Small percentage of faculty/staff participation.		Complete and accurate. Majority of faculty/staff participated in program review.		All full time faculty/staff and some part time faculty participated in program review.
Notes: Staff is listed. Consult with Pete about the program review so he is aware that HVAC is included.						

Data Repository		Incomplete		Satisfactory		Exemplary
Assessment Data		Assessments missing.		Required documents uploaded		Assessment reports are thorough and insightful.
Standards for Programs		Program standards are missing or not updated in 5 <sup>th</sup> year of cycle.		Program standards are based on careful analysis of data. If program has fallen		Program standards consider external professional standards, if applicable

**PROGRAM REVIEW Feedback-Appliance Repair Technology  
2016-2017**

			below standards, an objective has been written.	and/or identify additional success parameters unique to the discipline.
<b>Notes:</b> Program Standards are posted.				

Core Indicators	Incomplete	Satisfactory	Exemplary
<b>Assessment Data</b>	Core indicators are not addressed; no rationale provided if program falls below standards, nor plan for improvement included.	Program meets core indicator standards; if not, a rationale is provided and a plan for improvement is included.	Program meets core indicator standards and a thoughtful analysis provides a narrative about program strengths. If program does not meet standards, improvement plan is thoughtful and directed toward improving program outcomes.

Assessment	Incomplete	Satisfactory	Exemplary
<b>Program Assessment</b>	PSLOs are missing entirely or are not broken down per each major in a department.	PSLO's for each program are listed and assessed in year 5 of cycle. PSLOs are broken out and listed for each major within a department. In year 5, a program assessment is conducted.	PSLO's are modified as needed, and program assessments in year 5 of model are analyzed for ways to improve the program.
<b>Course Assessment</b>	Some course level assessments are missing; some courses are not in cohorts.	All required course assessments are uploaded according to the cohort cycle. COORs have been updated. All courses are in a cohort.	Assessment reports are thorough and are analyzed to suggest ways to improve student learning, curriculum, and/or pedagogy.
<b>Notes:</b> Assessments are uploaded with 100% of courses being assessed. Excellent job here! Going forward, and as the new member of the Appliance Technology department, review the assessments for quality and make sure future assessments meet your standards. Your next			

**PROGRAM REVIEW Feedback-Appliance Repair Technology  
2016-2017**

focus is to ensure that COOR's are updated. I recommend updating all of those that are past due in fall of 2017, then getting on the COOR's update cycle that is identified in the assessment cycle. Once caught up, it will be much easier to stay on track.

As of this review, Program Assessment has not been completed, but a matrix of aligning CSLO's and cross walking with PSLO's was discussed. Use the crosswalk along with SQL data and observations of the program to complete the PSLO assessment.

Missing Assessments:

None! Great job!

Cycle 1 Cohort list

Cycle 2 Cohort list is uploaded- all courses in Cycle 2 are current with 2016/2017 Catalog.

COOR's that need to be updated:

ACREF 45, 76, 76, 73, 77 & 78

Appliance: 23, 35, 36, 46, 13, 21, 26, 14, 25, 30, 31, 16, 24, 37 & 38

Past Objectives	Incomplete	Satisfactory	Exemplary
<b>Objective Description</b>	Some objectives, as written, tend to be more like descriptive rationales, rather than specific objectives – kind of a mix of rationale, activity and goal.	Objectives written are specific and measurable and address strategies for program growth and improvement.	Objectives are aligned with comprehensive program review goals in alignment with program and college mission and strategic directions.
<b>Status Reason</b>	Status is missing or not accurate.	Previous years objectives have been updated with status.	Status is listed and rationale for status is clearly stated.
<b>Program Improvement</b>	Missing data.	Previous years objectives have been updated with program improvement if completed. Student success (completion and assessment) and the achievement gap are considered.	Program improvement is well documented and supported with data and observations about success.
<b>Notes:</b> Update status for 2016-2017			

**PROGRAM REVIEW Feedback-Appliance Repair Technology  
2016-2017**

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New Objectives	Incomplete	Satisfactory	Exemplary
<b>Objective Description</b>	Some objectives, as written, tend to be more like descriptive rationales, rather than specific objectives – kind of a mix of rationale, activity and goal.	Objectives written are specific and measurable and address strategies for program growth and improvement.	Objectives are aligned with comprehensive program review goals and with program and college mission and strategic directions, especially addressing issues of equity.
<b>SQL/Achievement Data</b>	Data is not considered in writing objectives. No discussion of achievement gaps.	Clear evidence that SQL and achievement data has been considered in writing new objectives. Achievement gap issues are addressed in new objectives.	Data used to write new objectives is identified and may go beyond SQL to consider other data relevant to program.
<p><b>Notes:</b> Please use the SQL reporting link in the Data Repository tab in the PRST and consider the following data when writing your program review.</p> <p><b>SQL data to consider:</b></p> <ul style="list-style-type: none"> <li>• Productivity appears to be declining since fall 2013</li> <li>• Declining head and seat count</li> <li>• Very high success and completion rates across all demographics</li> <li>• Monitor degrees and certificates. Consider having a counselor do an in-class visit to encourage and ed plan and applying for graduation.</li> </ul>			

Department Successes	Incomplete	Satisfactory	Exemplary
	n/a	n/a	Relevant stories are posted under one or more tabs.
<p><b>Notes:</b> Please consider posting student and professional success stories.</p>			



**PROGRAM REVIEW Feedback-Appliance Repair Technology  
2016-2017**

Professional Development	Incomplete	Satisfactory	Exemplary
	n/a	n/a	Relevant professional development needs and/or participation has been documented.
<b>Notes:</b> Consider listing conferences attended and wish to attend.			

Print & Finalize	Incomplete	Satisfactory	Exemplary
		Completion status has been verified.	Feedback has been provided.

**NOTES FOR NEXT YEAR:**

Once you get caught up, you will find keeping on track easier. As we discussed, COOR updates need to happen on a regular basis. Send them through for major or minor changes and for updating text books. If the COOR does not need to be updated, but it is the year that it is scheduled to do so, send it through the curriculum process so the box is “checked” that it has been reviewed for content relevancy.

**PROGRAM IMPROVEMENTS NOTED:**

Strategic Directions

- Significant cleanup of the overall appliance area has made the program area cleaner and safer.

**PROGRAM NEEDS NOTED:**

Strategic Directions

- Promote and market program

Signature of Department Chair: Reviewed with Debra Winckler 4/13/17

Signature of Dean: *Natalie Hannum*

## Heating Ventilation and Air Conditioning (HVAC) Occupations Labor Market Information Report

Prepared by the San Francisco Bay Center of Excellence  
for Labor Market Research  
May 2018

### Recommendation

Based on all available data, there appears to be an undersupply of HVAC workers compared to the demand for this cluster of occupations in the Bay region. The annual gap between demand and supply from Environmental Control Technology (HVAC) programs is about 1,385. Even when only the demand for the Heating Air Conditioning and Refrigeration Mechanics and Installers occupation is used and compared to the supply from Environmental Control Technology (HVAC) programs, there is still an undersupply of about 625 in the region.

This report also provides student outcomes data on employment and earnings for regional and sub-regional Environmental Control Technology (HVAC) programs compared to other community college programs on TOP04 0946 in the state. It is recommended that this data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the region and state as well as to outcomes across all programs in the region.

### Introduction

This report profiles HVAC occupations in the 12 county Bay Region.

- **Environmental Engineering Technician (SOC 17-3025):** Apply theory and principles of environmental engineering to modify, test, and operate equipment and devices used in the prevention, control, and remediation of environmental problems, including waste treatment and site remediation, under the direction of engineering staff or scientist. May assist in the development of environmental remediation devices.  
*Entry-Level Educational Requirement: Associate Degree*  
*Training Requirement: None*  
*Percentage of Community College Award Holders or Some Postsecondary Coursework: 54%*
- **Industrial Engineering Technician (SOC 17-3026):** Apply engineering theory and principles to problems of industrial layout or manufacturing production, usually under the direction of engineering staff. May perform time and motion studies on worker operations in a variety of industries for purposes such as establishing standard production rates or improving efficiency.  
*Entry-Level Educational Requirement: Associate Degree*  
*Training Requirement: None*  
*Percentage of Community College Award Holders or Some Postsecondary Coursework: 54%*
- **Sheet Metal Workers (SOC 47-2211):** Fabricate, assemble, install, and repair sheet metal products and equipment, such as ducts, control boxes, drainpipes, and furnace casings. Work may involve any of the following: setting up and operating fabricating machines to cut, bend, and straighten sheet metal; shaping metal over anvils, blocks, or forms using hammer; operating soldering and welding equipment to join sheet metal parts; or inspecting, assembling, and smoothing seams and joints of burred surfaces. Includes sheet metal duct installers who install prefabricated sheet metal ducts used for heating, air conditioning, or other purposes.  
*Entry-Level Educational Requirement: High school diploma or equivalent*  
*Training Requirement: Apprenticeship*  
*Percentage of Community College Award Holders or Some Postsecondary Coursework: 33%*

- **Electrical and Electronics Repairers, Commercial and Industrial Equipment (SOC 49-2094):** Repair, test, adjust, or install electronic equipment, such as industrial controls, transmitters, and antennas.  
*Entry-Level Educational Requirement: Postsecondary Nondegree Award*  
*Training Requirement: Long-term on-the-job training*  
*Percentage of Community College Award Holders or Some Postsecondary Coursework: 52%*
- **Heating Air Conditioning and Refrigeration Mechanics and Installers (SOC 49-9021):** Install or repair heating, central air conditioning, or refrigeration systems, including oil burners, hot-air furnaces, and heating stoves.  
*Entry-Level Educational Requirement: Postsecondary Nondegree Award*  
*Training Requirement: Long-term on-the-job training*  
*Percentage of Community College Award Holders or Some Postsecondary Coursework: 42%*

## Occupational Demand

**Table 1. Employment Outlook for HVAC Occupations in Bay Region**

Occupation	2017 Jobs	2022 Jobs	5-Yr Change	5-Yr % Change	5-Year Openings	Annual Openings	10% Hourly Wage	Median Hourly Wage
Environmental Engineering Technicians	885	941	56	6%	443	89	\$17.89	\$29.49
Industrial Engineering Technicians	1,358	1,439	81	6%	683	137	\$19.56	\$30.71
Sheet Metal Workers	2,584	2,920	336	13%	1,764	353	\$15.45	\$29.37
Electrical and Electronics Repairers, Commercial and Industrial Equipment	1,879	1,954	76	4%	903	181	\$16.79	\$32.09
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	6,348	7,350	1,002	16%	4,275	855	\$14.23	\$24.99
<b>Total</b>	<b>13,053</b>	<b>14,603</b>	<b>1,550</b>	<b>12%</b>	<b>8,069</b>	<b>1,614</b>	<b>\$15.64</b>	<b>\$27.78</b>

Source: EMSI 2018.2

**Bay Region** includes Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

## Job Postings in Bay Region

**Table 2. Number of Job Postings for HVAC Occupation for latest 12 months (May 2017– Apr 2018)**

Occupation	Bay
Industrial Engineering Technicians (17-3026.00)	1,079
Heating and Air Conditioning Mechanics and Installers (49-9021.01)	1,044
Refrigeration Mechanics and Installers (49-9021.02)	71
Sheet Metal Workers (47-2211.00)	62
Environmental Engineering Technicians (17-3025.00)	15
Electrical and Electronics Repairers, Commercial and Industrial Equipment (49-2094.00)	2
<b>Total</b>	<b>2,273</b>

Source: Burning Glass

**Table 3. Top Job Titles for HVAC Occupations for latest 12 months (May 2017– Apr 2018)**

Common Title	Bay	Common Title	Bay	Common Title	Bay
Maintenance Technician	561	HVAC Installer	77	HVAC Journeyman	29
HVAC Technician	181	HVAC Mechanic	63	Maintenance Associate	28
Service Technician	176	Refrigeration Technician	56	Maintenance Helper	28
Maintenance Worker	155	Maintenance Engineer	39	Maintenance Mechanic	25
HVAC Service Technician	99	Hvac Project Manager	38	Manufacturing Technician	25
Mechanic	89	Maintenance Team Member	35	Deburr	23

Source: Burning Glass

## Industry Concentration

**Table 4. Industries Hiring HVAC Occupations in Bay Region**

Industry – 6 Digit NAICS (North American Industry Classification) Codes	Jobs in Industry (2017)	Jobs in Industry (2022)	% Change (2017-22)	% in Industry (2017)
Plumbing, Heating, and Air-Conditioning Contractors (238220)	5,690	6,748	19%	43.6%
Semiconductor and Related Device Manufacturing (334413)	363	350	(4%)	2.8%
Local Government, Excluding Education and Hospitals (903999)	288	304	6%	2.2%
Electrical Contractors & Other Wiring Installation Contractors (238210)	278	320	15%	2.1%
Residential Remodelers (236118)	242	256	6%	1.9%
Engineering Services (541330)	237	262	11%	1.8%
Federal Government, Civilian, Excluding Postal Service (901199)	219	214	(2%)	1.7%
Roofing Contractors (238160)	178	202	13%	1.4%
Sheet Metal Work Manufacturing (332322)	168	199	18%	1.3%
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) (541715)	137	144	5%	1.0%
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (811310)	127	134	6%	1.0%
Pharmaceutical Preparation Manufacturing (325412)	125	149	19%	1.0%

Source: EMSI 2018.2

**Table 5. Top Employers Posting Jobs for HVAC Occupations for latest 12 months (May 2017– Apr 2018)**

Employer	Bay	Employer	Bay	Employer	Bay
Sears	60	Whole Foods Market, Inc.	38	Western Digital	19
Tesla Motors	55	Dick's Sporting Goods Inc	27	Bellows Plumbing Inc	17
Jones Lang Lasalle Inc	40	Avis Budget Group, Inc.	23	Johnson Controls Inc	17
Alliance Residential Company	39	Fairfield Residential	19	Coca-Cola Enterprises Inc.	16

Source: Burning Glass

## Educational Supply

There are eight community colleges in the Bay region issuing 139 awards annually on TOP04 0946 - Environmental Control Technology (HVAC), and three other educational institutions issuing 89 awards for a total of 228 annual awards.

**Table 6. Number of Degrees, Certificates and Headcount on TOP 0946 - Environmental Control Technology (HVAC) and CIP 47.0201 Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology**

College	Sub-Region	TOP06 Code for Award	Headcount on TOP04	Associate Degrees	Certificates	Total Awards
Cabrillo	SC-Monterey	0946.10	on another TOP	0	2	2
DeAnza	Silicon Valley	0946.10	212	2	4	6
Diablo Valley	East Bay	0946.10	112	3	2	5
Laney	East Bay	0946.00	202	12	34	46
Los Medanos	East Bay	no awards	48	0	0	0
San Francisco	Mid-Peninsula	0946.00	88	0	9	9
San Jose	Silicon Valley	0946.00	229	10	55	65
Santa Rosa	North Bay	0946.10	13	0	4	4
Skyline	Mid-Peninsula	0946.10	62	1	1	2
CET-Sobrato	Silicon Valley	n/a	n/a	0	20	20
Institute for Business and Technology	Silicon Valley	n/a	n/a	0	58	58
InterCoast Colleges-Fairfield	North Bay	n/a	n/a	0	11	11
<b>Total for Bay Region</b>				<b>28</b>	<b>200</b>	<b>228</b>

Source: Data Mart and Launchboard and IPEDS

NOTE: Headcount of students who took one or more courses is for 2015-16. Awards for Community Colleges is the annual average for 2014-17. Awards for other postsecondary educational institutes is for 2016-17.

## Gap Analysis

There is a large labor market gap in the Bay region for HVAC occupations, with annual openings of 1,614 and annual supply of 228. This represents an undersupply of 1,386 students. Even when only the demand for Heating Air Conditioning and Refrigeration Mechanics and Installers is used compared to the supply from Environmental Control Technology (HVAC) programs, there is still an undersupply of about 625 in the region.

## Student Outcomes

**Table 7. Four Employment Outcomes Metrics for Students Who Took Courses on TOP04 0946.00 – Environmental Controls Technology (HVAC) in 2015-16**

2015-16	Bay Region (All CTE Programs)	State (0946.00)	Bay Region (0946.00)	Top Performing College in Bay Region (0946.00)	
% Employed Four Quarters After Exit	74%	71%	72%	San Jose City	87% (86 out of 99 students)
Median Earnings Two Quarters After Exit	\$12,640	\$10,130	\$12,425	Diablo Valley	\$23,300 (no of students n/a but >10)
Median % Change in Earnings	46%	47%	55%	Los Medanos	67% (13 students)
% of Students Earning a Living Wage	63%	69%	73%	Diablo Valley	94% (16 out of 17 students)

Source: Launchboard

Note: Top college in region in 2015-16 on this TOP04 code for % Employed Four Quarters After Exit with 100% employment (13 students) was Foothill College. However, there are no students recorded taking courses on this TOP code or receiving awards in 2016-17 at Foothill; so, the college is not included in the tables.

## Skills & Certifications

**Table 8. Top Skills for HVAC Occupations in the Bay Region (May 2017– Apr 2018)**

Skill	Postings	Skill	Postings	Skill	Postings
Repair	1,519	Test Equipment	142	Thermostats	66
HVAC	1,057	Cleaning	136	Electrical Diagrams/ Schematics	65
Predictive/Preventative Maintenance	498	Electrical Systems	135	Industrial Equipment Industry Knowledge	65
Plumbing	355	Wiring	133	Machining	65
Customer Service	325	Forklift Operation	130	Customer Contact	62
Teamwork/Collaboration	289	Budgeting	123	System Operation	62
Hand Tools	284	Carpentry	121	Facility Maintenance	61
Scheduling	245	Sales	112	Product Sales	61
Power Tools	227	Project Management	106	Technical Training	61
Machinery	224	Equipment Repair	102	Industrial Operations Industry Knowledge	60
Welding	194	Calibration	99	Drywall	58
Boilers	183	Cooling Towers	90	Technical Support	58
Ventilation	182	Appliance Repair	84	Good Manufacturing Practices (GMP)	57
Schematic Diagrams	180	Hydraulics	82	Personal Protective Equipment (PPE)	54
Occupational Health & Safety	175	Painting	78	Water Treatment	54
Equipment Maintenance	157	Electrical Work	69	Industrial Engineering Industry Expertise	53
Lifting Ability	150	Soldering	68	Quality Assurance and Control	53

Source: Burning Glass

**Table 9. Top Certifications for HVAC Occupations in the Bay Region (May 2017– Apr 2018)**

Note: 61% of records have been excluded because they do not include a certification. As a result, the chart below may not be representative of the full sample.

Certification	Postings	Certification	Postings
Driver's License	694	CDL Class C	24
Environmental Protection Agency Certification	162	Forklift Operator Certification	21
EPA CFC/HCFC Certification	70	Automotive Service Excellence (ASE) Certification	19
Security Clearance	31	Master Mechanic	18
North American Technician Excellence (NATE)	30	First Aid CPR AED	14

Source: Burning Glass

**Table 10. Education (Minimum Advertised) for HVAC Occupations in the Bay Region**

Note: 58% of records have been excluded because they do not include a degree level. As a result, the chart below may not be representative of the full sample.

Education (minimum advertised)	Latest 12 Mos. Postings
High school or vocational training	816 (85%)
Associate Degree	82 (9%)
Bachelor's or Higher	66 (7%)

Source: Burning Glass

## Methodology

Occupations for this report were identified by use of skills listed in O\*Net descriptions and job descriptions in Burning Glass. Labor demand data is sourced from Economic Modeling Specialists International (EMSI) occupation data and Burning Glass job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CTE Launchboard and CCCCCO Data Mart.

## Sources

O\*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI)

CTE LaunchBoard [www.calpassplus.org/Launchboard/](http://www.calpassplus.org/Launchboard/)

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

Living Insight Center for Community Economic Development

Chancellor's Office MIS system

## Contacts

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# EXHIBIT 15

## Cost and Revenue Analysis for Appliance Technology

### Annual FTES for past 5 years

2013-14: 59.820 x \$5,300 = \$317,046

2014-15: 49.580 x \$5,300 = \$262,774

2015-16: 50.190 x \$5,300 = \$266,007

2016-17: 38.14 x \$5,300 = \$202,142

2017-18: 27.80 x \$5,300 = \$147,340

**Total FTES Allocation: \$1,195,309**

### Total salary and benefits for Debra Winkler and Len Price (A load, AC load, C load):

2013-14: \$166,179

2014-15: \$178,108

2015-16: \$258,746

2016-17: \$116,888

2017-18: \$121,910

**Total: \$841,831**

### Operating Budget for Appliance:

	Budget	Actual
2013-14:	\$7,953	15,239.46
2014-15:	\$9,953	17,482.97
2015-16:	\$9,953	11,696.02
2016-17:	\$9,953	8,977.56
<u>2017-18:</u>	<u>\$9,953</u>	<u>12,103.85</u>
<b>Total:</b>	<b>\$49,765</b>	<b>\$65,499.86</b>

	2013-14	2014-15	2015-16	2016-17	2017-18
<b>Revenue</b>					
FTES	317,046 (59.820 FTES)	262,774 (49.580 FTES)	266,007 (50.190 FTES)	202,142 (38.14 FTES)	147,340 (27.80 FTES)
<b>Expense</b>					
Salary & Benefits	166,179	178,108	258,746	116,888	121,910
Operating Budget (Actual)	15,239.46	17,482.97	11,696.02	8,977.56	12,103.85
	135,627.54	67,183.03	<4,435.02>	76,276.44	13,326.15