

# Central California BUSINESS REVIEW

FEBRUARY  
2020

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# Central California BUSINESS REVIEW

## MISSION

To report on the economic and financial health of Central California.

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# Deans' Messages

I am very pleased to share our third edition of the *Central California Business Review (CCBR)*. We are deeply committed to supporting the economic development of the region we are fortunate to call home. When I first arrived at the Craig School of Business in 1992, I was struck by the unusually high level of mutual respect and engagement between the business community and the school. These partnerships have grown in number, depth, and scope over the past 30 years, and it is gratifying to see the *CCBR* become an established addition to this tradition.



This edition includes much-anticipated updates on consumer sentiment, real estate, banking, and water as well as several new articles key to our economic landscape. Many of these articles are co-authored by business community members and Fresno State faculty – a further testament to our Community-University partnerships.

I would like to thank the authors for their hard work and insights. Interim Associate Dean Antonio Avalos and Development Director Cara Peracchi Douglas were instrumental in the conceptualization and editing of this issue. A great deal of gratitude is owed to our editor Barbara Morgan whose industry knowledge and project management skills were essential to the publication. Many thanks to our erstwhile Dean, Robert Harper. The *CCBR* was envisioned and launched under his leadership and will serve as a testament to his commitment to economic development.

Finally, I would like to thank our Founding and Presenting Sponsor, Wells Fargo, for supporting this initiative, Educational Employees Credit Union for continuing to support the Consumer Sentiment Survey, and both Solar Negotiators and the Fresno/Clovis Convention & Visitors Bureau for their Reception and Industry Expert sponsorships.

A handwritten signature in black ink, reading 'Julie Olson-Buchanan'.

Julie B. Olson-Buchanan, PhD  
Interim Dean, Craig School of Business, California State University, Fresno

As my tenure as Dean of the Craig School of Business comes to an end, I am proud to have played a role in the development of our *Central California Business Review*. This third edition continues to provide insights into the regional economy and assists the Craig School in its mission to support economic development in the region. I am grateful for the multiple constituents who have played a part in bringing this valuable publication to fruition.

In addition to providing the region with qualified graduates starting their professional careers, the Craig School also supports the community through centers and institutes, including contributions from the Arnold & Diane Gazarian Real Estate Center, the Institute for Family Business, the Lyles Center for Entrepreneurship & Innovation, the University Business Center and our newest addition, the Solutions Hub. Each offers rewarding events I hope you will be able to attend.



My thirty years at Fresno State, including serving over a decade as Dean, have been rewarding ones. I have been blessed with the support of so many of you in the community. Thank you. I hope our paths cross again.

A handwritten signature in black ink, reading 'Robert M. Harper'.

Robert M. Harper, DBA  
Dean, 2008 - 2019, Craig School of Business, California State University, Fresno



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# Consumer *Sentiment Survey*

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## KEY POINTS

- Consumer sentiment in the region is generally positive, with over 70% of respondents indicating they are the same or better off financially compared to one year ago.
- Of those surveyed, 46% anticipate their household income will increase in the next year.
- Consumers anticipate an increase in income of 3% for the coming year.
- 24% of respondents expect their income to increase more than prices over the next year and 31% expect their income will increase about the same as prices.
- A large majority of respondents expect that regional business conditions will improve (32%) or stay the same over the next year (55%).
- Compared to national data, regional respondents are less positive about the improvements in their current personal finances and economic conditions compared to the past year but are more optimistic regarding the future.

**T**he *Central California Business Review* recently conducted a survey of consumer sentiment in the Central California region, including Fresno, Tulare, Merced, Madera, and Kings counties. The survey included measures of personal and regional economic conditions, as well as purchasing plans and credit utilization. The findings indicate that overall consumer sentiment in the Central California region is generally positive.

### Personal Economic Sentiment

Generally, respondents of the 2019 survey perceive their personal financial situation is stable or improving. Compared to one year ago, 30% reported being financially better off now, and 40% reported being financially the same. Compared to 5 years ago, 43% of respondents reported they currently experience a better financial situation, and 23% reported they are in the same financial situation (Figure 1).



**69% OF  
RESPONDENTS  
ANTICIPATE  
PRICES WILL  
INCREASE IN THE  
NEXT 12 MONTHS.**



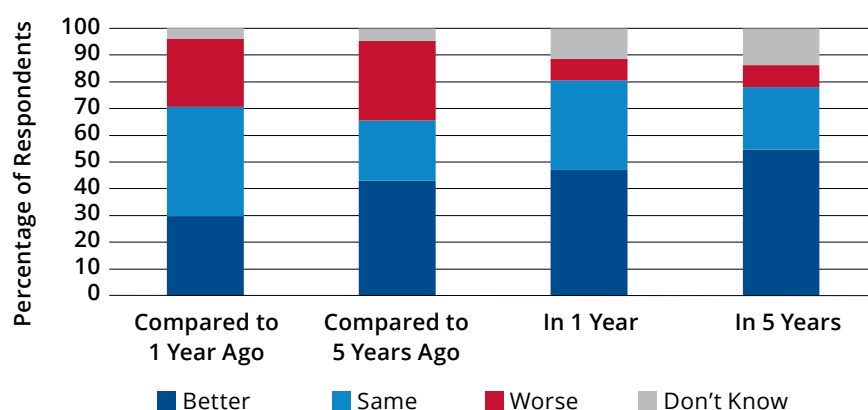
Compared to results from the 2018 Consumer Sentiment Survey, the 2019 survey finds the percent of consumers who perceive their current situation as either the same or better compared to one year ago has dropped three points (from 73.8% to 70.6%); the percent of consumers who perceive they are worse off has increased three points (from 22.7 to 25.6).

When asked about their expected personal financial situation, respondents had quite positive anticipations for the upcoming year as well as the next five years. About 47% of respondents expect to be better off financially in one year, and over half (55%) expect to be better off in 5 years. Of note, only 8% expect to be worse off financially over both the one- and five-year time horizons, while roughly 80% of consumers expect to be better off or stay the same.

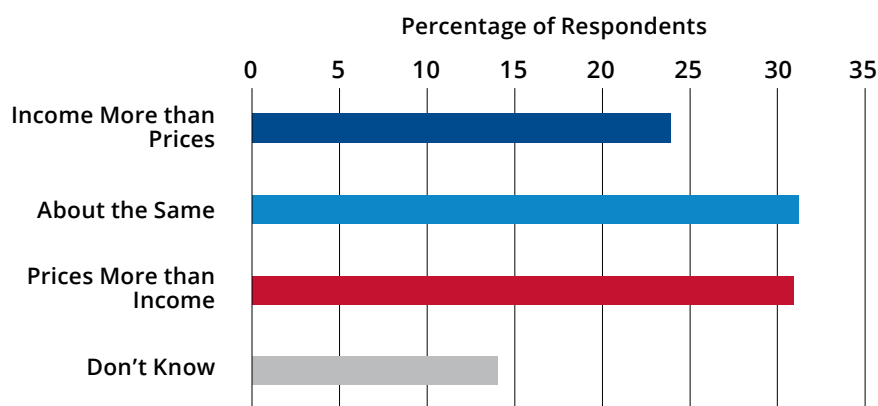
Approximately 22% of respondents anticipate prices will stay the same, while 69% of respondents anticipate prices will increase during the next 12 months. The median anticipated change in household income was 3%. About 46% of respondents expect their household income to increase over the coming year and

*When asked about their expected personal financial situation, respondents had quite positive anticipations for the upcoming year.*

**Figure 1  
Personal Economic Conditions**



**Figure 2  
Expected Income Increase/Decrease Relative to Prices**



an equal percent expect to have the same household income. Only 8% of respondents expect a decrease in household income. Comparing anticipated increase in prices (i.e., inflation) to anticipated increase in household income, 24% of respondents expect their income to increase more than prices over the next year or two and 31% expect a similar increase in their income and prices. About 31% of respondents expect prices to increase more than their income. (See Figure 2)

# Consumer Sentiment Survey



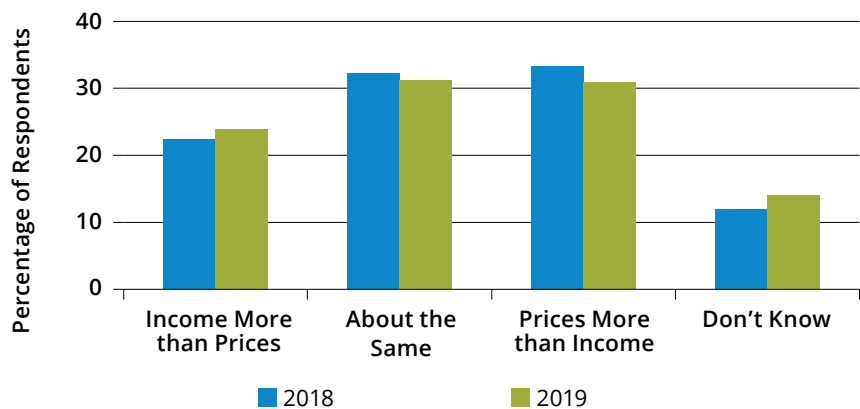
Consumer expectations about price changes relative to income are slightly more optimistic this year than last year. As Figure 3 indicates, the percent of 2019 respondents who anticipate prices will increase more than income is less than in 2018. Consistently, slightly more respondents anticipate income will increase more than prices in 2019 than did so in 2018. While the differences are fairly small, they indicate a positive sentiment.

## Sentiment about the Region

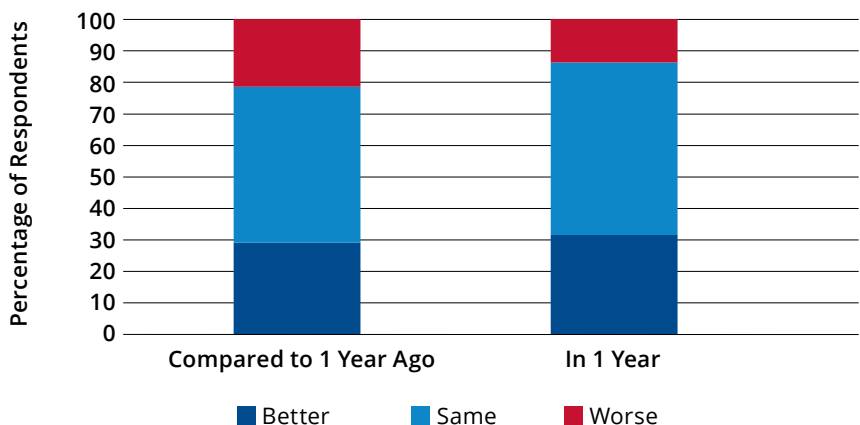
As for perception of the region's overall economy, more respondents indicate that economic conditions have improved (29%) or stayed the same (49%) compared to last year, and they expect conditions to continue to improve (32%) or stay the same (55%) over the next year (Figure 4). When asked about general business conditions, approximately 30% of respondents expect good times, 57% expect a mix of good and bad times, and only 13% expect bad times.

Compared to the 2018 survey results, consumer anticipation about the regional economy over the next year tends toward the status quo. While the percent of consumers in 2018 who felt the economy would be better in one year was slightly higher than in 2019, the percent of 2019 respondents who felt the economy will be worse decreased by 4.5 points from 2018 (Figure 5).

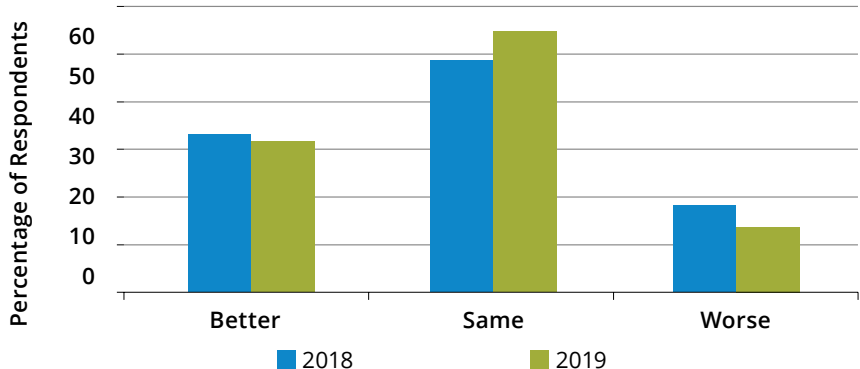
**Figure 3**  
Consumer Expectations about Prices • 2018 vs. 2019



**Figure 4**  
Regional Economic Conditions



**Figure 5**  
Consumers' Anticipation about the Regional Economy in One Year



## Regional vs. National Sentiment<sup>1</sup>

To compare regional sentiment with national sentiment measures, we included questions, adapted from the University of Michigan Consumer Sentiment<sup>®</sup> survey to address the Central California region. Following the University of Michigan's method of analysis, Relative Scores were calculated. Relative Scores above 100 suggest more respondents indicated favorable expectations than unfavorable expectations. Scores below 100 suggest respondents indicated more unfavorable than favorable expectations. Relative Scores of Central California are compared to National Relative Scores (Table1). The only questions with unfavorable ratings (from both regional and national groups) were regarding expectations about changes in prices and changes in income relative to prices.

Generally, when compared to the National respondents, Central California respondents perceive their personal

finances have improved less over the past year relative to National respondents (104 vs. 134) and over the past 5 years (113 vs. 139). However, respondents in Central California indicate more positive expectations about their personal financial situation over the next year than does the National sample (139 vs. 131) and over the next 5 years (146.5 vs. 141).

Data from the Central California and National surveys indicate that consumers expect an increase in both prices and income over the next year. The expected increases are lower for Central California vs. National respondents for both income (137.5 vs. 152) and prices (35.5 vs. 20). Both National and Central California respondents expect similar real income growth over the next years, indicated by whether the increase in prices will surpass the increase in income level (92 vs. 93).

**Table 1**  
**Regional Vs. National Consumer Sentiment<sup>1</sup>**

Category	Regional Relative Score	National Relative Score	Comparison	Interpretation
<b>Personal Economic Conditions</b>				
Current Financial Situation Compared to 5 Years Ago	113	139	⬇️	Region perceives less improvement over past 5 years
Current Financial Situation Compared to 1 Year Ago	104	134	⬇️	Region perceives less improvement over past year
Expected Change in Financial Situation in 1 Year	139	131	⬆️	Region expects more improvement over the next year
Expected Change in Financial Situation in 5 Years	146.5	141	⬆️	Region expects more improvement over next 5 years
<b>Personal Income Expectations</b>				
Expected Household Income Change Over the Next Year	137.5	152	⬇️	Region expects less income growth over the next year
Expected Change in Prices Over the Next Year	35.5	20	⬇️	Region expects less inflation over the next year
Expected Change in Household Income Relative to Prices	93	92	↔️	Region expects almost similar real income growth over the next years
<b>Economic Conditions</b>				
Current Business/Economic Conditions Compared to 1 Year Ago	108	115	⬇️	Region perceives less improvement over past year
Expected Change in Business/Economic Conditions in 1 Year	118	102	⬆️	Region expects more improvement over the next year

# Consumer Sentiment Survey



Both National and Central California respondents indicate perceived improvement in business conditions during the past year. However, when compared to those of Central California, National respondents indicate higher perceived improvements in business conditions (108 vs. 115). Both samples expect positive improvements to happen over the coming year and Central California respondents are more optimistic (118 vs. 102).

Comparing the regional sentiment relative scores for years 2017, 2018, and 2019, two trends are observed (Table 2). First, the expected changes in both financial situation for one year in the future (Column D) and economic / business conditions one year in the future (Column E) show continuing increases. Second, consumer perceptions of their current financial situation compared to both one year ago and five years ago were higher in 2018 than 2017 and 2019. The same pattern is seen with current business conditions. Consumers' 2018 perceptions were a good bit higher than for 2017 or 2019.

## Purchasing and Credit

Respondents also completed questions about major purchases. Looking at the past 6 months, approximately 42% of respondents reported making a major household purchase (e.g., furniture, television, major appliances, etc.). When asked whether this is a good time to make major household purchases, approximately 47% responded positively and about 46% anticipate making one during the next 6 months.

Respondents also indicated the types of credit they currently hold. About 24% hold a mortgage, 5% hold a home equity line of credit, 32% hold an auto loan, 47% have a credit card carrying a balance, and 22% hold a student loan. As for plans to acquire different types of credit in the next year, respondents indicated that they plan to seek mortgages (10%), home equity lines of credit (7%), auto loans (15%), student loans (9%) and obtain credit cards (21%) within the next 12 months.

When comparing consumers' responses with 2018, a higher percentage of consumers indicate they plan to use credit card and student loan debt as financing methods in 2019, and a slightly lower percent are planning to acquire a mortgage.

## Survey Methodology

The Central California Consumer Sentiment Survey was adapted from the University of Michigan Consumer Sentiment Survey. The sample is composed of 1,783 respondents from Central California, recruited via a marketing research firm to complete the survey. Respondents represented in the sample included Fresno (52.7%), Tulare (19.8%), Merced (12.8%), Madera (7.5%), and Kings (7.3%).

## Endnote

- 1 National data from the University of Michigan Consumer Sentiment Survey 2018 Data. Available at: <https://data.sca.isr.umich.edu/>. Relative score values calculated as % of favorable responses minus % of unfavorable responses plus 100. Positive or negative comparison indications are provided for regional vs. national score differences exceeding 2 points.

**Table 2**  
**Consumer Sentiment Relative Regional Scores for Three Years**

	(A) Current Financial Situation Compared to One Year Ago	(B) Current Financial Situation Compared to 5 Years Ago	(C) Current Business / Economic Conditions Compared to One Year Ago	(D) Expected Change in Financial Situation in One Year	(E) Expected Change in Business /Economic Conditions in One Year
2017	101	111	104	134	111
2018	111	120	114	136	115
2019	104	113	108	139	118





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# Real Estate *Sentiment Index*

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## KEY POINTS

- The Fall 2019 Overall Real Estate Sentiment Index shows a slight improvement in current and future expectations relative to last year's performance.
- All real estate sectors follow similar increasing current sentiment expectations, yet future expectations are still lower. Once again, growing concerns over the national and state economies may be blighting future expectations.
- The agricultural sector has been a "hot" topic in the last few years with news of the potential impact of the Sustainable Groundwater Management Act.

Results from the Gazarian Real Estate Center's 2019 *Real Estate Sentiment Index* are just coming to light.

The now traditional survey intends to capture current and future sentiment about the local real estate economy. A survey is sent to approximately 1,500 professionals and their responses form a weighted index for various local real estate market sectors ranging from 0 to 5 in sentiment as below:

<b>Negative</b>	0 to 1
<b>Mildly negative</b>	>1 to 2
<b>Neutral</b>	>2 to 3
<b>Mildly positive</b>	>3 to 4
<b>Positive</b>	>4 to 5

## Overall Sentiment

The overall sentiment index in Fall 2019 regarding current conditions was 3.89, which reflects a mildly positive sentiment (Figure 1). This value represents a 14% increase from the Fall 2018 sentiment index value. We may be observing an improvement in sentiment relative to previous years, although overall future expectations (as measured by the six-month

**FALL 2019 SINGLE-FAMILY RESIDENTIAL INDEX REFLECTS A POSITIVE SENTIMENT.**



*The Fall 2019 projected overall sentiment is 9% lower than the current overall sentiment, yet almost 8% higher than the Fall 2018 projected sentiment.*

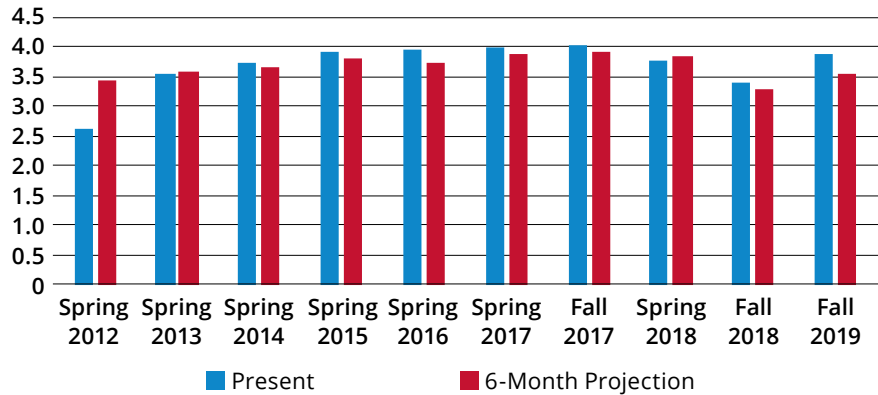
projection) are still lower than current sentiment. The Fall 2019 projected overall sentiment is 9% lower than the current overall sentiment, yet almost 8% higher than the Fall 2018 projected sentiment. Last year, we indicated that concerns over the state of the economy might be dampening real estate market sentiments. We can argue that this year, the current state of the economy is keeping people surprisingly content, but uncertainty and concerns over a potential economic slowdown still blights future sentiments.

## Submarkets

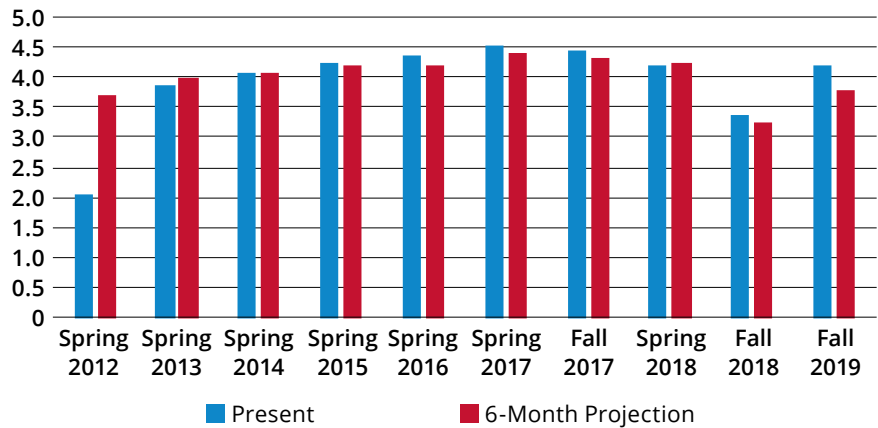
The present single-family residential index in Fall 2019 reflects a positive sentiment, while the 6-month projected index indicates a mildly positive sentiment (Figure 2). Last year, we reported a significant drop in the year-over-year change for this index. This year, we observe a 24% increase in the current sentiment and a 16% increase in the future sentiment index. We asked survey participants about their future expectations on mortgage rate changes. Almost 50% of respondents do not expect any changes, while 27% expect decreases and 27% expect increasing rates. We also asked for their expectation on the best real estate sector investment potential. Multi-family residential and single-family residential resulted in the highest percentage, with 27% and 18% of respondents, respectively.

Last year, we highlighted sentiment performance in the real estate industrial sector. We indicated a slight slowdown from the previous years of continuous upheaval. This year, we notice an improvement in sentiment. The Fall 2019 current industrial

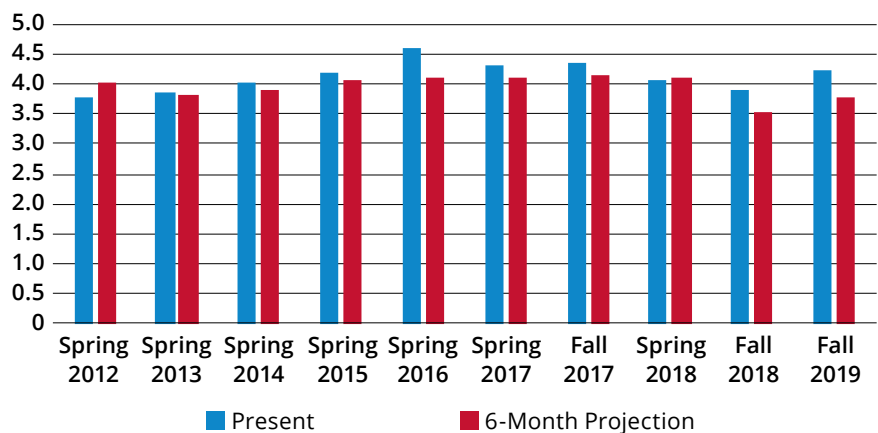
**Figure 1**  
**Overall Sentiment Index**



**Figure 2**  
**Single-Family Residential Sentiment Index**



**Figure 3**  
**Multi-Family Sentiment Index**





# Real Estate *Sentiment Index*



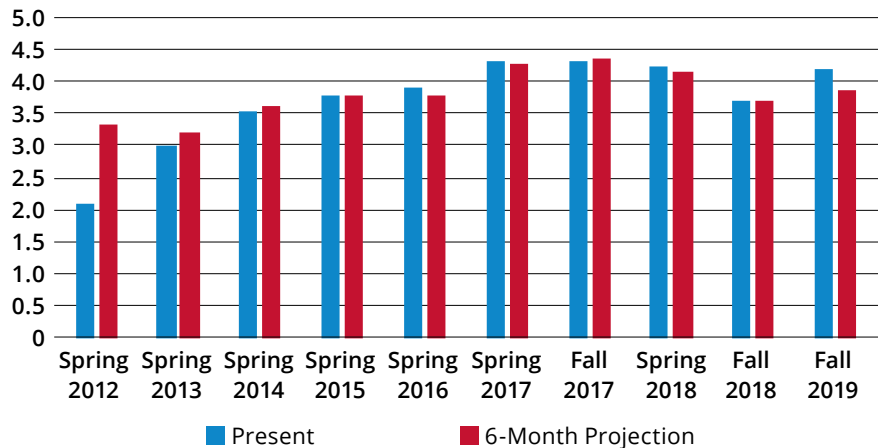
sentiment index resulted in a 13% increase from Fall 2018, and a 4% increase of the future sentiment over the same period (Figure 4). Asking rents have stabilized while vacancy rates remain consistently low, indicating that the market is still showing signs of potential improvement as new construction becomes available.

Similar to last year, the office and retail sentiment indices in Fall 2018 and Fall 2019 reflect a mildly positive sentiment. The office sector (Figure 5) shows a 12% and 10% increase in current and future expectations from their Fall 2018 levels, while the retail sector (Figure 6) reflects a 15% increase in present expectations and an 11% increase in future expectations.

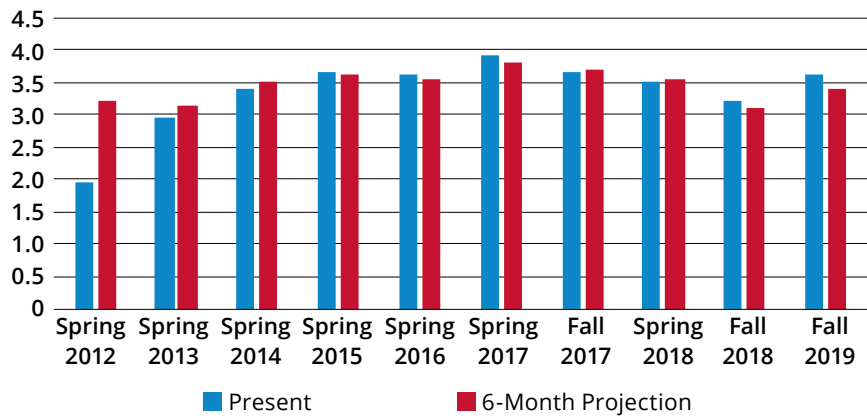
## Agricultural and Land

In this section, we give special attention to the Agricultural and Land Indices (Figures 7 and 8). In spring 2019, the Gazarian Real Estate Center hosted an *Agricultural Investment Symposium*. The event gathered experts in the agricultural sector, particularly representatives from institutional agricultural investors. The keynote speaker was Stan Xavier, a well-known Fresno appraiser. His presentation was followed by Jamie Shen, Chief Investment Officer at PGIM Agricultural Investments, and Dr. Srinu Konduru, Chair of the Department of Agricultural Business at Fresno State. Presenters gave their valuable insights on the current state of the agricultural real estate sector, particularly the uncertainty the Sustainable Groundwater

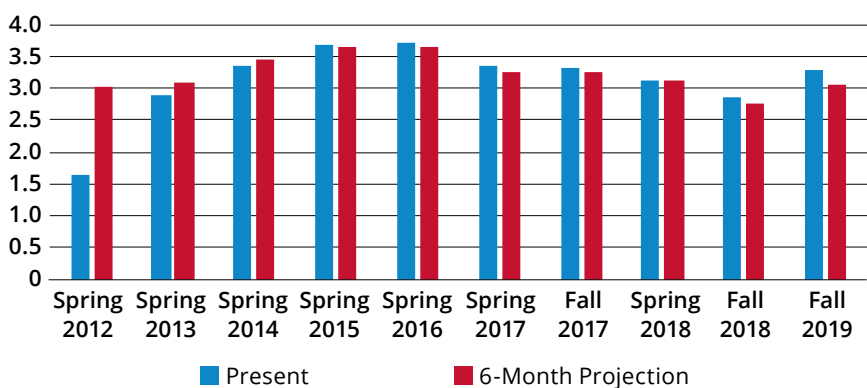
**Figure 4**  
**Industrial Sentiment Index**



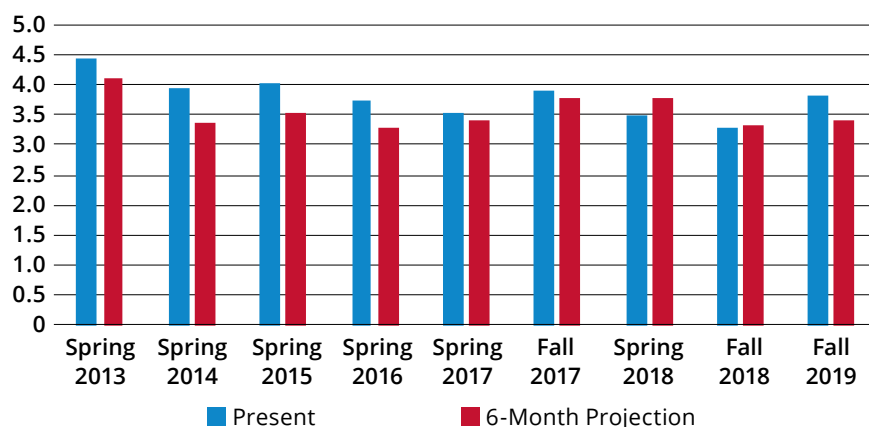
**Figure 5**  
**Office Sentiment Index**



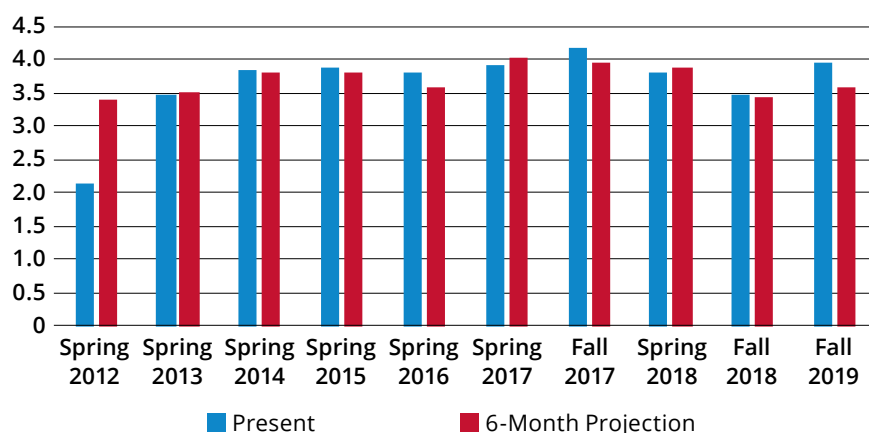
**Figure 6**  
**Retail Sentiment Index**



**Figure 7**  
**Agriculture Sentiment Index**



**Figure 8**  
**Land Sentiment Index**



Management Act (SGMA) has placed on current and future land values. For institutional investors, one of the most important attributes when looking at potential land investments in California is water security. Potential investment properties not only need a steady supply of water, but also the availability of water from multiple sources (ground and surface).

The current and six-month projected indices for land and agriculture are mildly positive, with the land index being slightly higher than agriculture's. However, for land and agriculture, the six-month projected indices are both 10% lower than the current index. These values may reflect uncertainty over the state of the agricultural markets, particularly concerns over the availability of water and the uncertain impact of the SGMA on land and agricultural markets.

**CURRENT  
AND FUTURE  
SENTIMENTS  
IN ALL REAL  
ESTATE SECTORS  
ARE SLIGHTLY  
HIGHER.**



## Conclusions

Consistent with the mission of the Gazarian Real Estate Center to provide information that promotes investment opportunities in Central California, the *Real Estate Sentiment Index* is a great tool to capture sentiment about the state of the local real estate economy. We encourage local and outside investors to use this index in combination with other market statistics to realize local potential business opportunities.

This year, we find that current and future sentiment in all real estate sectors are slightly higher relative to last year. The current overall sentiment across all real estate sectors is mildly positive, but future expectations are marginally blighted by uncertain market conditions. We can argue that a Presidential election in late 2020, coupled with a potential slowdown in economic growth, and uncertainty about the Valley's groundwater situation, may be creating a "wait-and-see" atmosphere affecting not only real estate markets but the whole economy.

## References

Newmark Pearson Commercial Fresno Area Office and Industrial Market Trends Reports, <https://www.newmarkpearson.com/reports.html>

# Global Business

## *Central California's International Trade and Foreign Direct Investment*

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### KEY POINTS

- Of the 50 states, California ranked #1 in imports and #2 in exports in 2018.
- The Fresno Metropolitan Statistical Area (MSA) leads Central California in exports, with a 43% share.
- The Madera MSA has increased exports 167% over the past 8 years.
- 95% of companies exporting goods from California are small and medium-sized exporters with fewer than 500 employees.

### International Trade

"International trade is a critical part of California's economy. As the nation's largest agricultural producer and exporter, our farmers, ranchers, and food processors benefit from open markets, export sales, and a global consumer base."<sup>1</sup> The state's total exports reached \$178 billion in 2018 – just over 11% of all U.S. exports – making California the country's second-largest exporter. Texas, with exports of \$315.4 billion, nearly 20% of U.S. total exports, was first.<sup>2</sup> The number of companies exporting goods from California in 2017 was 71,874 of which 95% were small and medium-sized (SME) exporters with fewer than 500 employees.

The top three markets for California exports were Mexico (\$31 billion), Canada (\$18 billion) and China (\$16 billion). California, the largest importer in the U.S., imported a total of \$441 billion in 2018, resulting in a trade deficit for the state of \$263 billion. The state's top three sources of imports were China (\$161 billion), Mexico (\$44 billion) and Japan (\$34



billion). Electrical machinery (\$92 billion), industrial machinery (\$73 billion) and motor vehicles & parts (\$65 billion) were on top of the import list.

Of the state's \$178 billion in exports, five Metropolitan Statistical Areas (MSAs) in Central California accounted for \$5.57 billion or 3% of California's exports in 2018. (The Office of Trade and Industry Information, part of the U.S. Department of Commerce, measures exports by MSA rather than by county; MSA names are abbreviated as shown in parentheses in Table 1.) Table 1 and Figure 1 indicate total exports for each MSA for the past four years.

For the period 2015 – 2018, Fresno and Tulare averaged roughly 70% of the region's total exports each year, though Fresno's exports declined while Tulare's increased. Of note, Tulare is the only MSA to have experienced four years of consistent growth. While Fresno maintained its leading position due to crop production and other manufacturing, Tulare surpassed Fresno in food manufacturing in 2018. Tulare's other manufacturing exports— computer and electronic products— have also contributed to Tulare's growth.

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LARGEST  
AGRICULTURAL  
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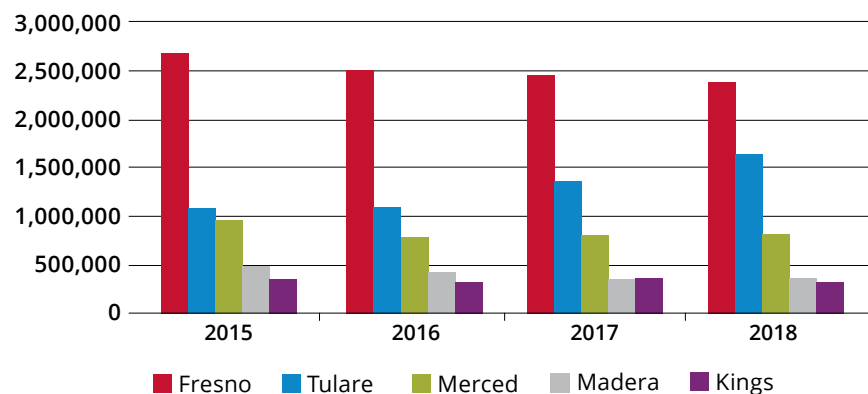
*Fresno and Tulare averaged roughly 70% of the region's total exports each year, though Fresno's exports declined while Tulare's increased.*

**Table 1**  
**Value of Exports by MSA, 2015 – 2018 (\$ thousands)**

	2015	2016	2017	2018
<b>Fresno</b>	2,681,714	2,517,618	2,466,202	2,399,753
<b>Visalia-Porterville, Tulare (Tulare)</b>	1,086,762	1,097,130	1,371,633	1,654,903
<b>Merced</b>	970,789	794,726	812,127	817,660
<b>Madera-Chowchilla (Madera)</b>	503,431	434,775	356,824	373,574
<b>Hanford-Corcoran, Kings (Kings)</b>	373,948	324,717	365,763	328,263
<b>Total</b>	<b>5,616,644</b>	<b>5,168,966</b>	<b>5,372,549</b>	<b>5,574,153</b>

Data Source: The Office of Trade and Economic Analysis (OTEA), International Trade Administration, U.S. Department of Commerce

**Figure 1**  
**Value of Exports by MSA, 2015 – 2018 (\$ thousands)**



Data Source: The Office of Trade and Economic Analysis (OTEA), International Trade Administration, U.S. Department of Commerce

## Agricultural Exports

California is the largest agricultural exporter in the U.S. In 2017, the State's agricultural exports totaled \$20.6 billion in value, increasing by 2.2% from the previous year, and representing nearly 15% of total U.S. agricultural exports. In crop production, the five MSAs in Central California delivered around 27% of the \$10.7 billion in fruit and nuts the state exported. Almonds remained California's top valued agricultural export commodity at nearly \$4.5 billion in

# Global Business



2017. Tree nuts, including almonds, pistachios (export value of \$1.5 billion), and walnuts (\$1.4 billion), mainly produced in the Central Valley, helped California dominate the U.S. agricultural export market. The value and yearly change in exports for California's top trade partners are shown in Table 2.

Almonds and wine were the top exports to the EU, responsible for 46% and 15% of total exports respectively. Produce (strawberries, lettuce, tomatoes) accounted for roughly two-thirds of California's exports to Canada. Pistachios and almonds together accounted for just over 50% of exports to China / Hong Kong.

California's exports to India achieved the highest percentage growth in 2017, increasing 32.5% and equalling \$215 million. In dollars, this growth in exports to India nearly equalled that of China / Hong Kong. The growth in India has been driven largely by an increase in the export of tree nuts. Between 2016 and 2017, almond exports to India increased by 34% (\$168 million); walnut and pistachio exports increased by 157% (nearly \$50 million).

According to the Office of Trade and Economic Analysis, the Fresno MSA's share of California's ag exports to top markets averaged about

13% in 2017. Asia, including China/ Hong Kong, Japan, Korea and India, was the largest foreign market for Fresno, and purchased \$987 million in goods, followed by \$728 million by Canada and Mexico.

Table 3 shows agricultural exports for the five MSAs from 2010 to 2018.<sup>4</sup> As the table indicates, the eight-year growth in agricultural exports for each area appears quite strong. Madera's exports in 2018 were 2.3 times their 2010 exports, and most MSAs experienced 8-year growth of well over 40%. This 8-year increase is, however, attributable largely to the earlier part of the period as four of five MSAs registered double-digit, year-over-year growth from 2010 through 2013. Growth became negative for four of the five counties in 2015 and 2016, then improved with strong growth in Tulare and Kings in 2017 (Figure 2). The most recent year, 2018, saw only one MSA with growth over 5% – Madera – with a 12% growth rate.

**Table 2**  
**Top Destinations for California's Agricultural Exports – 2017 (\$ Millions)**

Destination	Export Value 2017	Year Over Year Growth (Decline) from 2016
European Union	\$3,408	(2.3)
Canada	\$3,287	(0.5)
China / Hong Kong	\$2,270	11.0
Japan	\$1,452	0.8
Mexico	\$1,057	3.2
Korea	\$996	11.4
India	\$880	32.5

Source: California Agricultural Exports 2017 – 2018<sup>3</sup>

**Table 3**  
**Value of Agricultural Exports, 2010 – 2018 (\$ Thousands)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	8-Year Growth
Fresno	1,363,290	1,722,402	2,083,745	2,532,390	2,479,574	2,220,983	2,056,964	1,973,823	1,938,338	42%
Tulare	882,780	976,265	948,505	1,011,969	1,169,878	941,808	964,321	1,243,958	1,278,811	45%
Merced	500,255	646,962	740,582	891,115	1,007,440	916,540	739,091	738,430	751,135	50%
Madera	143,727	160,529	182,947	265,543	354,167	405,264	349,921	304,180	339,694	136%
Kings	245,555	358,104	436,124	491,640	401,695	363,644	316,070	361,291	318,039	30%
Total	3,135,607	3,864,262	4,391,903	5,192,657	5,412,754	4,848,239	4,426,367	4,621,682	4,626,018	48%

Data Source: The Office of Trade and Economic Analysis (OTEA), International Trade Administration, U.S. Department of Commerce<sup>4</sup>

Figure 3 indicates the mix of agricultural exports by year. While crop production increased significantly between 2010 and 2014 and remained relatively stable thereafter, food manufacturing posted a drop of \$847 million between 2014 and 2018 (with Fresno contributing \$584 million of the decline). Part of the decline in the export values can be attributed to the drop in prices of the tree nuts, especially almonds, which caused some temporary market volatility. The only MSA to have any significant growth in food manufacturing after 2014 was Tulare. After a decline in 2015, Tulare recovered and in 2018 exported 9% more than 2014.

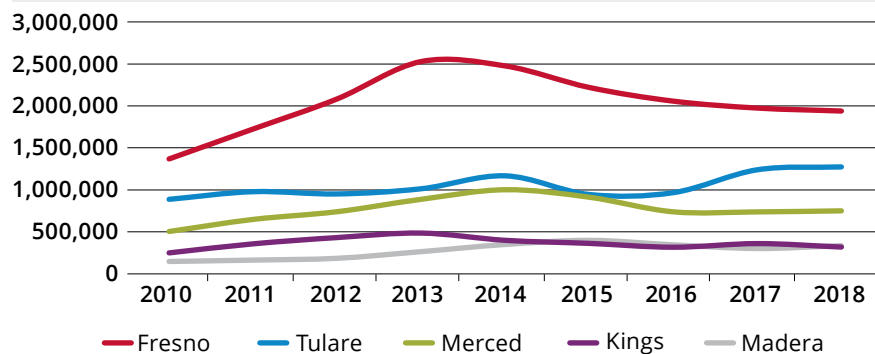
## California Foreign Direct Investment (FDI)

Foreign Direct Investment plays an important role in the U.S. economy. In 2016, FDI created 7.1 million jobs directly, spent \$60.1 billion in Research & Development activities, and produced 25% of all U.S. goods exports. In California, 769,200 jobs are directly supported by FDI and foreign-owned affiliates. Major sources of greenfield investment in California were from Europe, led by the United Kingdom (19% of investment), Germany (9%) and Japan and France (8% each).<sup>5</sup>

California's FDI was driven largely by acquisitions. The overall FDI declined significantly from 2015 (Figure 4).

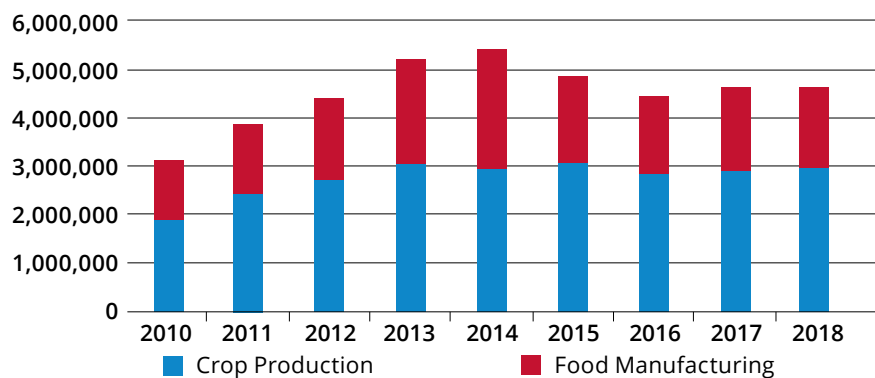
Even though the current FDI data are not available for the Central California region, the partners who developed the Global Trade & Investment Plan are cognizant of the importance of having access to current data. Efforts are underway to start collecting and quantifying the impact of FDI in the Central California region on a regular basis.

**Figure 2**  
Value of Agricultural Exports, 2010 – 2018 (\$ Thousands)



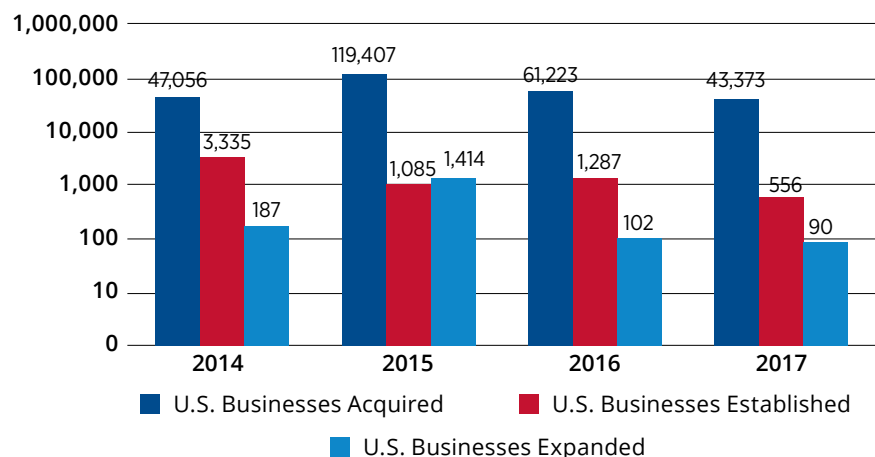
Data Source: The Office of Trade and Economic Analysis (OTEA), International Trade Administration, U.S. Department of Commerce<sup>4</sup>

**Figure 3**  
Exports for Five MSAs for Agricultural Sectors (\$ Thousands)



Data Source: SelectUSA. Foreign Direct Investment (FDI): California

**Figure 4**  
Types of California New FDI (\$ Millions)<sup>6</sup>



Data Source: Bureau of Economic Analysis



## Outlook

The U.S. recently completed the U.S. Mexico and Canada Free Trade Agreement (USMCA). The agreement addresses issues not envisioned in the previous North American Free Trade Agreement (NAFTA) such as labor rates, intellectual property and digital trade. The local international trade ecosystem facilitated by the U.S. Export Assistance Center will host a specific event in 2020 regarding the advantages, changes, and perspectives of the USMCA.

In the most recent update on U.S.-China trade tensions, the Phase One Trade Agreement was reached. According to the agreement, China would make substantial additional purchases of U.S. goods and services in the coming years. This is welcomed news by exporters in the agricultural sector.

Ideally, there will be more investment locally in advanced manufacturing, ag-tech and other subsectors. California's Senior Advisor for International Affairs and Trade at the Governor's Office of Business and Economic Development, indicated that California, as the world's fifth largest economy, needs to make sure that small businesses are integrated into the global economy<sup>14</sup>. Governmental support for small businesses creates opportunities to market products globally, scale operations, meet new international customers, and create jobs<sup>15</sup>. According to the California Central Valley Global Trade and Investment Plan<sup>16</sup>, the Central Valley is California's up-and-coming region for economic development and its partners are prepared to join in this regional effort to facilitate global investment and trade opportunities.

In order to take advantage of these opportunities, there are several resource providers ready to assist companies in pursuing and reaching their international expansion goals:

- California Central Valley Economic Development Corporation (CCVEDC) • <https://centralcalifornia.org/>
- California Centers for International Trade Development (CITD) • <https://www.scccd.edu/business-and-community/citd/index.html>
- County & City Chambers of Commerce
- U.S. Commercial Service (USCS), Fresno Export Assistance Center • <https://2016.export.gov/california/fresno/>

*In the most recent update on U.S.-China trade tensions, the Phase One Trade Agreement was reached.*

- Western United States Agricultural Trade Association (WUSATA) • <https://www.wusata.org/>

## Resources

Several resources and programs facilitate the development of international trade in the Central Valley including Central California District Export Council. The Central Valley Global Trade & Investment Plan provides a road map for the Central Valley businesses to further engage in the global economy. Development of the plan was sponsored by the Brookings Institute and JP Morgan Chase, in collaboration with the Fresno County Economic Development Corporation, Center for International Trade Development (State of California), California State University, Fresno, and the U.S. Commercial Service (International Trade Administration, U.S. Department of Commerce). The international trade community and its partners have focused on implementing and augmenting the infrastructure for international trade and development in the region using recommendations from this plan.

In 2018, the Central California District Export Council (CenCal DEC) was formed; each member of the council has been approved by the U.S. Department of Commerce. In addition to the activities of the CenCal DEC, the Central Valley also has a new resource in the recently established General Purpose Operator for the Fresno Foreign Trade Zone<sup>7</sup> (FTZ). The Fresno FTZ is highly integrated with the international trade community and provides opportunities for local, value added employment and cost savings through tariff shifts for companies looking to import or export. Additionally, the World Ag Expo<sup>8</sup> continues to attract buyers from all over the world, giving Central Valley firms an opportunity to meet international buyers without having to travel overseas. Similarly, programs like the Western United States Agricultural



Trade Association<sup>9</sup> (WUSATA) have brought numerous international buyers to the region ready to do business.

Gold Key<sup>10</sup> is another program offered through the U.S. Department of Commerce that provides U.S. companies with matchmaking appointments with up to five interested partners in a foreign market. In addition to the export of agricultural products, the Fresno D.R.I.V.E. (Developing the Region's Inclusive and Vibrant Economy) Initiative<sup>11</sup> identified that 29% of manufactured goods in the region are exportable. Fresno D.R.I.V.E. has established a goal to increase that to 50% by providing an international trade specialist job training program through the community college system and other partners such as the California Manufacturing Technology Consulting<sup>12</sup> (CMTc) and the San Joaquin Valley Manufacturing Alliance (SJVMA)<sup>13</sup>. By having more locally trained international trade specialists working with manufacturing firms, more types of products will become export ready.

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## Endnotes

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# Tourism & Travel

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## KEY POINTS

- In the Central Valley, visitors spent \$4.5 billion on hospitality and tourism, supported 46,600 jobs and contributed \$258 million in state and local tax revenue in 2018.
- While the Central Valley's tourism revenue has experienced both negative and positive growth rates over the past 6 years, year-over-year growth was nearly 9% in 2017 and in 2018, was 7.5%.
- Over 6 million people visited the three National Parks in or near the six-county region, spending nearly \$650 million in 2018.
- The Fresno-Yosemite International Airport experienced a record number of travelers in 2018 serving 1.7 million passengers.



## Overview

Tourism is broadly defined as expenditures by individuals who have traveled more than 50 miles to reach a destination (National Tourism Resources Review Commission, 1973). Further, tourism includes the activities of individuals who “visit a destination outside their usual environment for less than a year for any main purpose, including, holidays, leisure and recreation, business, health, education, or other purposes” (Middleton, 2015). The information in this article is related to individuals who stay away from home for less than a year and travel more than 50 miles one-way on a non-routine trip.

As an industry, travel and tourism includes several complementary sectors that work effectively together to meet visitor and tourist demand, including transportation & travel, food & beverage service, accommodations, recreation & entertainment (including attractions), retail sales, and travel

arrangements. Tourism spending in 2018 in the United States was \$1.1 trillion. Seventy percent (\$761.7 billion) was for leisure travel and 30% (\$327.3 billion) was for business travel (U.S. Travel Association, 2019).

Tourism’s impact can be assessed by measuring both its direct economic effects, (revenue resulting from businesses that sell directly to tourists and visitors), and its indirect economic effects, (revenue earned by businesses that supply goods and services to tourism businesses) (Stynes, 1997; U.S. Travel Association, 2019). This article highlights important direct and indirect economic effects of visitor spending in California and the Central Valley.

## Economic Impact

California is a popular destination with visitors from around the world. According to Visit California, total direct travel and tourism spending in

2018 was \$140.6 billion, representing a \$79 billion contribution to California’s total gross domestic product (about 2.5%).

Tourism’s economic activity translates to job sustainability for California residents. In 2012, industry jobs equaled just over 1.0 million; by 2018, the industry accounted for 1.2 million jobs. Tourism is also considered a leading export for California, as approximately 60% of tourism-related revenue comes from individuals who reside outside of the state (Dean Runyan Associates, 2019).

Destinations in the Central Valley are also very popular with global visitors. Table 1 provides data for six counties in the Central Valley – Fresno, Kern, Madera, Merced, Kings, and Tulare – and shows visitors spent nearly \$4.5 billion in 2018. Of that, \$2.35 billion (52% of the total) came from visitors who live outside of the Central Valley.

**Table 1**  
**County Direct Travel / Tourism Spending 2010-2018 (\$ Millions)**

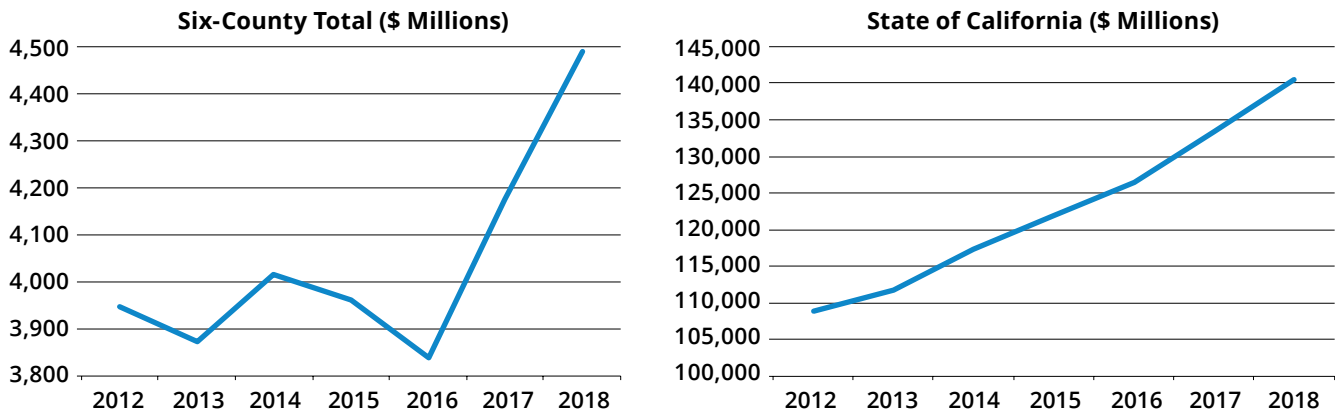
	2012	2013	2014	2015	2016	2017	2018	2012 - 2018 Growth	2017 - 2018 Growth
<b>Kern</b>	1,492	1,461	1,510	1,504	1,396	1,518	1,639	10%	8.0%
<b>Fresno</b>	1,326	1,310	1,348	1,345	1,364	1,426	1,526	15%	7.0%
<b>Tulare</b>	446	432	453	419	384	479	517	16%	7.9%
<b>Madera</b>	262	264	275	269	291	316	339	29%	7.3%
<b>Merced</b>	249	244	264	261	246	270	294	18%	8.9%
<b>Kings</b>	171	163	167	164	159	167	175	2%	4.8%
<b>Six-County Total</b>	3,946	3,874	4,017	3,962	3,840	4,176	4,490	14%	7.5%
<b>California</b>	108,916	111,692	117,385	121,945	126,402	133,321	140,556	29%	5.4%

Data Source: Dean Runyan Associates, 2019; Visit California, 2019

# Tourism & Travel



**Figure 1**  
**Travel and Tourism Revenue**



The region's tourism revenue grew by 14% and \$544 million between 2012 and 2018, though there were a few years of negative growth during the period. For the same period, the state of California's tourism revenue grew by 29%, more than double that of the region. Also notably different from the region, California did not experience any years of negative growth (Figure 1).

The most recent couple of years have seen more positive growth. Year-over-year revenue in the six-county region grew nearly 9% in 2017 and in 2018, grew 7.5%. Also in 2018, the Fresno Yosemite International Airport had a record year in passenger volume, serving over 1.7 million travelers, a 14% increase over 2017, in which over 1.5 million passengers were served. (Fresno Yosemite International Airport, 2019). Whether this is evidence of the region "catching up" to the state's growth remains to be seen.

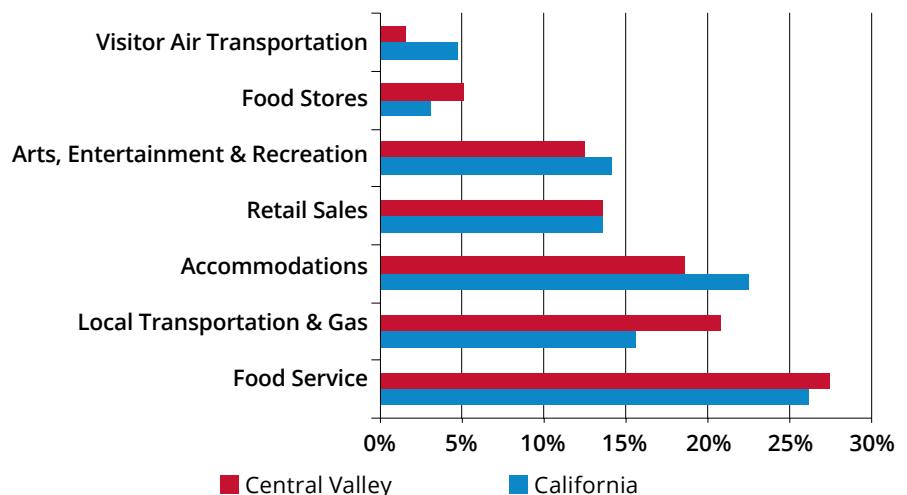
Category expenditures for visitors to California and to the Central Valley are shown in Table 2 and Figure 2. The

**Table 2**  
**Percent of Spending by Travelers and Tourists • 2018**

	California	Central Valley
Food Service	26%	28%
Local Transportation & Gas	16%	21%
Accommodations	23%	19%
Retail Sales	14%	14%
Arts, Entertainment & Recreation	14%	13%
Food Stores	3%	5%
Visitor Air Transportation	5%	2%

Data Source: Dean Runyan Associates, 2019; Visit California, 2019

**Figure 2**  
**Percent of Spending by Category • 2018**



## FRESNO AND KERN COUNTIES ACCOUNTED FOR 70% OF TOURISM REVENUE IN 2018 FOR THE SIX-COUNTY AREA.



largest category is food service. Key differences between the state and Central Valley are lower spending for accommodations in the Central Valley and higher spending on local transportation and food. These differences are likely due to the lower cost of real estate in the region and the greater distances to tourist attractions such as Yosemite and other National Parks.

### Tax Revenue

Tourism revenue creates tax revenue. As shown in Table 3, the amount of tax revenue generated for local governments in the Central Valley in 2018 was \$117 million; the amount generated for the State was \$257 million. This tax revenue allows public services, public utilities, and social services to be funded and helps Central Valley taxpayers save money on their overall tax bill as a large share of tax-generating revenue comes from visitors originating outside the Valley.

A subset of tourism tax revenue is the transient occupancy tax, a tax levied on hotel rooms. The transient tax is an indicator of

*As tourism and travel have increased over the past several years, counties have realized a corresponding increase in tax revenue.*

travel activity for a county or region, as most transient taxes are paid by visitors from outside the area. Table 4 provides information about transient tax rates and revenues for each county for 2018. Overall, transient taxes accounted for roughly 15% of overall tax revenues from tourism for the Central Valley in 2018. A record \$16.7 million was collected for Fresno

County, along with \$15.9 million for Kern County. As tourism and travel have increased over the past several years, counties have realized a corresponding increase in tax revenue. Of note, cities set their own transient tax rates. The highest rate in the Central Valley is 12%, a rate charged by Fresno, Kingsburg, Selma, and Bakersfield.

**Table 3**  
**Total Tax Revenue from Tourism in 2018 (\$ Millions)**

	Local	State	Total
Kern	37.9	95.7	133.6
Fresno	40.4	83.2	123.6
Tulare	15.9	30.7	46.6
Madera	11.5	17.8	29.3
Merced	7.7	18.7	26.4
Kings	3.5	11.1	14.6
<b>Six-County Total</b>	<b>116.9</b>	<b>257.2</b>	<b>374.1</b>

Data Source: Dean Runyan Associates, California Travel Impacts, 2019

**Table 4**  
**2018 Transient Occupancy Tax Revenue by County (\$ Millions)**

County	Revenue	Transient Tax Rate
Fresno	16.7	11.6%
Kern	15.9	9.9%
Tulare	7.5	9.8%
Madera	5.0	9.1%
Merced	3.1	9.9%
Kings	1.0	8.6%
<b>Total</b>	<b>49.2</b>	

Data Source: Dean Runyan Associates, 2019; Visit California, 2019



## Employment and Earnings

The growth in tourism spending in the Central Valley has a positive impact on the region's job market. In 2018, in the six-county area, there were nearly 47,000 tourism related jobs, which generated almost \$1.5 billion in employee earnings (Table 5). The number of jobs has increased 20% since 2012, and growth in jobs for the six-county region was higher than the state as a whole. Madera County is a standout, with 50% growth in the tourism industry over the past six years. Merced County has also experienced significant job growth in tourism jobs and is up over 30% in jobs. These figures demonstrate the full impact tourism has in the Central Valley relative to employment.

## Tourism Growth

The Central Valley's location, affordability, and natural resources are just a few of the reasons hospitality and tourism have grown over the last several years. The most obvious evidence of this growth is in the number of hotels being built. In Fresno and neighboring Clovis, three new hotels have opened in the last year, with at least four currently under construction and four more in the planning stages. In Bakersfield, three hotels are under construction and three more are being planned. There are three hotels currently under construction in Madera County and several are in the works in Visalia as well. Overall, a growing Central Valley tourism industry leads to more jobs created and money invested.

There are three spectacular National Parks located either within or in close proximity to the Central Valley: Kings Canyon National Park, Sequoia National Park, and Yosemite National Park. All three offer world-class scenery and provide a variety of outdoor activities, including hiking, rock-climbing, horseback riding, camping, back packing and river rafting. In addition to being one of America's most popular national parks, Yosemite is also a UNESCO World Heritage Site. As shown in

Table 6, these parks saw almost six million visitors in 2018— visitors who spent more than \$650 million and helped support 8,179 jobs.

These figures are particularly remarkable as 2018 had some of the most destructive wildfires in California history. Despite the destruction, Yosemite National Park saw over four million visitors with the highest number of international visitors coming from the United Kingdom, Germany, and France.

**Table 5**  
**Employment in Tourism**

	2012 Employment	2018 Employment	Increase in Jobs	Growth in Jobs 2012 - 2018	Employee Earnings (\$ Million)
<b>Kern</b>	14,820	17,610	2,790	19%	541
<b>Fresno</b>	12,600	14,029	1,429	11%	438
<b>Kings</b>	1,880	2,160	280	15%	61
<b>Madera</b>	2,820	4,230	1,410	50%	126
<b>Merced</b>	2,400	3,141	741	31%	89
<b>Tulare</b>	4,420	5,450	1,030	23%	169
<b>Central Valley</b>	38,940	46,620	7,680	20%	1,423
<b>California</b>	1,028,000	1,163,000	135,000	13%	52,001
Data Source: Dean Runyan Associates, 2019; Visit California, 2019					

**Table 6**  
**2018 National Park Figures**

Park Unit	Total Recreation Visits	Total Visitor Spending (\$000s)	Percent Visitor Spending from Non-Local Visitors	Jobs Supported
<b>Kings Canyon</b>	699,233	\$61,146	98.70%	809
<b>Sequoia</b>	1,229,594	\$94,431	97.90%	1,186
<b>Yosemite</b>	4,009,438	\$495,245	96.60%	6,184
<b>Combined</b>	5,938,265	\$650,822	96.98%	8,179
Data Source: National Parks Service, 2019				





Overall, the Central Valley's close proximity to the National Parks will continue to drive international and domestic visitors to the area.

Several specific events attract visitors to the Valley each year. For example, the World Ag Expo in Tulare occurs each year in February and attracts more than 100,000 attendees from 70 countries. In Fresno County, the Clovis Rodeo, in April each year, brings in an estimated 45,000 attendees and generates \$12 million in economic impact. Each October, The Big Fresno Fair attracts more than 600,000 attendees and generates more than \$68 million.

In September/October, the Kern County Fair generates more than \$39 million in economic impact (California Department of Food and Agriculture, 2013). The Lightning in a Bottle music festival, which occurs each May, also attracts approximately 20,000 participants and generates approximately \$3 million. (Price, 2019).

## Conclusion

Overall, tourism, travel and hospitality play an important role in the economic viability of the Central Valley. The region's major events, unique sites, transportation hubs, and lodging facilities all drive tourist expenditures, tax revenue, job creation, and earnings. The consistent growth in tourism will create an expansion of opportunities for the future. As more individuals continue to visit, Valley communities and residents will benefit economically through increased tourist spending at Valley businesses, additional tax revenues, and positive word of mouth about Valley attractions and events. The recent growth in all six counties indicates a bright future for the Central Valley and California.

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## KEY POINTS

- California reached a milestone of ONE MILLION installed solar systems in 2019 and accounts for nearly half of all solar installations in the U.S.
- Fresno has the third-highest number of homes in California with rooftop solar panels.
- A solar panels/lithium-ion batteries complex— to be located in Kern County was recently approved by the Los Angeles Department of Water and Power. The project would meet 6% to 7% of L.A.'s annual electricity needs.
- California has the largest number of commercial solar customers in the U.S. The low cost of reliable solar energy storage systems (batteries) in the long-term will secure a more flexible and adjustable energy supply and has the potential to mitigate high peak-time demand charges.

## Overview

The Golden State could also be referred to as the “Solar State,” as it accounts for 47% of all solar installations in the U.S. Our abundant sunshine, high utility rates, and availability of land create an ideal environment for investments in solar. In addition, our state government's commitment to renewable energy has created a favorable legislative environment. In February 2005, California Governor Arnold Schwarzenegger introduced the California Million Solar Roofs bills (SB 1 and SB 1017). The two bills together were intended to create a ten-year incentive program to help Californians install one million solar systems throughout the state by 2018<sup>1</sup>. In September of 2018, then California Governor Jerry Brown signed Assembly Bill 100, which established a goal to have 60% of the state's energy derived from clean energy by 2030, and 100% by 2045.

Photovoltaic (PV) systems convert sunlight directly to electricity by means of PV cells made of semiconductor materials. California reached the milestone of ONE MILLION installed solar PV systems in 2019, one year later than the goal set by Governor Schwarzenegger. Numerous for-profit companies and nonprofit organizations like Grid Alternatives contributed to achieving this milestone<sup>2</sup>. According to a report

by the Solar Energy Industries Association, as of June 2019, 18.74% of the state's electricity came from solar, a significantly higher percentage than the national average of 2.5%<sup>3</sup>. It is clear that California is on track to meet its ambitious renewable energy targets, with solar power playing an ever more important role in California's energy future.

A solar power system represents a significant cost savings for its owner. If one assumes that a typical residential solar system can offset a \$300 monthly energy bill, that solar system represents an after-tax savings of \$3,600 per year. If that savings is applied across one million solar systems, it equals \$3.6 billion in potential energy savings every year. Even more significant, the value of these savings increases over time as the value of a kilowatt rises every year with utility rates.

### Solar Trends in California and the Valley

California continues its commitment to renewable energy through the new home solar mandate. Starting in 2020, all new homes in California are required to have solar power installed. The amount of solar required is determined by the square footage of the home and the climate zone in which the home is located. A typical new home will have 8-10 solar panels, which will not completely offset a home's energy consumption, but will allow the homeowner to benefit from reduced reliance on the utility for their energy needs<sup>4</sup>.

Of note, Fresno has the third-highest number of homes in California

with rooftop solar panels. The total electrical output capacity of Fresno's residential solar panel systems amounted to almost 148,700 kilowatts of direct current (DC) power<sup>5</sup>. In the four counties around Fresno (Fresno, Kings, Tulare, and Madera Counties), there were 1,000 solar permits issued per month in 2019.

The Central Valley has also proven an excellent location for large-scale solar facilities due to the relatively low cost of real estate, abundant open land, and mild climate. Large-scale plants often employ concentrating solar power (CSP) systems to concentrate the sun's energy using various forms of reflective or converging devices such as troughs, lenses, or mirror panels that produce heat, which is then used to generate electricity. Key requirements for CSPs include contiguous parcels of

### FRESNO HAS THE THIRD-HIGHEST NUMBER OF HOMES IN CALIFORNIA WITH ROOFTOP SOLAR PANELS.



land with limited cloud cover and areas of high solar radiation (as measured by the sun's intensity). According to the National Renewable Energy Laboratory (NREL), the U.S. Southwest, including Central California, meets these requirements particularly well. Table 1 provides a list of large (100 megawatt AC capacity or more) solar power generating facilities located in the Central Valley<sup>6,7</sup>.

**Table 1**  
**Large Solar Facilities in the Central Valley**  
**with 100MW AC Capacity or More**

Station	Location	Capacity (MWAC)
Great Valley Solar Farm	Fresno County	200
Tranquility Solar Project	Fresno County	200
Astoria Solar Project	Kern County	175
Beacon Solar Project	Kern County	162
Catalina Solar Project	Kern County	143
Garland Solar Facility	Kern County	200
Solar Star	Kern County	579
Springbok Solar Farm	Kern County	260
Henrietta Solar Project	Kings County	105
Mustang Solar Project	Kings County	100
Quinto Solar Project	Merced County	110
Data Source: U.S. Energy Administration		



# Solar Energy



In addition to established solar plants, new solar projects are planned for the Central Valley. In November 2019, the Los Angeles City Council unanimously approved purchasing power from the Eland Solar and Storage Center. "Located on 2,650 acres in Kern County, the project will include two large-scale solar facilities that will capture 400 megawatts (MW) of solar energy and store up to 1,200 megawatt-hours (MWh) of energy. The site will hold enough energy to power 283,330 homes across Los Angeles." The facility is estimated to be the largest solar energy and storage facility in the United States<sup>8,9</sup>.

In Merced County, the Wright Solar Facility, with a 200 MW capacity, came online November 30, 2019 to provide energy to San Mateo. "This project will add hundreds of construction jobs in the community, bring in millions of dollars of new tax revenues and will greatly enhance the effort to make our state and region more environmentally sustainable," according to a County official.

According to the Solar Jobs Census of 2018, there were 242,000 jobs in the solar industry in the U.S. (including installation, manufacturing, trade & distribution, and operations & maintenance). California employed about 77,000 of the total, or close to one-third of U.S. solar jobs. While counties like Santa Clara and San Francisco employ roughly 10,000 solar workers each, the six-county area that makes up the Central Valley had just over 2,000 jobs total. Table 2 indicates the distribution of solar jobs by county<sup>10</sup>.

## Factors Affecting the Solar Industry

The demand for solar installations is impacted by the cost of the technology, the availability of tax credits from both state and federal authorities, the capacity and compatibility of energy storage devices, the useful life cycle and recyclability of solar panels, and environmental factors like the recent weather and fire conditions that have created grid shut downs. The costs associated with prices of modules, inverters, other hardware balance-of-system components (BOS), and all the soft costs have been reduced by more than half over the last eight years as shown in Figure 1<sup>11</sup>. In addition, the cost to install solar has decreased 70% over the last decade. An average-sized residential system has dropped

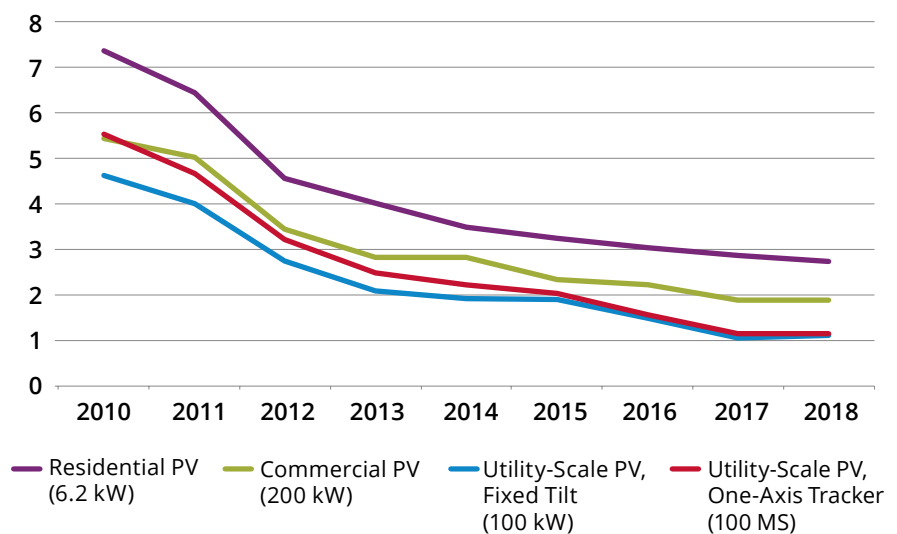
from a pre-incentive price of \$40,000 in 2010 to roughly \$18,000 today<sup>12</sup>.

Tariffs on solar panels imported from China impose stress on solar energy installation. According to a report published by Solar Energy Industries Association (SEIA)<sup>13</sup>, the

**Table 2**  
**Solar Jobs in Central Valley Counties**

County	Solar Jobs
Kern	895
Fresno	862
Tulare	223
Kings	38
Madera	29
Merced	26
<b>Total</b>	<b>2073</b>
Data Source: The Solar Foundation, Solar Jobs Census, 2018	

**Figure 1**  
**Cost by Year for Types of PV Solar Systems • 2018 \$ per Watt DC**



Data Source: PV System Cost Benchmark Summary (inflation adjusted) by National Renewable Energy Laboratory, 2010–2018<sup>12</sup>



four-year tariff program that began in early 2018 could potentially reduce installations by 10.5 gigawatts (equal to 1.8 million homes) between 2018 and 2021. The White House (Trump administration) has argued that more solar manufacturing jobs could be created in the U.S. by resisting China's heavily subsidized solar industry. However, the reality is most panels installed in the U.S. are made in China (China PV manufacturers hold over 50% global market share), and solar panel price increases significantly discourage people to buy and install.

### Government Incentives and Subsidies:

The Solar Investment Tax Credit (ITC) has been one of the most important federal programs to support the growth of solar energy in the U.S. The tax credit provides a federal income tax credit equal to 30% of the cost of a solar project for both residential and commercial projects. Originally created in 2005, the program phases out over a three-year period starting in 2020. The tax credit in 2020 is 26%, drops to 22% in 2021, and drops further to 10% in 2022<sup>14</sup>. In 2023, residential solar projects will receive no tax credit, while commercial solar projects will continue to qualify for a 10% income tax credit.

Figure 2 provides information about the installation types and overall growth in installations in California for the past decade<sup>15</sup>. Most segments of the solar industry have experienced tremendous growth year-over-year. The number of utility-scale solar projects fluctuates year to year due

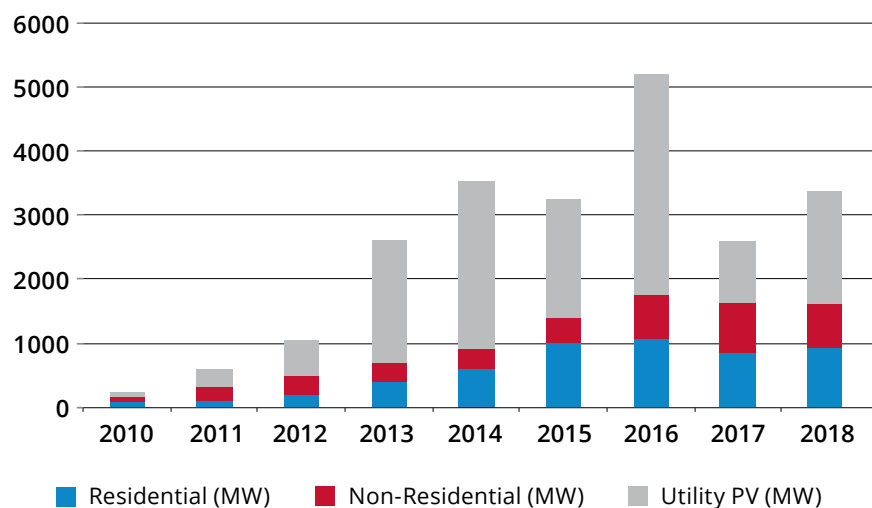
to the time required to develop these projects and the timing of their coming online for service. Residential and non-residential (commercial) solar projects have seen consistent annual growth over the past ten years. In 2016 there was a spike in solar projects due to the anticipated expiration of the solar investment tax credit (ITC) at the end of that year. Even though the ITC was extended six more years in December 2015, many solar projects had been planned for completion prior to the ITC expiration. This spike in 2016 led

to a reduced number of solar projects being completed in 2017. The year 2018 saw a return to the annual growth rates of previous years.

In addition, the Self-Generation Incentive Program (SGIP), a rebate program offered by the State of California for approved renewable technologies is commonly applied to batteries that are used for solar energy storage. The value of the incentive can range from \$0.50 to \$0.25 per watt-hour, which translates into a savings of

*The Solar Investment Tax Credit (ITC) has been one of the most important federal programs to support the growth of solar energy in the U.S.*

**Figure 2**  
**Number of New Solar Installations by Year and Type**  
**(in Megawatt Capacity)**



Data Source: California annual solar installation capacity of photovoltaic (PV) systems, 2010 to 2018<sup>15</sup>

# Solar Energy

\$1,250 to \$2,500 on a 5kW battery<sup>16</sup>. With a battery energy storage system, California homeowners can not only store excess solar electricity and decrease energy bills, but also secure energy for unexpected extreme situations.

## **Environmental Factors (Weather and Wildfires):**

The recently implemented Public Safety Power Shutoffs (PSPS), which occur during high winds and high fire danger events, have drawn attention to the benefits of energy independence. During certain weather conditions, the utilities turn off power to affected regions to reduce the risk of fires. Even if power is only turned off for 24 hours, it can take days for the utility to inspect transmission lines after the weather conditions have passed. Most solar systems are designed with a safety feature to shut down when the electric grid is turned off to prevent the solar system from pushing power into the grid when the utility requires the grid to be completely disabled. It comes as a surprise to some solar consumers that their solar system will not provide backup power during a power outage.

One of the solutions to this problem is a backup battery system. When a solar system is designed with a battery component, the solar system detects when the power from the grid is disabled and switches to an “islanding mode.” This allows the solar system to operate independently of the grid, providing power for the home or business to consume during the day, and providing backup power via the battery’s storage capacity in the evening.

## **Solar Energy Storage:**

Currently, there are two different types of battery storage systems in California applications: grid-tied systems and off-grid (or independent) systems. The challenges faced by grid-tied systems are their complex design and installation, while their benefit is a small size and a balance of excess energy demand such as unexpected changes from equipment overloads or storms, different daily patterns of human activities, etc. Since the power supply and demand in the electricity grid must be equal at any given moment, the grid-tied systems can smooth out the supply and ensure it

matches the demand. The off-grid systems typically work with renewable energy systems, e.g., solar panels, and are installed in areas that have a high chance of disconnection from the grid to protect devices against shortfalls of power through their rapid response and quickly discharging power to the electricity grid. Their batteries are therefore larger in size and are more costly to install, particularly due to their high initial cost. In comparison, normal energy backup systems (gas or diesel generators) tend to take a much longer time to respond to the disconnection. In addition, off-grid battery systems can offer a nearly endless service life, a clean, quiet and adjustable energy supply, and the integration capacity to future home upgrades (e.g., smart home) and a future smart grid. In the long term, they have no additional fuel cost and very few maintenance or service costs.

It is estimated that just over 25% of U.S. commercial customers have the option to subscribe to a utility payment structure that includes a “demand charge” (a charge for electricity used at the operation’s peak level of demand). Demand charges allow the utility to distribute more of the costs of building and maintaining system capacity to those who contribute most to the need for increased capacity. Such charges may exceed \$15 per kilowatt. California has the most commercial electricity consumers (over 1 million)<sup>17</sup>. Given this potential for high demand charges, many commercial customers in California and elsewhere are considering installation of battery systems and other storage devices.

## **Solar Long-Term Maintenance and End-of-Life Disposal:**

The deployment of solar photovoltaic (PV) in the US accounted for over 50 million solar modules in 2018 and is estimated to double by 2022<sup>18</sup>. By 2050, the US is expected to have 7.5 million tons of PV waste with the potential to recover enough raw materials to produce 2 billion new panels<sup>19</sup>. Although the installed solar panels can usually last for 10~20 years, the predictable waste volume of solar urges people to establish a long-term maintenance and waste-management & disposal strategy.



*Solar power installation in California is becoming more economical and affordable, a factor allowing the state to stay on track to meet future ambitious renewable energy goals.*

Early failures and end of life projects will create an economic opportunity and an environmental need to recycle PV modules. Currently, the PV module recyclers do not have the required volume to run the recycling factories to the sufficient capacity to make the process economical. At the same time, there is no system and funding in place to relocate the PV modules from the rooftops to the recycling factories. The Solar Energy Industries Association (SEIA) has written a white paper stating the need for a system and currently only the state of Washington has such a system<sup>20</sup>.

Recycling of PV modules and batteries has the potential to become a valuable secondary resource for critical materials: for example, it has been argued that high-cobalt-content modules and batteries should be recycled immediately to bolster cobalt supplies<sup>21</sup>. Numerous recycling methods, such as thermal and chemical methods currently attract increasing research efforts and are under fast development. These methods can be adapted to the PV modules, home energy storage systems and even car batteries. With around 12,000 MW solar and over 700 MWh of batteries installed in 2018 in California, recycling is becoming a game changer in the solar industry and supply chain.

## Conclusion

Solar power installation in California is becoming more economical and affordable, a factor allowing the state to stay on track to meet future ambitious renewable energy goals. As an excellent location with abundant sunshine and availability of land, the Central Valley has built over 2,200 MW AC capacity solar-power generating facilities and created over 2,000 solar jobs. Although recent tariffs on Chinese imports may impose stress on solar power system deployment, the long-term cost reduction and low maintenance requirements will lead to the continued overall growth of solar installations in California. Solar

power generation with a battery energy storage system has the great potential to mitigate the risks associated with maintaining a continuous power supply during extreme conditions and can optimize the demand-production balance for the electric power grid.

## Endnotes

- 1 <https://ilsr.org/california-seeks-million-solar-roofs-2018/>.
- 2 <https://www.solarpowerworldonline.com/2019/12/california-solar-industry-celebrates-1-million-solar-roofs-sets-new-goal-for-storage/>
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# Water & Agriculture

## *in the San Joaquin Valley*

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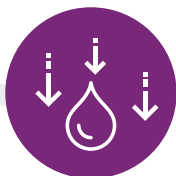
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### KEY POINTS

- Over the past 60 years, the level of groundwater in the San Joaquin Valley has dropped 60 feet on average as aquifers have been drawn down for agricultural irrigation and public water supplies.
- The San Joaquin Valley's water system infrastructure is currently being stressed by aging facilities, climate change, and the Sustainable Groundwater Management Act (SGMA).
- It is estimated that SGMA compliance, without alternative water supply sources, will result in a water deficit that will remove 20% of the Valley's agricultural land (1 million acres) from production and result in \$6 billion in lost farm revenue.
- Fresno State researchers have been working with stakeholders in the San Joaquin Valley to identify alternative financing strategies for a regionally coordinated, local funding source to finance the repair, expansion, and modernization of the water system infrastructure and propose a Water Resilience Investment Special Tax.

For the most recently reported farm year (2017-18), total value of agricultural production for the eight-county San Joaquin Valley was \$34.9 billion. For comparison purposes, the No. 2 state in agricultural production in the U.S. is Iowa, which generated \$27 billion during the same period. Through previous visionary and unprecedented public and private past investment in water system infrastructure, the San Joaquin Valley is the most productive agricultural region in the world. Maintaining and growing this strong, resilient, and healthy agricultural economy requires maintaining a strong, resilient, and healthy water

**OVER THE PAST  
60 YEARS  
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ON AVERAGE.**



system. Today, the water system infrastructure the Valley's agricultural industry relies on is being stressed by several factors – aging facilities, climate change, and the Sustainable Groundwater Management Act (SGMA). A discussion of the current water situation was presented in the 2019 *Central California Business Review*. This article provides an update.

### **Aging Infrastructure**

The initial planning for the water supply storage, conveyance, and distribution facilities that currently serve the San Joaquin Valley started over 100 years ago. The majority of those facilities are now over 50 years old. Consequently, the State's water system is exhibiting signs of age, wear, and deterioration, as illustrated by the failure of the Oroville Dam Spillway, and subsidence failures in the Friant-Kern Canal, Delta Mendota Canal, and California Aqueduct. Perhaps even more challenging for the

*Valley water agencies (GSAs) will file groundwater management plans in early 2020. Reduced groundwater pumping and land fallowing are two programs expected to be included in most plans.*

State's water system infrastructure is the need to satisfy today's competing social, environmental, and economic demands for water – which are much different than they were 100 years ago.

### **Climate Change**

An additional consideration in the evaluation of the State's water infrastructure is the impact of climate change. Currently, the San Joaquin Valley relies on snowfall in the Sierras to accumulate as a snowpack, which serves as a natural form of water supply storage. As the snowpack gradually melts from March to August, the slow release of water fills local streams, creeks, rivers, and storage reservoirs, and the water is diverted to beneficial uses throughout the San Joaquin Valley. This gradual release of water forms the basis of design for the State's existing water system infrastructure.

The State has made significant investment in climate-change research. Their current climate-change forecast indicates that the San Joaquin Valley will continue to

receive approximately the same amount of total annual precipitation, but more will fall as rain and less as snow, and the rainfall will come earlier in the year over a shorter duration, potentially creating flash-flood conditions. The storage capacity of existing infrastructure is insufficient to accommodate such conditions and will result in millions of acre-feet of water flowing out to the Pacific Ocean through the San Francisco Bay. This will be lost water, unavailable for food production in the San Joaquin Valley.

### **Sustainable Groundwater Management Act**

On September 14, 2014, Governor Brown signed into law three bills collectively referred to as the Sustainable Groundwater Management Act (SGMA). The purpose of the SGMA is to address undesirable results caused by excessive groundwater extractions (the use of water from wells). In addition to surface water, Valley farmers have consistently relied on drilling wells to extract groundwater for irrigation. In addition, many

# Water & Agriculture *in the San Joaquin Valley*

Valley water agencies have utilized groundwater to provide for public needs. Over the past sixty years, the level of groundwater has decreased on average across the Valley by about 60 feet as the region's aquifers have been tapped and their millions of acre-feet of water permanently extracted. Figure 1 illustrates the increasing depth at which wells are being drilled in the San Joaquin Valley.

All eight counties have groundwater basins that the State has designated "critically overdrafted" due to the presence of undesirable results. Undesirable results include: (a) chronic lowering of groundwater levels, (b) significant and unreasonable reduction of groundwater storage, (c) significant and unreasonable land subsidence, (d) depletion of surface water and groundwater interconnections,

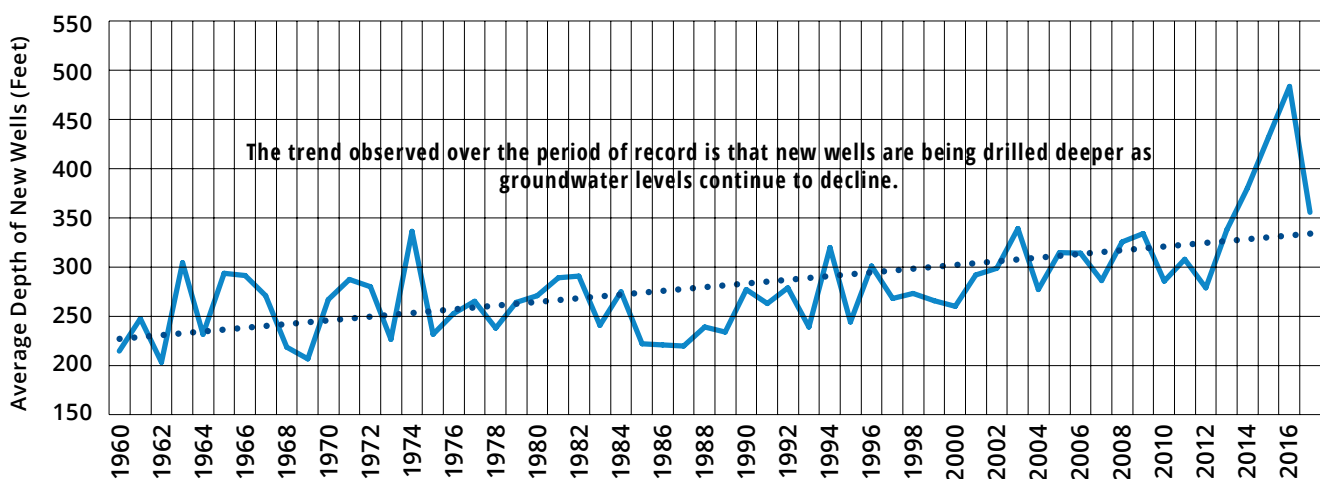
(e) significant and unreasonable degradation of water quality, and (f) significant and unreasonable saltwater intrusion.

Groundwater Sustainability Agencies (GSAs) in critically overdrafted groundwater basins (most of the Valley) are required to submit their Groundwater Sustainability Plans (GSPs) by Jan 31, 2020. For most GSAs, the information and data available to determine sustainable yield, minimum thresholds, and water budgets was limited in terms of quantity of data and quality of data. Most will adjust and improve recommendations using the first five years of the SGMA compliance period (from 2020 to 2025) during which they will collect more and higher quality data to validate their initial GSP assumptions and adjust sustainable yield, minimum

thresholds, and water budgets as necessary. This process results in GSPs that are fairly fluid in nature.

GSPs are required to include language about projects, programs, and initiatives that each GSA will pursue to achieve groundwater balance. Reduced groundwater pumping and land fallowing are two programs expected to be included in most GSP's. There will be limits on the amount of water growers can pump beginning February 1, 2020. For example, there are about a million acres scattered throughout the Valley that have historically pumped 2.5 to 4 feet of water each year for crop production (feet of water per acre of crop), and the new restrictions will limit pumping to less than 1 foot. Under this scenario, if a grower has 100 acres

**Figure 1**  
**Average Depth of New Wells Drilled in the San Joaquin Valley (8 counties)**



Data Source: California Department of Water Resources, Well Completion Reports





of a crop that requires 4 ft of water per acre, and they can only pump 1 ft per acre, the grower will farm only 25 acres.

In February 2019, the Public Policy Institute of California (PPIC) reviewed water supply data for the San Joaquin Valley and forecasts that, without alternative water supply sources, SGMA compliance will result in water supply reductions for the San Joaquin Valley of approximately 2.4 million acre-feet per year, which will require fallowing approximately 1 million acres of productive farmland. Since the total number of acres currently dedicated to agricultural production in the Valley is approximately 5 million, 1 million acres represents a 20% reduction in the world's most productive farmland.

To understand the economic impacts of removing 1 million acres of farmland from production, Fresno State's California Water Institute has been working with several professors, including Dr. Sunding, Chair of the Natural Resource Economics Department at UC Berkeley, who conducted an economic impact analysis for SGMA implementation. In January 2020, Dr. David Sunding presented the findings of the assessment and estimates farm revenue losses associated with the 2.4 million acre-foot water supply deficit resulting from SGMA at \$5.9 billion or 16.3% of farm revenue annually. (For the most recent 2017-18 crop year, the Valley produced \$34.9 billion in total farm revenue.)

*Water supply losses related to aging infrastructure, climate change conditions, and other environmental factors will add to the currently forecasted deficit of 2.4 million acre-feet per year associated with SGMA implementation.*

### The Future of Water Systems

Water supply losses related to aging infrastructure, climate change conditions, and other environmental factors will add to the currently forecasted deficit of 2.4 million acre-feet per year associated with SGMA implementation. The additional water supply losses will translate into additional economic and job losses in the San Joaquin Valley. The existing high rates of poverty in the Valley, the forecasted adverse economic impacts associated with SGMA and climate change, create significant concern regarding the economic future of the San Joaquin Valley.

There are opportunities to make strategic capital investments in water system infrastructure which will result in an improved ability to capture, store, convey and distribute water, and which will reduce the financial losses in agricultural production associated with SGMA implementation and climate change. The needed infrastructure improvements should include, but not be limited to, groundwater recharge and banking facilities,

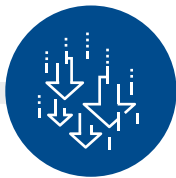
ecosystem enhancement and restoration, conveyance facilities, surface storage facilities, drinking water facilities, and wastewater recycling facilities. Overall, the estimated capital cost required is approximately \$6 billion. Thus, a critical need for the San Joaquin Valley is a reliable source of local revenue to pool together with state, federal, and private funds to cover the costs to repair, expand and modernize the existing water system infrastructure.

What local revenue options are available to combine with state and federal investments, to repair, expand, and modernize the water system infrastructure serving the San Joaquin Valley? Unfortunately, there is no regionally coordinated, local-funding mechanism to finance the repair, expansion, and modernization of water system infrastructure.

While the SGMA legislation gave broad authorities to GSAs, including the assessment of rates, fees, and charges to administer the program, purchase land, purchase water, build infrastructure, etc., the San

# Water & Agriculture in the San Joaquin Valley

**IT IS ESTIMATED  
THAT THE WATER  
DEFICIT WILL  
REMOVE 20%  
OF THE VALLEY'S  
AGRICULTURAL  
PRODUCTION.**



Joaquin Valley has 8 counties, 21 groundwater basins, and 108 Groundwater Sustainability Agencies. The scale of these GSAs is simply too small to generate sufficient revenue to finance meaningful infrastructure. GSA boundaries were determined by water rights, not financial planning, so there is a need for a model that allows for pooled resources across eight counties. If the economy in the San Joaquin Valley is going to survive, some form of broad, equitable, and sustainable funding mechanism and governance structure needs to be developed. One such solution is the Water Resilience Investment Special Tax.

## Water Resilience Investment Special Tax (WRIST)

Fresno State researchers have been working with stakeholders in the San Joaquin Valley to identify alternative financing strategies for a regionally coordinated, local funding source to finance the repair, expansion, and modernization of the water

system infrastructure. To generate the funding necessary, Fresno State proposes the adoption of a voter-approved Water Resilience Investment Special Tax (WRIST) in each of the eight counties in the San Joaquin Valley. The implementation of this proposed financing plan will first require approval by two-thirds of the voters in each county, no small task.

Currently, the minimum sales tax in California is 7.25%. The State allows local governments to add additional sales tax increments with voter approval, and many cities and counties in the San Joaquin Valley have done so. Consequently, sales tax rates vary from county to county, and city to city, as shown in Table 1.

The proposed WRIST would add to other general and special taxes that have previously been approved by voters. For example, if the voters in Tulare County approve the WRIST at

one-half percent, then the total sales tax rate in Tulare County's jurisdiction will increase from 7.75% to 8.25%.

As a voter-approved special tax, the WRIST will be applicable to all taxable transactions in all eight counties. It is recommended that the same incremental increase be placed on the appropriate ballots for all counties.

Increasing the sales tax would result in significant additional revenue for water infrastructure. Between 1997 and 2018 the combined taxable sales of the eight counties averaged \$46.9 billion. While using this average is conservative, sales tax increases of .25% on the low side and .75% on the high side, would result in additional revenue of \$117 million and \$351 million respectively. In 2018, taxable sales transactions equaled \$67.2 billion, so those same tax rates would result in revenue of \$168 million (.25%) and \$504 million (.75%).

**Table 1  
Municipal and County Tax Rates, San Joaquin Valley**

County	County Tax Rate	Highest Municipal Sales Tax Rate	
		Municipality	Rate
San Joaquin	7.750%	Stockton	9.000%
Stanislaus	7.875%	Oakdale	8.375%
Merced	7.750%	Los Banos	8.750%
Madera	7.750%	Chowchilla	8.750%
Fresno	7.975%	Kerman	8.975%
Kings	7.250%	Corcoran	8.250%
Tulare	7.750%	Porterville	9.250%
Kern	7.250%	Bakersfield	8.250%
Data Source: <a href="https://www.cdtfa.ca.gov/legal/legislative-research.htm#overview">https://www.cdtfa.ca.gov/legal/legislative-research.htm#overview</a>			



The implementation of a special sales tax would be regressive in nature, creating an additional financial burden for low-income residents on the purchase of basic food, personal care, and household items. This is an unfortunate situation for low-income residents in the San Joaquin Valley. However, to compensate for the cost burden placed on low-income residents, Fresno State authors recommend the JPA Board of Directors target specific allocations of WRIST revenues to projects that provide safe and affordable drinking solutions for low-income communities served by small public water systems and low-income communities served by individual, onsite domestic wells. Such an allocation will reduce the cost of service for low-income communities, while improving the level and quality of service. Additionally, the expectation is that the residential economic benefits resulting from the special sales tax will be multiple times greater than the cost of the special tax. A significant benefit to this approach is that it would attract monies from other state, federal and private investments that would be matched one-for-one and thus could double the positive impact of the WRIST.

For example, if the sales tax generates \$2 billion over 10 years, and the tax dollars are matched one-for-one, a total \$4 billion will be available for water system investment. The objective will be to invest the \$4 billion in specific water

system projects that will reduce the forecasted economic losses resulting from SGMA and climate change to something less than \$6 billion annually. If, for example, the one-time investment of \$4 billion in tax revenue and matched funds reduced annual agricultural economic losses from \$6 billion to \$4 billion (\$2 billion per year), the payback period would be short. Avoiding the loss of \$2 billion in agricultural revenue per year by spending \$4 billion once is a two-year payback period. While this calculation ignores the net profit aspect of revenue, it is a simple illustration of the benefits of raising \$2 billion in tax revenue that could be matched.

The revenue generated by the WRIST would fund water system infrastructure projects using debt financing and Pay-Go financing. The funding priority would be public agency projects that have already qualified to receive funding from a state, federal, or private agency, but lack the local match dollars required by the funding agency as a condition of funding approval. These types of investments are low-risk because the funding agency and regulatory agency have already vetted the project merits and deemed the project investment worthy. All that is missing is the local match. The additional benefit of co-investing in projects with other public and private partners is that each partner brings another level of transparency and accountability requirements, which is beneficial for the public.

## Governance and Project Management

To manage revenue associated with the WRIST, a model must be created to govern and manage the funds so they are optimized for water infrastructure. While there is no perfect governance model for the WRIST, this analysis considered two legal structures for the management and administration: Enhanced Infrastructure Financing Districts (EIFDs) and Joint Powers Authorities (JPAs). The design and selection of the optimum organizational model would need to consider equity, accountability, transparency, efficiency, and effectiveness. For the purposes of this analysis, the management and administration of the WRIST, as well as the planning, permitting, design, and construction of water system infrastructure funded by the WRIST, would be through an eight-county Joint Powers Authority (JPA). However, EIFDs remain a viable organizational model that may prove to be more financially beneficial for WRIST management and administration, and there is a need for additional research on this legal structure.

The core function of the JPA Board of Directors would be to consider water-related projects in the San Joaquin Valley for WRIST funding. As a condition of funding, the WRIST JPA would participate in all phases of project delivery from initial feasibility and planning studies to construction, startup, and commissioning. The JPA Board of Directors would receive funding recommendations, and



# Water & Agriculture in the San Joaquin Valley

generally operate, function, and conduct the business of the WRIST JPA through three committees: Planning Committee, Finance Committee, and Project Delivery Committee.

Table 2 presents a sample revenue-allocation plan for the WRIST Fund using five designated sub-funds. The sample plan allocates \$234.4 million per year, (a voter-approved WRIST at .5%). On an annual basis, the JPA Board of Directors would adopt allocation ratios for the sub-funds, and then allocate the pooled revenues to the sub-funds based on the adopted allocation ratios. Once the JPA Board of Directors adopts the revenue allocations for each sub-fund, the JPA Board of Directors would allocate funds to each county for those sub-funds that have county allocations. The county allocation will be in proportion to taxable sales transactions in each county and will change each year based on prior-year transactions.

Detailed information about the proposed structure and operations of the EIFD and JPA will be available in an upcoming report from the California Water Institute, "San Joaquin Valley Water Infrastructure Financing Strategy."

## Conclusion

The San Joaquin Valley economy is heavily dependent on agriculture production revenue for employment, prosperity, and economic stability. Water supply

availability is the single most important resource for the Valley's economic survival, and is, unfortunately, at-risk because of aged, worn, and deteriorated infrastructure, implementation of SGMA, and forecasted climate change conditions. The level of economic losses forecasted for agriculture in the San Joaquin Valley is alarming at \$6 billion in lost agricultural production annually. The cost to repair, expand, and modernize the water system infrastructure in the Valley is also estimated at \$6 billion. The San Joaquin Valley must develop ways to make strategic capital investments in water infrastructure to reduce economic losses through proposals such as the WRIST.

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Funding Water Without Drowning In Debt: A Literature Review of Public Funding For Water Infrastructure, Dr. Thomas T. Holyoke, Professor, Department of Political Science, California State University, Fresno, November 2019

Socioeconomic and Demographic Trends of the San Joaquin Valley 1970—2017, Dr. Amber Crowell, Assistant Professor, College of Social Science, California State University, Fresno, June 2019

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**NOTE:** The eight-county San Joaquin Valley includes the counties of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and Kern.

**Table 2**  
**Sample WRIST Revenue Allocation Plan, San Joaquin Valley**

County	Example Annual Revenue Allocation, 0.50% Special Tax Increment					
	County Revenue Allocation, %	JPA Mgmt and Admin, 5%	Regional Infrastructure Fund, 50%	Local Drinking Water Fund, 15%	Local Ag Irrigation Project Fund, 15%	Local Environmental Projects Fund, 15%
San Joaquin	18.37%	\$11,721,819	\$117,218,185	\$6,459,894	\$6,459,894	\$6,459,894
Stanislaus	14.30%			\$5,028,660	\$5,028,660	\$5,028,660
Merced	4.90%			\$1,723,107	\$1,723,107	\$1,723,107
Madera	2.61%			\$917,818	\$917,818	\$917,818
Fresno	23.71%			\$8,337,730	\$8,337,730	\$8,337,730
Kings	2.65%			\$931,885	\$931,885	\$931,885
Tulare	10.06%			\$3,537,645	\$3,537,645	\$3,537,645
Kern	23.40%			\$8,228,717	\$8,228,717	\$8,228,717
<b>TOTAL</b>	<b>100%</b>	<b>\$11,721,819</b>	<b>\$117,218,185</b>	<b>\$35,165,456</b>	<b>\$35,165,456</b>	<b>\$35,165,456</b>

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# Banking

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## KEY POINTS

- Central California banks and credit unions have slowed down since last year's impressive 20.2% loan growth, with loan growth of 5.5% for the year ending September 30, 2019. Loan growth decreased from last year in every segment with the worst performing category (residential lending) growing at -8.6%.
- Central California banks' loan growth decreased from 22.8% last year to 5.9% this year, while their peers in the San Francisco FDIC Region and nationwide continue to experience negative growth.
- Central California Credit Unions' loan growth decreased from 7.8% last year to 3.3% this year, driven by negative growth in vehicle loans (-1.3%), which represent 53% of all Central California credit union loans.
- Commercial Real Estate continued as the largest segment for Central California banks at 40.6% of all loans, and commercial loan volume decreased significantly from the last two years.
- Trade uncertainty, unresolved Brexit, simmering geo-political issues, and a dysfunctional government all remain risks to the economy and are likely to make it more challenging for Central California banks and credit unions to return to the impressive growth rates we have seen in the past.

## Growth Slows for Central California Banks and Credit Unions

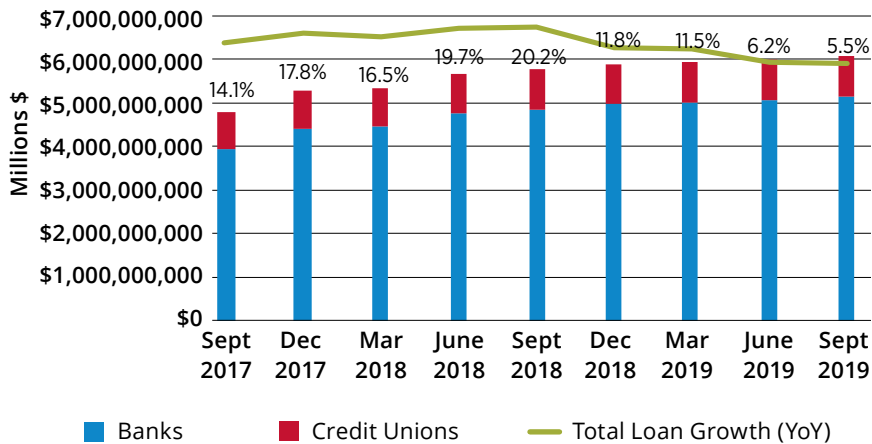
Following national economic trends, Central California banks and credit unions have seen their torrid growth from the past two years slow substantially in 2019, with loan growth falling from 20.2% last year to 5.5% this year as of September 2019 (Figure 1).

Even with slowed growth, Central California banks managed to keep ahead of regional and national peers (institutions with between \$100 million and \$10 billion in assets in the San Francisco FDIC Region and nationwide). Table 1 shows San Francisco Region and national banks continue to experience negative (or close to zero) loan growth since Q4 2017.



## Central California banks' growth in total assets and equity capital slowed to about half of what they were this time last year.

**Figure 1**  
**Central California Loans**



Data Sources: FDIC & NCUA

Central California banks' growth in total assets and equity capital slowed to about half of what they were this time last year, but still remained positive at 7.3% and 10.2%, respectively (Table 2). Credit unions, on the other hand, experienced increased growth in assets (+3.8% compared to +2.5% last year) and equity capital (+12.6% compared to +3.1% last year). Contributing to these strong numbers were higher levels of loan, investment and other income and relatively stable expenses. Credit unions experienced less growth in assets and more growth in equity capital compared to the banks.

**Table 1**  
**Growth in Loans for Regional and National Banks (Year over Year)**

	3Q-2017	4Q-2017	1Q-2018	2Q-2018	3Q-2018	4Q-2018	1Q-2019	2Q-2019	3Q-2019
Central California Banks	14.5%	19.8%	18.4%	22.3%	22.8%	12.5%	12.3%	6.5%	5.9%
San Francisco FDIC Region Banks*	2.2%	-3.1%	-6.7%	-5.5%	-11.7%	-7.2%	-7.2%	-6.7%	-0.6%
National Banks*	-0.1%	0.0%	-1.9%	-1.8%	-1.1%	-0.7%	0.3%	0.5%	-0.2%

\*Regional and national banks between \$100 million and \$10 billion in assets.

Data Source: FDIC

**Table 2**  
**Growth in Selected Balance Sheet Items (Year over Year)**

	3Q-2017	4Q-2017	1Q-2018	2Q-2018	3Q-2018	4Q-2018	1Q-2019	2Q-2019	3Q-2019
<b>Central California Banks</b>									
Total Assets	13.7%	16.3%	12.0%	12.3%	15.5%	8.8%	10.9%	5.3%	7.3%
Total Equity Capital	14.9%	19.6%	12.9%	11.0%	20.9%	13.9%	16.8%	10.7%	10.2%
<b>Central California Credit Unions</b>									
Total Assets	3.8%	4.1%	3.8%	3.4%	2.5%	2.7%	2.2%	2.9%	3.8%
Total Equity Capital	3.4%	6.3%	4.4%	3.7%	3.1%	6.3%	10.2%	12.8%	12.6%

Data Sources: FDIC & NCUA

**Table 3**  
**Growth in Net Income (Year over Year)**

	3Q-2018	4Q-2018	1Q-2019	2Q-2019	3Q-2019
Central California Banks	24.2%	23.0%	19.2%	17.9%	14.0%
Central California Credit Unions	13.3%	23.5%	30.4%	66.0%	41.8%

Central California Banks' net income is the pre-tax net income.  
Quarterly growth based on rolling 1-year net income.

Data Sources: FDIC & NCUA

**Table 4**  
**Loan Portfolio Allocations as of 9/30/19**

Segment	Central California Banks	SF Region 100m-10b Banks	National 100m-10b Banks
Commercial RE	40.6%	34.0%	29.7%
Residential	10.3%	18.7%	27.0%
Commercial & Industrial	13.4%	14.2%	14.6%
Multi-Family Residential	3.9%	10.9%	6.6%
Construction Loans	9.7%	5.9%	7.3%
Farm & Farmland Loans	11.0%	4.1%	6.7%
Loans to Individuals	3.5%	9.8%	5.0%
Other	7.7%	2.4%	3.1%
TOTAL	100%	100%	100%

Data Source: FDIC

**Table 5**  
**Central California Loan Growth by Category (YoY)**

Segment	3Q-2017	4Q-2017	1Q-2018	2Q-2018	3Q-2018	4Q-2018	1Q-2019	2Q-2019	3Q-2019
Commercial RE	23.7%	26.2%	20.2%	25.3%	27.0%	13.8%	11.8%	5.0%	6.0%
Residential	10.0%	19.4%	19.9%	19.4%	13.6%	-0.3%	-3.1%	-6.4%	-8.6%
Commercial & Industrial	9.9%	15.5%	4.6%	16.4%	24.1%	13.0%	20.2%	11.0%	0.9%
Multi-Family Residential	9.3%	19.5%	17.9%	35.2%	39.9%	26.2%	27.1%	12.3%	10.1%
Construction Loans	34.4%	24.1%	33.5%	29.8%	27.2%	28.6%	22.8%	15.2%	5.1%
Farm & Farmland Loans	1.9%	2.6%	5.1%	14.8%	15.2%	17.5%	14.8%	4.5%	5.2%
Loans to Individuals	20.4%	21.4%	20.3%	16.5%	15.5%	6.3%	7.3%	7.3%	1.6%
Other	-13.0%	19.3%	49.6%	23.2%	15.4%	-5.7%	5.5%	19.9%	56.1%
TOTAL	14.5%	19.8%	18.4%	22.3%	22.8%	12.5%	12.3%	6.5%	5.9%

Data Source: FDIC

Central California banks have also seen a decrease in pre-tax net income growth at 14% compared to last year's growth of 24.2% (Table 3). Credit Unions, however, have experienced 41.8% growth in net income over last year as of September 2019. The growth seems to be driven by increases in non-operating income.

## Banks

Central California Banks' loan growth slowed dramatically, from 22.8% to 5.9% on a year-over-year basis as of 9/30/2019 (Table 1). Central California banks continue to outperform when compared to institutions between \$100 million and \$10 billion in assets in the San Francisco FDIC Region and nationwide at -0.62% and -0.2% respectively.

Commercial Real Estate continued to be the largest loan segment for Central California Banks at 40.6% of all loans (Table 4). Its slowdown mirrored the overall trend, with loan growth slowing from 27% to 6% on a year-over-year basis (Table 5). The tightening of credit



standards in this sector each quarter, since Q4 2018, that was reported by the Federal Senior Loan Officer Survey<sup>1</sup> may have contributed to the decrease in growth in this segment. Increased economic uncertainty over the past year, including factors such as the Federal Reserve rates and trade policy, may have also contributed to the slowdown.

The next two largest segments are where there were more issues. Commercial and Industrial loans, the second largest segment at 13.4%, grew at only 0.9% on a year-over-year basis after last year coming in with 24.1% growth. According to the Federal Senior Loan Officer Survey, banks eased terms on Commercial and Industrial loans over the third quarter of 2018 to help combat a weaker demand and increased competition, and their standards have been left basically unchanged since then. Nationally, banks have reported a weaker demand for Commercial and Industrial loans. They attribute the decrease in demand to customers experiencing a reduced need to finance mergers or acquisitions, accounts receivable, and inventories; reduced investment in plant or equipment; increases in internally generated funds and customer borrowing shifting to other sources.<sup>1</sup>

Residential loans, 10.3% of all loans experienced negative growth (-8.6%) on a year-over-year basis, with four of the last five quarters showing negative growth. Banks reported weaker demand across all residential real estate loan categories and began easing standards on this category over the third quarter of 2018 and have left the standards unchanged

since then.<sup>1</sup> For Q3 2019, the San Francisco Region banks experienced negative year-over-year growth in this category (-17.33% and -3.49%, respectively).

The 2018-2019 year saw a YoY percentage increase in average prices of houses sold.<sup>2</sup> Mortgage rates, however, peaked at an average of 4.95% in Q4 of 2018 and as of Q3 2019 are down to an average rate of 3.71%. The national housing affordability index (HAI)<sup>2</sup> increased 11.5% and the California HAI was up 15.57% from Q3 2018 to Q3 2019, indicating an increase in the ability to afford housing. In terms of Central California, all counties (Fresno, Kings, Madera, Merced, and Tulare) saw an increase in affordability following the state and national trend.<sup>3</sup>

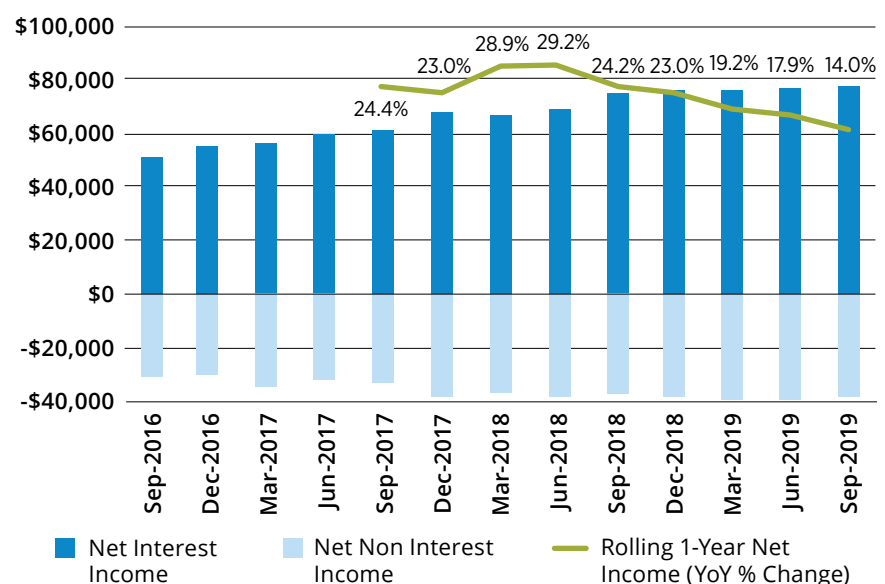
The negative growth in the Central California banks residential real

estate loans could be residual impact from the 2018 interest rate increases, resulting in a general softening in real estate in mid-2019. However, it is anticipated that the three Federal Reserve Board (FRB) interest rate cuts in 2019 and subsequent decreases in mortgage rates and increasing HAI should begin to offset that.

The category with the strongest growth this year was the 'Other' category, which makes up 7.7% of Central California bank loans. This category increased from 15.4% growth in Q3 2018 to 56.1% growth in Q3 2019 (Table 5).

Net income experienced a slowdown, with year-over-year growth dropping from 24.2% to 14% (Figure 2). Slower loan growth was mostly responsible for this change, but it's likely that a yield curve that

**Figure 2**  
**California Central Banks**  
**Quarterly Net Interest Income and Net Non-Interest Income (in '000s)**



Data Source: FDIC



# Banking

flattened and actually inverted for several weeks also contributed to this sharp decline. However, the recent FRB interest rate cuts and the interest rate curve steepening in early October, set expectations that margins may get some relief in the fourth quarter of 2019. (By year end, the 1-10 year yield spread had widened to its largest spread since November 2018.)

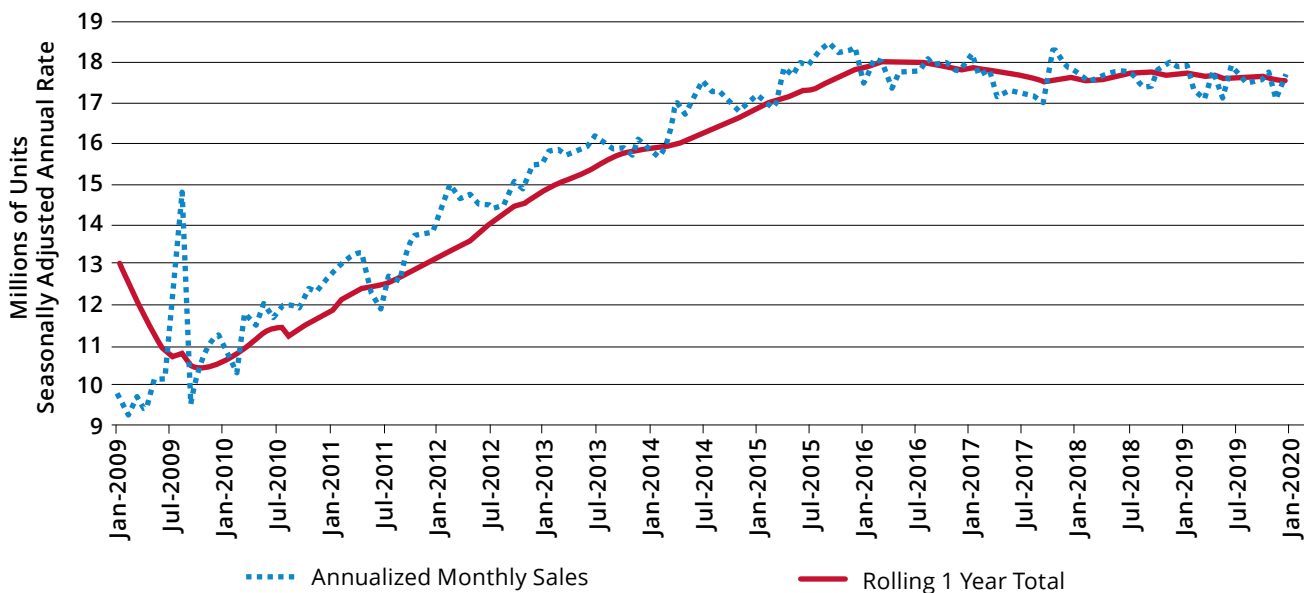
Overall, Central California's banks have experienced a slow down over the past year. There are some factors, including increases in interest rates by the Federal Reserve, trade tariffs and uncertainty around trade policy, a slowing housing market, and a possible contraction from the previous year's boon from tax cuts that may have contributed to a reduction in economic growth.

## Credit Unions

Central California Credit Unions are less diverse in lending, making nearly 90% of loans for two types of collateral. Vehicle Loans make up 53% and Real Estate Loans make up 35% of credit union portfolios.

Vehicle loans have been slowing every quarter since Q3 2017, finally going negative on a year-over-

**Figure 3**  
**Total U.S. Vehicle Sales**



Data Source: U.S. Bureau of Economic Analysis

**Table 6**  
**Central California Credit Union Loan Growth (Year over Year)**

	3Q-2017	4Q-2017	1Q-2018	2Q-2018	3Q-2018	4Q-2018	1Q-2019	2Q-2019	3Q-2019
Unsecured Loans	3.7%	4.8%	3.6%	4.5%	7.2%	6.5%	8.3%	7.7%	5.2%
Vehicle Loans	16.9%	11.1%	9.8%	6.2%	5.6%	5.5%	2.0%	1.1%	-1.3%
Secured Non-RE Loans	1.0%	4.3%	3.8%	4.3%	6.0%	4.2%	20.9%	19.9%	20.1%
Real Estate Loans	7.9%	6.0%	5.4%	11.4%	11.9%	12.6%	15.0%	7.7%	8.8%
<b>TOTAL</b>	<b>12.1%</b>	<b>8.6%</b>	<b>7.6%</b>	<b>7.6%</b>	<b>7.8%</b>	<b>7.8%</b>	<b>7.4%</b>	<b>4.5%</b>	<b>3.3%</b>

Data Source: NCUA



year basis in Q3 2019 (Table 6). At 53% of the total loan portfolio, declining vehicle loans makes any growth in Credit Union loans a challenge. Secured non-real estate loans jumped 20.1% over the last year, but only account for about 4% of total loans. Real Estate Loans continued to be positive, although growing more slowly than last year. They still managed 8.8% growth and account for 35% of the loan portfolio at quarter end. This enabled Central California Credit Unions to grow total loans at a 3.3% year-over-year basis, versus 7.8% last year.

Slowing U.S. total vehicle sales will continue to be a headwind for the Credit Unions. Figure 3 shows that since their 2015 peak, U.S. vehicle sales have been gradually declining, and few expect that trend to change. In Jim Henry's 6/27/19 forbes.com article<sup>4</sup> he warns of slowing sales, with "record-setting new-vehicle prices and economic uncertainty over issues like tariffs and trade acting as a brake." In the same article he writes, "For 2020, Cox Automotive predicted U.S. auto sales would decline again."

Overall, despite slowing loan growth, Central California Credit Unions showed healthy improvements in growth of Total Assets and Total Equity Capital. Growth in Total Assets rose from 2.5% last year to 3.8% on a year-over-year basis. Growth in Total Equity Capital was even more impressive, increasing from 3.1% to 12.6% by 3Q 2019.

## Forecast

There are headwinds that resulted in slower growth last year for Central California Banks and Credit Unions, some of which remain, at least for the time being. Trade uncertainty is still with us, which has a potentially larger impact on agriculturally led economies such as Central California's. An unresolved Brexit, simmering geo-political issues, and a dysfunctional government also still remain risks to the economy.

The one change is the interest rate outlook. Last year at this time we were looking at a Federal Reserve Board projection of a December 2018 rate hike along with three additional interest rate increases in 2019. After three rate decreases in 2019, today we are looking at a FRB projection of no hikes or cuts in 2020. Even more telling is a market perception of a relatively high hurdle for interest rate increases versus a relatively low hurdle for more cuts. This benign outlook might be the key to keeping growth on an upward track.

The wildcard in all this is the presidential election. While Obama's re-election in 2012 and Trump's election in 2016 were both viewed as potentially disruptive events, both experienced positive market reactions. In fact, the year after Obama's 2012 election (2013) turned out to be one of the stronger years for the stock market. Trump's 2016 election was feared to be the harbinger of a severe market correction, and it turned out just the opposite. Again, the year after the election (2017) was a very strong year. However, there seems to be a wider spread between the policies of the incumbent and his challengers than ever before, and certainly a more partisan atmosphere. It remains to be seen if the fears of either party come true and what the impact of that might be, but the potential for volatility seems high.

## Notes

- Central California is defined as the following counties: Fresno, Kings, Madera, Merced, and Tulare.
- Banks headquartered in Central California are: Central Valley Community Bank, Premier Valley Bank, United Security Bank, Fresno First Bank, Murphy Bank, Bank of the Sierra, and Suncrest Bank.
- Credit Unions headquartered in Central California are: First California, Greater Valley Credit Union, United Local, Fresno Fire Department, San Joaquin Power Employees, Fresno Grangers, Kinds, Families and Schools Together, Tulare County, Merced Municipal Employees\*\*, and Merced School Employees.
- \*\*Merced Municipal Employees credit union closed and the last reported data is December 2018. Losing this data point did not significantly impact any of the reported results.

## Endnotes

- 1 The Federal Reserve, 11/04/2019, "The October 2019 Senior Loan Officer Opinion Survey on Bank Lending Practices," <https://www.federalreserve.gov/data/files/sloos-201910-fullreport.pdf>
- 2 National Association of Realtors, "Housing Affordability Index," <https://www.nar.realtor/research-and-statistics>.
- 3 California Association of Realtors, "Housing Affordability Index-Traditional," <https://www.car.org/marketdata/data/haitraditional>
- 4 Forbes, 06/27/2019, "U.S. Auto Sales Likely Slow Further In The Second Half Of 2019, Forecasters Say" <https://www.forbes.com/sites/jimhenry/2019/06/27/us-auto-sales-likely-slow-further-in-the-second-half-of-2019-forecasters-say/#787606326dc3>

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Another key to success is the ability to adapt and change to meet new challenges. We welcome the interim dean of the Craig School of Business, Dr. Julie B. Olson-Buchanan to her new role, and look forward to continued engagement between the Craig School of Business and local businesses as we work together to build a better future for Central California.



*Roger Nord*

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