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2022 Second Quarter

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Social Dashboard for
Bakersfield-Kern



Energy Transition in the
Electricity Sector

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KERN ECONOMIC JOURNAL is a quarterly publication (February, May, August, November) of California State University, Bakersfield. Its purpose is to track local trends and analyze regional, national, and global issues that affect the economic well-being of Kern County. The journal provides useful information and data that can help the community make informed economic decisions. Sources of funding for this journal include university contributions and sponsorship and subscription fees.

Editorial and analytical articles on important local, regional, national, and international issues and trends are invited for consideration of publication in the journal. Articles (not exceeding 800 words in length) must be submitted to the Managing Editor in electronic copy. Individual authors are responsible for the views and research results.

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Kern Economic Journal



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Economy at a Glance!

2021 SECOND QUARTER
BY DR. NYAKUNDI MICHIEKA
& DR. RICHARD S. GEARHART III

*National Economy*¹

U.S. GDP decreased at an annual rate of 0.6 percent in the second quarter of 2022. In the first quarter of 2022, real GDP decreased by 1.6 percent. The smaller decrease in second quarter GDP (compared to the first quarter) reflected an upturn in exports and increased consumer spending. Profits increased by 4.6 percent at a quarterly rate in the second quarter after increasing by 0.1 percent in the first quarter. Private goods-producing industries decreased 10.4 percent, private services producing industries increased 2.0 percent, and government decreased 0.2 percent. A total of 9 of 22 industry groups contributed to the second quarter decline in real GDP.

The decrease in **real GDP** reflected decreases in private inventory investment, residential fixed investment, federal government spending, and state and local government spending. These were offset by increases in exports and consumer spending, while imports increased.

Current-dollar GDP increased by 8.5 percent (annual), or \$508 billion, in the second quarter to a level of 25.25 trillion.

Current-dollar personal income increased \$305.7 billion in the second quarter. This increase reflected increases in compensation (salaries and wages) and personal income.

Real disposable personal income, which is adjusted for inflation and taxes, decreased by 1.5 percent.

Personal saving was \$629.0 billion in the second quarter. The BEA derives the personal saving rate by calculating personal saving as a percentage of disposable personal income.

Personal saving rate – personal saving as a percentage of disposable personal income – was 3.4 percent in the second quarter.

The Conference Board's Index of Leading Economic Indicators – a measure of future economic activity

¹U.S. economic numbers were obtained from the Bureau of Economic Analysis "U.S. Economy at a Glance". This is found at <http://www.bea.gov/newsreleases/glance.htm>.

The information for the Index of Leading Economic Indicators is found at <https://conference-board.org/data/bcicountry.cfm?cid=1>.

The University of Michigan Consumer Sentiment Index is found at <http://www.sca.isr.umich.edu/tables.html>.

– decreased by 0.3 percent in August 2022 to 116.2 following a 0.5 percent decline in July.

The University of Michigan's Consumer Sentiment Index increased from 63.1 in the first quarter of 2022 to 57.8 in the second quarter of 2022. The value for the index in the second quarter of 2021 was 85.6 and 74 in the second quarter of 2020.

*State Economy*²

In California, the unemployment rate dropped to 4 percent in the second quarter of 2022 compared to 5 percent in the first quarter of 2022. At the county level, Alpine (5.3), Colusa (9.1), Fresno (5.8), Imperial (12.2), Kern (6.6), Kings (6.2), Los Angeles (4.8), Madera (5.5), Merced (6.9), Plumas (5.3), San Joaquin (4.8), Stanislaus (5.0), Tulare (7.1) and Yuba (4.8) had unemployment rates above the state average (of 4.8). Counties with the lowest unemployment rates include Marin (2.0), Placer (2.4), San Francisco (3.0), San Mateo (1.9) and Santa Clara (2.0).

California's labor force increased by 212,067 in the second quarter of 2022. During this period, civilian employment increased by 383,000 from 18 million to 18.4 million. Nonfarming enterprises hired 178,967 more workers while farm employment increased by 2,800 workers. The mining and logging sector hired 200 less workers while the construction and manufacturing sectors hired 6,567 more, and 13,367 more workers, respectively. Service sector employment increased from 15.1 million to 15.3 million between the first and second quarter of 2022. The state and local government added 2,733 and 14,333 workers, respectively.

Local Economy

The local economy witnessed an increase in the labor force, from 383,533 in the first quarter of 2022 to 383,900 in the second quarter of 2022. Civilian employment increased by 5,167, from 353,533 in the first quarter of 2022 to 358,700 in the second quarter of 2022. Nonfarm employment increased by 3,767 while farm employment rose by 8,633.

² The California economic numbers were obtained from the Bureau of Labor Statistics "Local Area Unemployment Statistics Map". This is found at <https://data.bls.gov/map/MapToolServlet?survey=la&map=county&seasonal=u>.



In Bakersfield, nonfarm employment changed in the following manner: mining and logging employment remained the same, construction added (167 workers), manufacturing remained unchanged while service added (3,600 workers). Within the service sector, trade, transportation and utilities added (933 workers), financial activities lost (33 workers), professional and business services added (533 workers), education and health services lost (600 workers) while leisure and hospitality added (733 workers). Within the government, the federal government employment remained the same (11,200 workers), state government added (100 workers) and local government added (700 workers).

Total salaries and wages in Kern County increased from \$326,667 in the first quarter of 2022 to \$339,067 (3.8 percent rise) in the second quarter of 2022. Compared to four quarters ago, salaries were higher by \$19,167 or 6 percent.

The rate of unemployment varied considerably across cities, ranging from 2 percent in Ridgecrest to 23.83 percent in Delano. Most cities in Kern County showed a mild decrease in the unemployment rate compared to last quarter. The biggest quarter to quarter drop in the unemployment rate occurred in California City where it dropped from 16.00 percent to 12.93 percent. In Bakersfield, the unemployment rate was 3.9 percent in the second quarter of 2022 compared to 5.27 percent in the first quarter. In Kern County, unemployment was 6.57 percent in the second quarter of 2022 compared to 8.33 percent in the first.

In the second quarter of 2022, the median home price in Bakersfield was \$397,132 compared to \$313,833 in the second quarter of 2021. Home prices are \$83,298 higher than they were four quarters ago. Within the region, median home prices in Taft were the lowest at \$204,000 compared to \$418,833 in Rosamond.

The weighted price index for the five publicly traded companies doing business in Kern County (Sierra Bancorp, Tejon Ranch Company, Chevron Corporation U.S., Granite Construction, and Wells Fargo Company) decreased by 11 percentage points from \$110.0 to \$97.8. The index is 3 percentage points less than it was four quarters ago. All companies gained/lost as follows: Chevron (decreased 13.5 percent quarter-over-quarter), Tejon Ranch (decreased 8.3 percent quarter-over-quarter), Granite Construction (decreased 11.9 percent quarter-over-quarter), Wells Fargo (decreased 8 percent quarter-over-quarter) and Sierra Bancorp (decreased 11.2 percent quarter-over-quarter).

The average retail price of gasoline increased by \$1.31 to \$5.84 a gallon (quarter to quarter). Gas prices were 45.9 percent higher than they were four quarters ago when they averaged \$4.00 a gallon. The unit price of California's Class III milk was \$24.65 in the second quarter of 2022 compared to \$17.95 in the first quarter of 2022. The Index of Farm Price Parity in the second quarter of 2022 (1.00) was higher than that of the first quarter of 2022 (0.94).

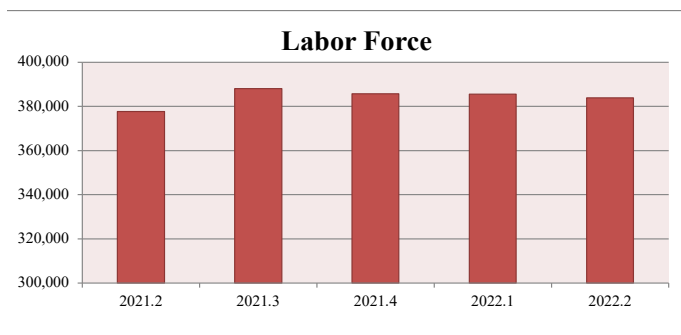
Tracking Kern's Economy¹

DR. NYAKUNDI MICHIEKA &
DR. RICHARD S. GEARHART III

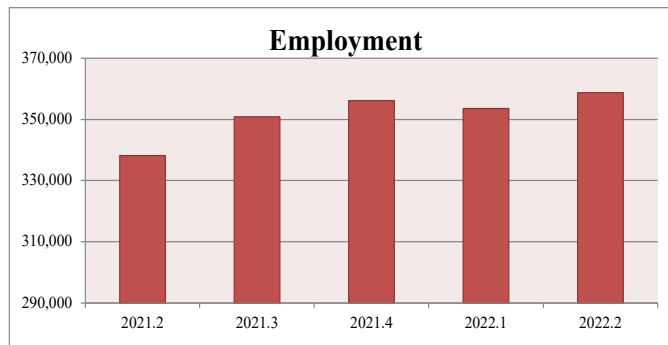
Labor Market

We adjust published data in three ways. First, we average monthly data to calculate quarterly data. Second, we recalculate quarterly data to take into account workers employed in the “informal” market (i.e., self-employed labor and those who work outside their county of residence). Finally, we adjust quarterly data for the effects of seasonal variations.

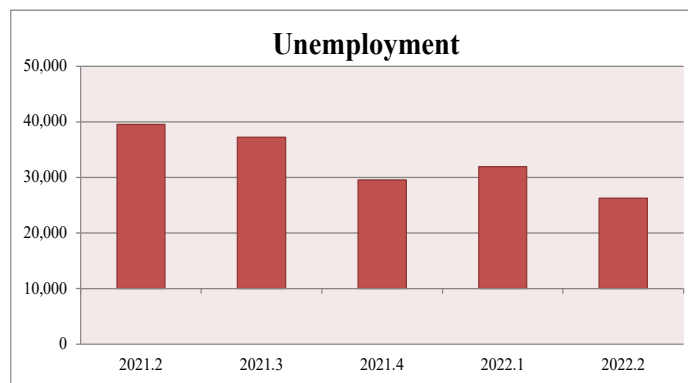
Labor Force - The civilian labor force decreased by 1,633 members, from 385,533 in the first quarter of 2022 to 383,900 in the second quarter of 2022. The labor force estimates are similar to the pre-pandemic levels (early 2019) recorded where they averaged 388,000. The labor force numbers have witnessed a mild decline over the last three quarters. The Bureau of Labor Statistics defines the labor force participation rate as the proportion of the working-age population that is either working or actively looking for work. Recessions tend to push labor force participation down.



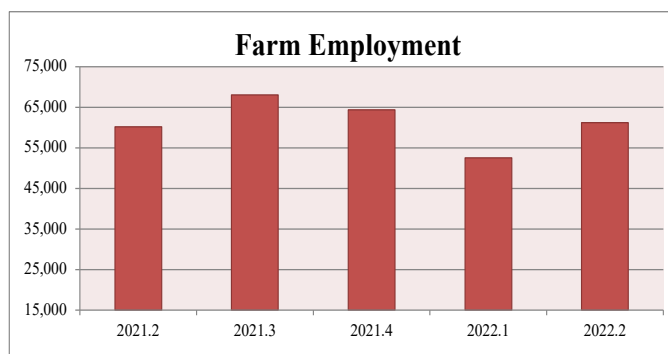
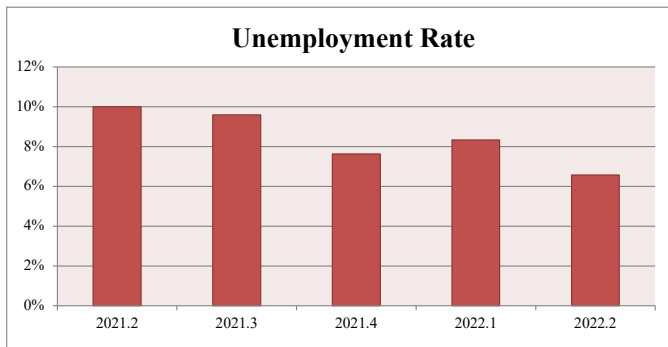
Employment - In the second quarter of 2022, Kern County hired 5,167 more workers as total employment increased from 353,533 to 358,700. This is a 6 percent increase in employment compared to the second quarter of 2021, when 338,167 persons were employed. Last year (2021), first to second quarter employment increased by 3,167.



Unemployment - In the meantime, quarter to quarter unemployment decreased by 5,667 as the number of jobless workers dropped from 31,967 to 26,300. The number of unemployed workers is 33.47 percent lower than it were four quarters ago. In the second quarter of last year (2021), there were 39,533 unemployed workers compared to 26,300 this quarter.



Unemployment Rate - Kern County's year-to-year unemployment rate dropped by 3.43 percentage points from 10 percent in the second quarter of 2021 to 6.57 percent in the second quarter of 2022. The unemployment rate in the second quarter of 2022 was 1.77 percent lower than that of the first quarter of 2022. Kern County's unemployment rate was 8.33 percent in the first quarter of 2022 and 6.57 percent in the second quarter of 2022. Kern's unemployment rate is higher than that of California which is 3.8 percent.

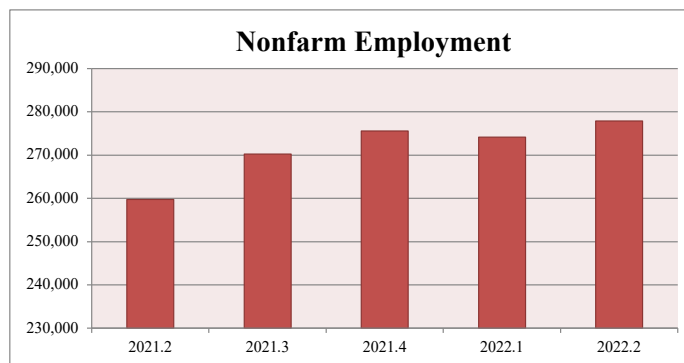


The unemployment rate varied considerably across cities, ranging from 2 percent in Ridgecrest to 23.83 percent in Delano. Most cities in Kern County showed a mild decrease in the unemployment rate compared to last quarter. The biggest quarter to quarter drop in the unemployment rate occurred in California City, where it dropped from 26.87 percent to 23.83 percent. In Bakersfield, the unemployment rate is 6.57 percent (second quarter of 2022) compared to 8.33 percent in the first quarter.

Nonfarm Employment – Local nonfarm industries employed 3,767 more workers in the second quarter of 2022 as the number increased from 274,133 to 277,900. The industries hired 18,167 more workers compared to four quarters ago (7 percent more). The second quarter estimates of the number of nonfarm workers are similar to the 2019 second quarter numbers.

Unemployment Rate of Cities			
Location	Unemployment Rate (%)	Location	Unemployment Rate (%)
KERN COUNTY	6.57	McFarland	11.13
Arvin	6.93	Mojave	8.37
Bakersfield	3.90	Oildale	10.37
California City	12.93	Ridgecrest	2.00
Delano	23.83	Rosamond	9.43
Edwards	9.73	Shafter	6.47
Frazier Park	6.27	Taft	3.93
Lake Isabella	9.53	Tehachapi	7.70
Lamont	5.77	Wasco	12.73

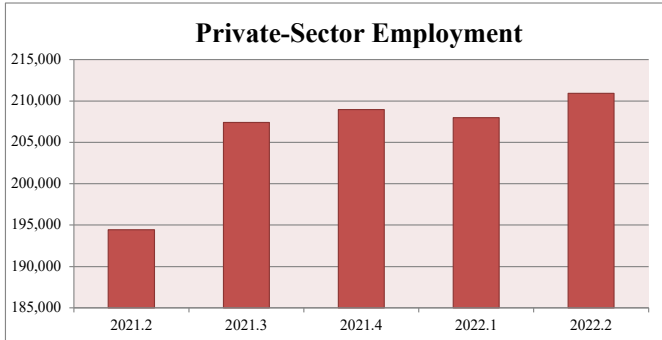
Note: City-level data are not adjusted for seasonality and “informal” market workers.



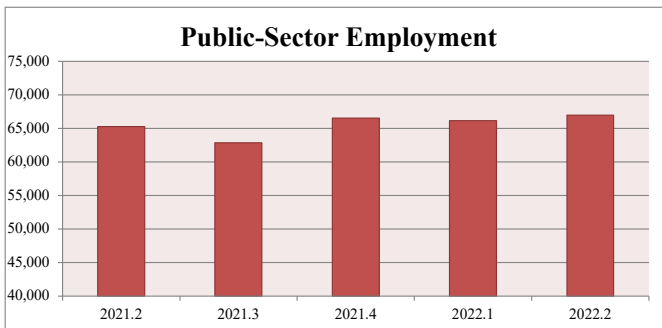
Farm Employment – In the second quarter of 2022, Kern County hired 8,633 more farm workers. As a result, farm employment increased from 52,533 in the first quarter of 2022 to 61,167 in the second quarter of 2022. The year-over-year number of farm workers increased by 1,000 to 61,167 (compared to 60,167 last year).

In Bakersfield, nonfarm employment changed in the following manner: mining and logging employment did not change; construction added 167 workers; manufacturing employment remained the same while the service sector added 3,000 workers. Within the service sector, trade, transportation, and utilities added 933 workers; financial activities lost 33 workers; professional and business services added 533 workers; education and health services added 533 workers while leisure and hospitality added 733 workers. The federal government employment remained the same while the state government added 100 workers, as local government added 700 workers.

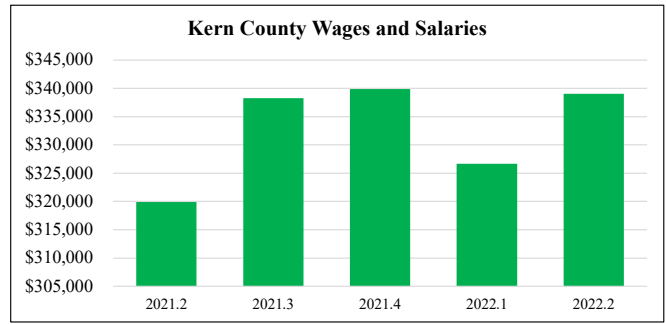
Private-Sector Employment - Nonfarm employment is comprised of private- and public-sector employment. In the second quarter of 2022, private companies hired an additional 2,967 workers compared to the first quarter of 2021. They also hired 8.49 percent more workers this quarter than they did four quarters ago. This quarter's estimates are similar to those recorded in the fourth quarter of 2019. Today, the private sector employs 210,933 individuals.



Public-Sector Employment - The public sector consists of federal, state, and local government agencies. The local government labor market includes county and city agencies and public education. In the second quarter of 2022, government agencies hired 800 more workers as employment increased from 66,167 to 66,967 – a 1.21 percent increase. Compared to last year, 2.55 percent more workers were hired in the public sector.

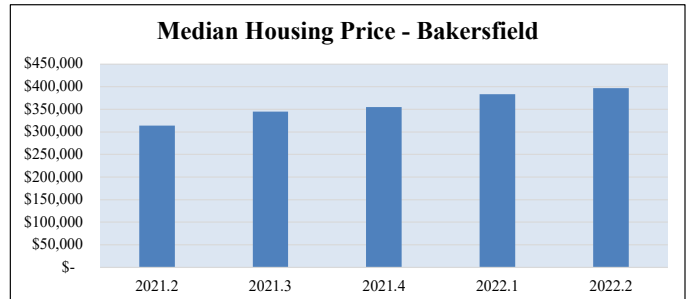


Salaries and Wages - Total salaries and wages in Kern County increased from \$326,667 in the first quarter of 2022 to \$339,067 in the second quarter – a 3.8 percent increase. Compared to four quarters ago, salaries were \$19,167 (or 6 percent) higher.

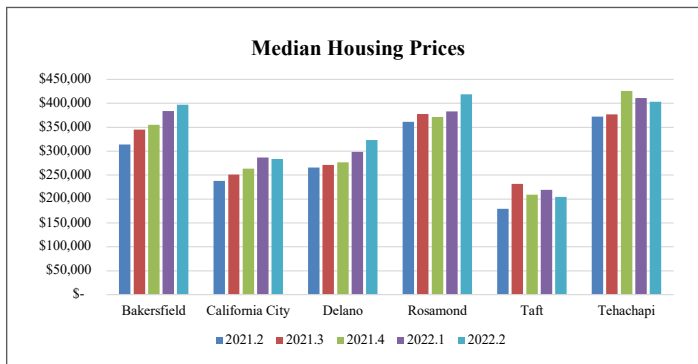


Housing Market

Housing Price - - In the second quarter of 2022, Bakersfield's housing prices were up by \$13,632 (3.55 percent) compared to the first quarter of 2022. The median home price averaged \$397,132 in the second quarter compared to \$383,500 in the first quarter of 2022. Prices are also \$83,298 higher than they were four quarters ago in 2021. This rise in home prices has been fueled by increased demand and low inventory.



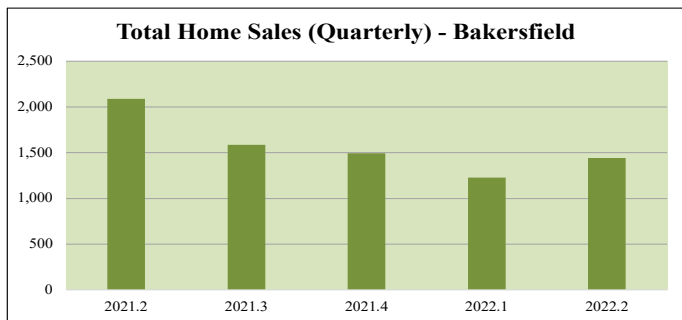
Regional Housing Prices - Changes in housing demand felt in Bakersfield are likely to spillover to surrounding cities as individuals who are on the margin of buying or selling are likely not located in the Bakersfield MSA directly. An assessment of first to second quarter (2022) changes in median sales price indicates that home prices surged in all cities in Kern County, except in California City, Tehachapi and Taft. Rosamond recorded the highest uptick in prices (+\$35,000) while Taft recorded the greatest drop in prices (-\$15,000). The average price increase was 2 percent across all regions in the county. The median home price averaged \$338,355 in the second quarter of 2022 compared to \$330,264 in the first quarter at the county level.



The year-to-year home prices increased in all cities in Kern County as follows: Bakersfield (26.54 percent), California City (19.28 percent), Delano (21.78 percent), Rosamond (15.94 percent), Taft (13.60 percent) and Tehachapi (8.37 percent).

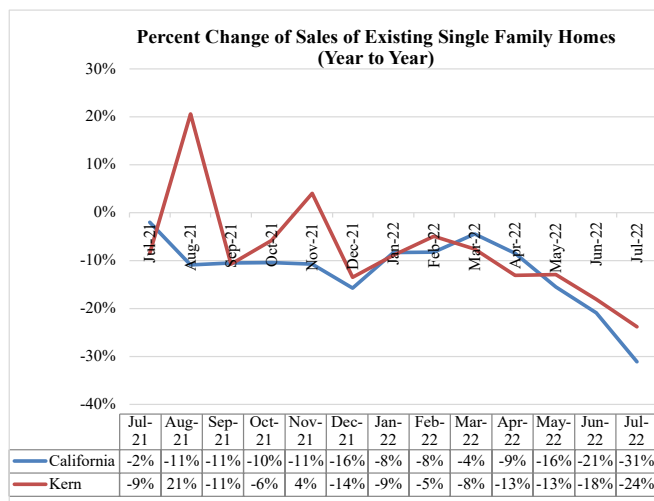
Location	Median Price	Median Price	Price Change (\$) (Annual Change)	% Price Change (Annual Change)
	2021.2	2022.2	2021.2 to 2022.2	2021.2 to 2022.2
Bakersfield	313,833	397,132	83,298	26.54%
California City	237,667	283,500	45,833	19.28%
Delano	265,500	323,333	57,833	21.78%
Rosamond	361,250	418,833	57,583	15.94%
Taft	179,583	204,000	24,417	13.60%
Tehachapi	372,167	403,333	31,167	8.37%
Averages	288,333	338,355	50,022	17.59%

Home Sales – In Bakersfield, quarter to quarter sales of residential units increased by 213 units, from 1,227 in the first quarter of 2022 to 1,440 in the second quarter of 2022. An average of 649 less homes were sold in the second quarter (of 2022) compared to the second quarter last year (2021).

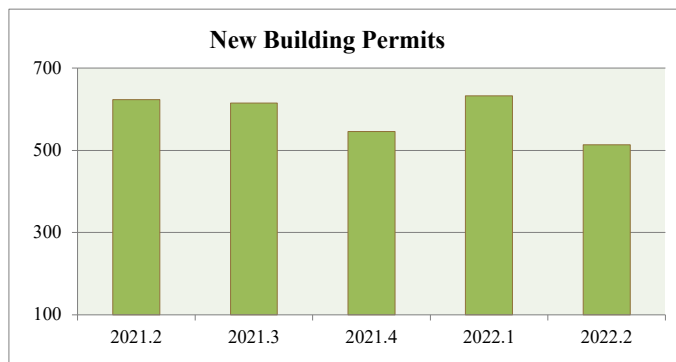


Growth in Housing Sales – We compare growth in sales of existing single-family homes in Kern County with growth in sales in California. Positive values indicate that more homes were purchased this year compared to last year. In July 2022, 24 percent less homes were sold in Kern County compared to July 2021. In California,

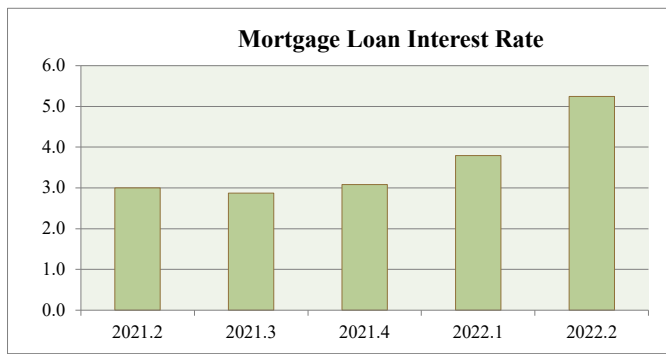
sales were 31 percent lower. The average growth in home sales in California between July 2021 and July 2022 were -12 percent while the number was -7.9 percent in Kern County.



New Building Permits – In the second quarter of 2022, Kern County issued 119 less permits for construction of new privately-owned dwelling units compared to the first quarter of 2022. A total of 513 permits were issued this quarter compared to 623 in the second quarter last year (2021). This decrease indicates a drop in construction plans in Kern County. Over the last five years, and average number of permits issued in the second quarter of every year is 532.

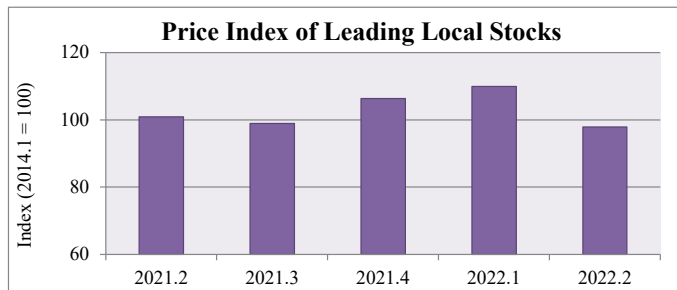


Mortgage Interest Rate – In the second quarter of 2022, the interest rate on thirty-year conventional mortgage loans increased to 5.24 percent from 3.79 percent in the first quarter of 2022. The thirty-year mortgage interest rates continue to rise over the last four quarters. The interest rate in the second quarter of 2021 was 3 percent.

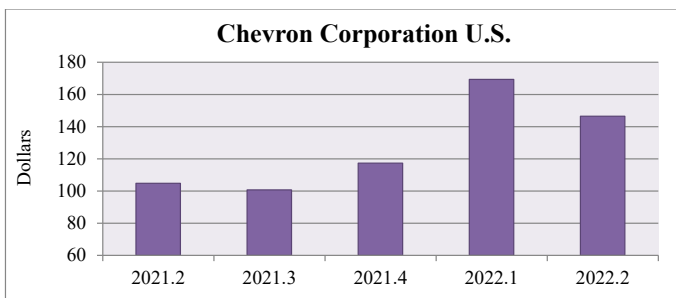


Stock Market

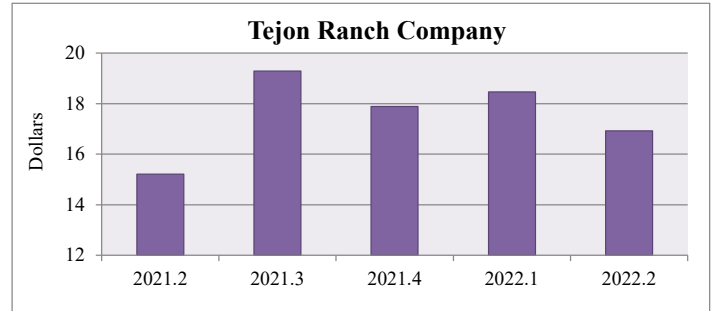
In the second quarter of 2022, the composite price index (2014.1=100) of the five publicly traded companies doing business in Kern County decreased by \$12.12 from \$110.0 to \$97.8 (quarter to quarter change). The index is 3 percentage points lower than it was four quarters ago. Average “close” prices were measured for five local market-movers: Chevron Corporation U.S., Tejon Ranch Company, Granite Construction, Wells Fargo Company, and Sierra Bancorp.



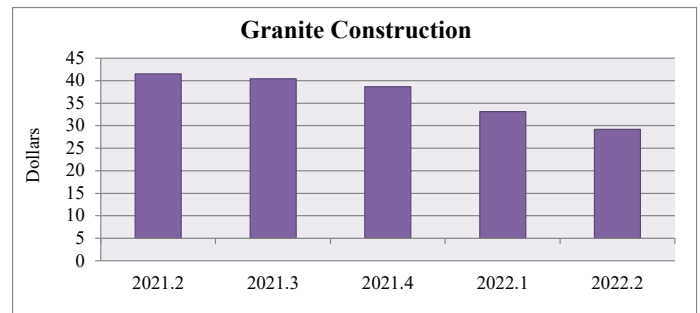
Chevron Corporation U.S.: Compared to last quarter, CVX lost \$22.80 (or 13.5 percent) per share as its price decreased from \$169.31 to \$146.51. Relative to the second quarter of 2021, CVX was up \$41.77 (or 39.9 percent).



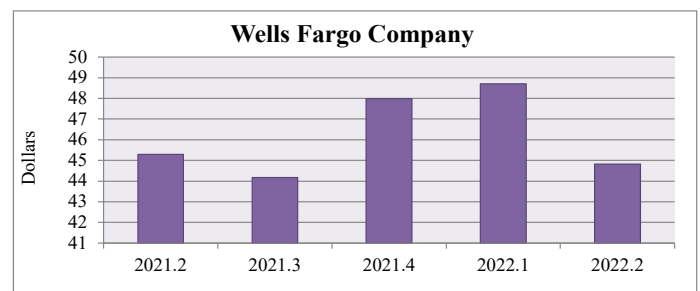
Tejon Ranch Company: TRC lost \$1.54 (or 8.3 percent) per share as its stock price decreased from \$18.46 to \$16.92 between the first quarter and second quarter of 2022. Compared to last year, the TRC stock price was up \$1.71 (or 11.2 percent).



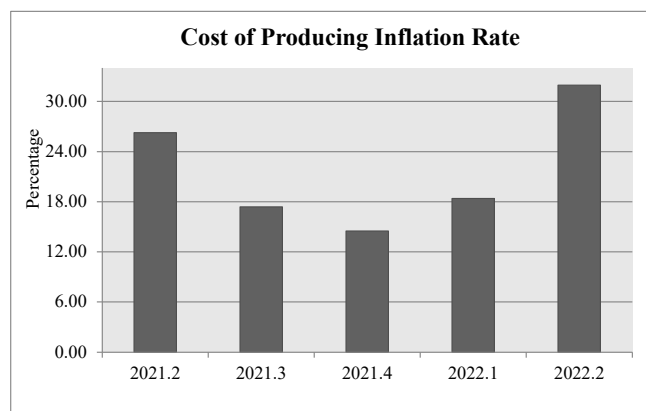
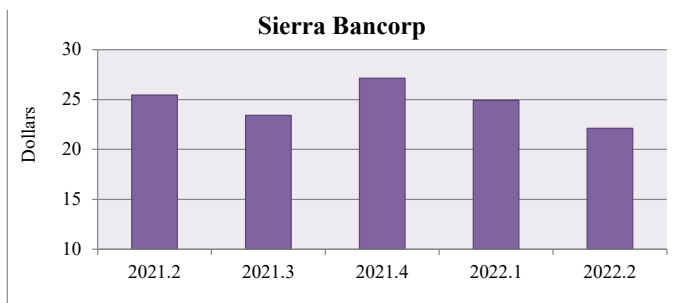
Granite Construction: GVA lost \$3.93 (or 11.9 percent) per share as its stock price decreased from \$33.11 to \$29.18 between the first and second quarter of 2022. GVA lost \$12.35 (or 29.7 percent) over the last four quarters.



Wells Fargo Company: WFC lost \$3.89 (or 8 percent) per share as its stock price decreased from \$48.71 to \$44.82 between the first and second quarter of 2022. Relative to one year ago, WFC was down \$0.47 (or 1 percent).

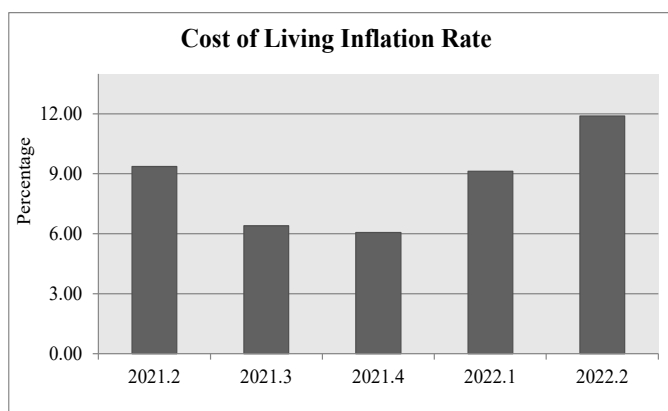


Sierra Bancorp: BSRR lost \$2.79 (or 11.2 percent) per share as its price decreased from \$24.92 to \$22.13. Similar to GVA and WFC, BSRR lost \$3.32 (or 13 percent) this quarter compared to the second quarter of 2021.



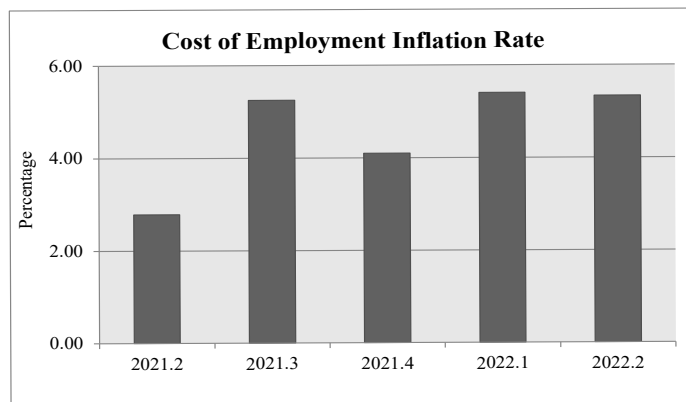
Inflation

Cost of Living – In the second quarter of 2022, the Consumer Price Index for all urban areas (1982-84 = 100) increased from 9.13 to 11.90. The index was 9.36 in the second quarter of 2021.



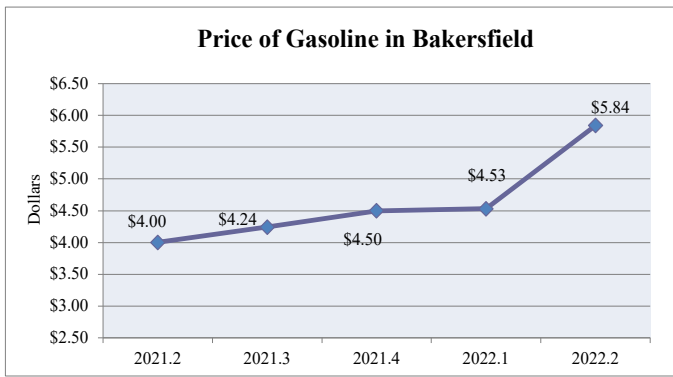
Cost of Production –The Producer Price Index for all commodities (1982 = 100) increased between the first and second quarter of 2022 from 18.40 to 31.94 percent. The cost of production inflation rate was 26.26 percent four quarters ago.

Cost of Employment - The Employment Cost Index (December 2005 = 100) for all civilian workers increased from 150.1 in the first quarter of 2022 to 152.1 in the second quarter, causing employment inflation to rise by 5.33.

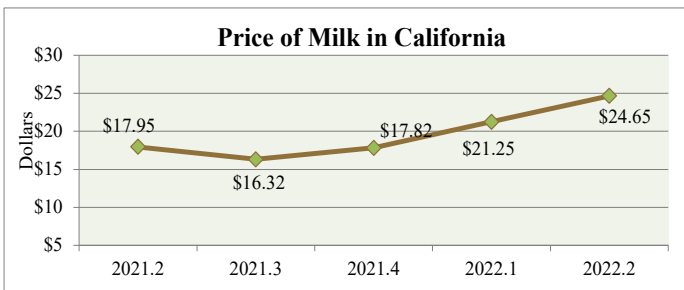


Commodity Prices

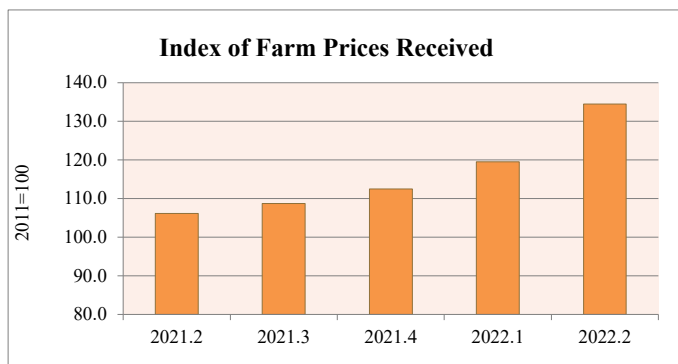
Price of Gasoline – In the Bakersfield Metropolitan Statistical Area, the average retail price of gasoline increased by \$1.31 to \$4.53 from \$5.84 between the first and second quarter of 2022. Average prices are 45.9 percent higher than they were a year ago.



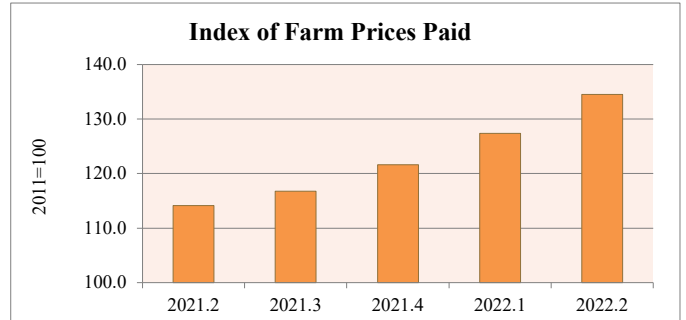
Price of Milk – The unit price of California’s Class III milk increased in the second quarter of 2022 by \$3.41 to \$24.65 from \$21.25. Noticeably, milk prices are on the uptick after dropping to \$16.32 price mark recorded in the third quarter of 2021. Prices are 37.4 percent or \$6.71 higher than they were four quarters ago when they were \$17.95.



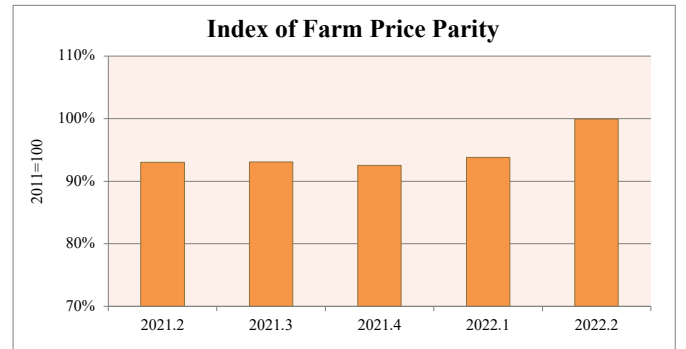
Farm Prices – In the second quarter of 2021, the National Index of Prices Received by Farmers for all farm products (2011 = 100) increased by 14.93 points to 134.4 compared to the 119.5 in the first quarter of 2022. This is a 28.62 point increase from the 106.2 points recorded in the second quarter of 2021.



Meanwhile, the National Index of Prices Paid by farmers for commodities, services, interest, taxes, wages, and rents increased by 5.6 percentage points compared to last quarter. This means that farmers are less better off this quarter compared to last quarter.



We measure the Index of Farm Price Parity as the ratio Index of Prices Received to the Index of Prices Paid. In the first quarter of 2022, the Index of Farm Price Parity was 94 percent compared to 100 percent this quarter. Four quarters ago, the price ratio was 93 percent.



¹ Source – Online databases: <http://www.labormarketinfo.edd.ca.gov>; www.usda.com; www.bakersfieldgasprices.com; www.bea.gov; www.car.org; www.trulia.com; www.census.gov; <https://www.redfin.com>; <https://www.cafmmo.com>; www.bls.gov

The Economic and Social Dashboard for Kern County

Nyakundi M. Michieka Ph.D.
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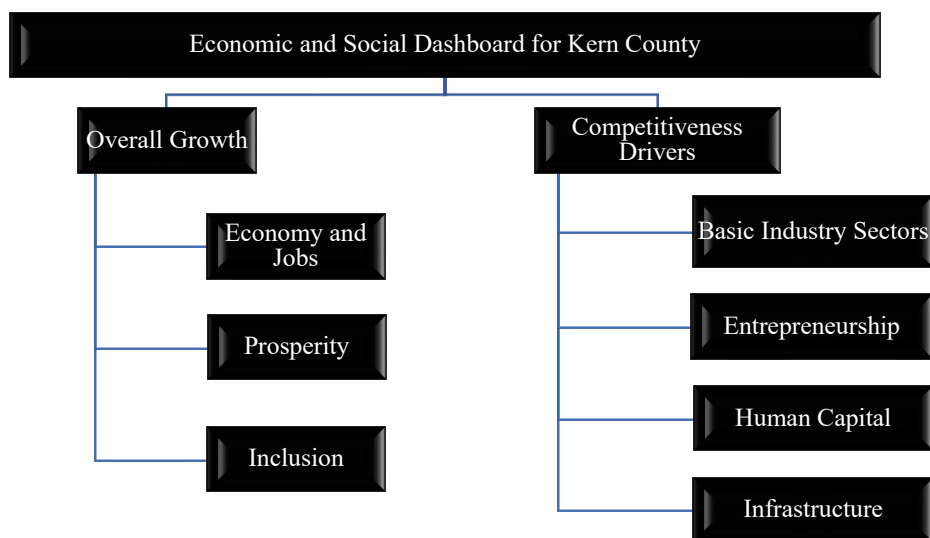
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The Center for Economic Education and Research (CEER) at California State University, Bakersfield in collaboration with A Better Bakersfield and Boundless Kern (B3K) is developing a dashboard. The *Bakersfield–Kern Economic and Social Dashboard* will offer a snapshot of current economic conditions in the Bakersfield Metropolitan Statistical Area (MSA). By providing stakeholders with a better understanding the region’s economic performance, we aim to improve policy making and the quality of life in Bakersfield–Kern.

Various data metrics for Bakersfield–Kern will be collected and assessed against five peer MSAs across the country. The MSAs are Fresno (California), Spokane (Washington), Albuquerque (New Mexico), Tulsa (Oklahoma), and Syracuse (New York).

The large number of indicators that could be used in a dashboard is mind numbing. Uncertainty also arises over which metrics should be given greater importance (Eberts 2006a). Considering availability, timeliness, comparability, and relevance, we selected 32 indicators to measure Bakersfield–Kern’s overall economic performance and competitiveness.¹ The metrics used to track overall economic performance include: growth in GDP, employment, wages, and standard of living. Those measuring competitiveness will assess growth in industry employment, entrepreneurship, human capital, and infrastructure. Figure 1 shows the broad classification of series.

Figure 1: Regional Economic and Social Dashboard for Bakersfield–Kern.



Annual changes are reported. The findings are summarized below:

¹These criteria are outlined by Eberts et. al (2006b) and Erickcek (2013). Availability requires that most data should be available on at least an annual basis. Timeliness requires that the reporting period for the indicators is a maximum of two years. Comparability requires that the data be available for all MSAs. Relevance requires that the data should be directly related to the economic conditions in the MSA.

1. Economy and Jobs
 - a. Real GDP: Bakersfield's GDP declined by 1% between 2019 and 2020. This was the smallest decline in GDP when compared to the other regions, which on average declined by 4%.
 - b. Employment: Between 2019 and 2020, employment in Bakersfield fell 5%. It ranked 2nd in the list in job loss (along with Fresno and Tulsa, which each recorded a fall in employment of 5%). Syracuse lost 8% of employees.
2. Prosperity
 - a. Wages: Between 2019 and 2020, Bakersfield wages increased 2%. Wages in Tulsa and Syracuse fell 1%. Wages in Fresno increased by 3%.
 - b. Productivity (Real GDP per job): Syracuse's productivity growth was highest at 5%, followed by Bakersfield (4%) and then Fresno and Albuquerque.
 - c. Standard of Living (GDP per Capita): The standard of living dropped in all regions. The rate at which it fell in Bakersfield was less than that of its peers (2%). Tulsa and Syracuse witnessed a 7% fall in GDP per capita.
3. Inclusion
 - a. Poverty: The poverty rate for children aged 0-17 years increased in Bakersfield by 1% between 2019 and 2020. Syracuse and Spokane witnessed a 2.1 and 2.5% increase. Fresno (-0.2%) and Albuquerque (-0.7%), however, witnessed a reduction in poverty.
4. Basic Industry Sectors
 - a. Industry: Between 2019 and 2020 period, Bakersfield lost the 2nd highest number of jobs in agriculture and oil & gas. Only the transportation sector in Bakersfield witnessed an increase in jobs during that period
5. Real Estate Affordability
 - a. Housing: The amount of mortgage payments increased by 46% in Kern, compared to Fresno (46%) and Spokane (60%). The monthly mortgage payment in Bakersfield in 2022 was \$1,435 compared to Fresno's \$1,726 or Spokane's \$1,817.
6. Entrepreneurship
 - a. New Firms: During the 2021 to 2022 period, the number of new firms in Bakersfield increased least compared to other regions. Bakersfield experienced a 27% rise in new firms compared to Syracuse's 35%.
7. Infrastructure
 - a. Commute times: The time to commute to work in Bakersfield is the highest among its peers. It took an average of 23.6 minutes to commute to work in Bakersfield. In Tulsa or Syracuse it took an average of 20 minutes. Also, the percentage of households with broadband connectivity in Bakersfield was among the lowest in comparison to its peers.
8. Human Capital
 - a. 3rd Grade Reading Scores: Bakersfield's 3rd grade reading scores, high-school graduation rate and college graduation rate were lowest in comparison to its peers.
9. Demographic Data
 - a. All People in Poverty: Bakersfield's poverty rate increased by 1.3%, while Tulsa's poverty rate remained unchanged
 - b. Poverty by Sex: The poverty rate among females increased by 1.7% compared to a 0.9% increase among males.
 - c. Poverty by Race: In Bakersfield, poverty among American Indians and Alaskan Natives grew the fastest (6.4%) followed by Blacks or African Americans (5.4%). Poverty among Whites increased by 1.3% while Hispanic poverty rate increased by 0.4%.



Our findings focus on the economic and social changes that occurred between 2019 to 2020 in Bakersfield–Kern compared to its peers. All six metros suffered negative economic shocks due to the COVID-19 pandemic. Nonetheless, compared to peers, Bakersfield–Kern’s overall GDP dropped the least during the pandemic period. Wages also grew during this period for Bakersfield–Kern, whereas other regions experienced a decline in wages. Employment in agriculture and manufacturing dropped while employment in transportation and warehousing grew. Although mortgage payments increased by 46% and 45% in Bakersfield and Fresno, the monthly mortgage payment in Bakersfield is on average \$300 dollars less than in Fresno. Mortgage rates are much higher in Spokane. Finally, Bakersfield ranked lowest in growth of new-firm startups and education rates.

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Energy Transition in the Electricity Sector

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The energy sources in the United States and the rest of the world are transitioning from fossil fuels to renewables – a change that will continue over the next few decades. In the United States, the sources of electricity generation from various sources have changed over time as illustrated in Figure 1, which shows annual generation from different sources since 1950. The use of coal for electricity generation has declined since mid-2000s. Most of the coal-fired powerplants have been replaced by natural gas plants which have a lower carbon intensity. The renewable energy sources (including wind, hydroelectric, solar, biomass, and geothermal energy) have also increased rapidly since 2010. In 2020, renewable sources accounted for 21% of the power generated in the United States. In the 10-year period between 2010 and 2020, electricity generation from renewable sources nearly doubled, from ~450 billion kWh in 2010 to ~850 billion kWh in 2020. Total renewable electricity generation increased to 9% in 2020. Among the renewables, wind is the most prevalent source of electricity generation today, growing by 14% between 2019 and 2020. Utility-scale solar generation (projects of more than 1 megawatt) increased to 26% from 2019, while small-scale solar projects (for example rooftop solar panels) increased to 19% from 2019.

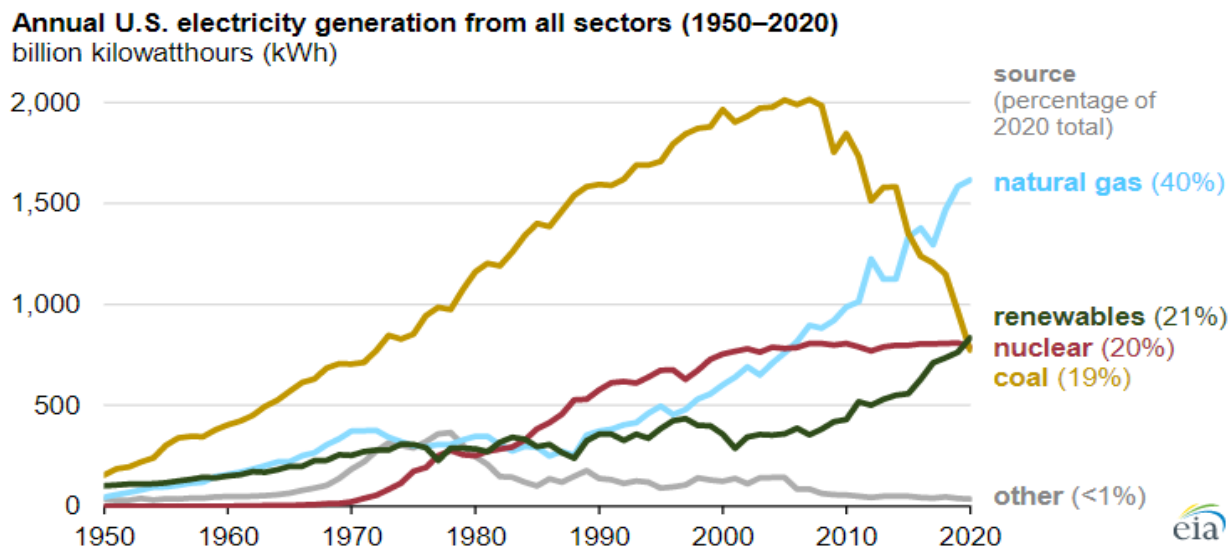


Figure 1. Annual US electricity generation from all sectors (1950-2020). Source: Energy Information Administration (U.S. EIA, 2022b).

According to Marcelo and Busby (2022), the transition of electricity generation from fossil fuels to renewable sources will be accelerated by the Inflation Reduction Act (IRA) which was signed into law recently. This law is expected to increase installed solar and onshore wind capacity in the United States by 40%, with an extra capacity of 155 gigawatts (GW). 85 GW of this 155 GW additional capacity will be from onshore wind projects and 85 GW of it will be utility-scale solar projects. The new incentives added by IRA are expected to attract additional investments of more than \$270 billion till 2030 by tax credits, with an additional \$160 billion of investment in the onshore wind projects and an additional \$110 billion of capital expenditure in solar projects. Figure 2 shows the installed capacity of wind and utility-scale solar projects in the United States from 2017 to 2030. In addition to



wind and solar, the IRA will boost nuclear, hydrogen, carbon capture and storage, and geothermal activity while accelerating electric vehicle adoption. These investments will be distributed to different parts of the United States including California.

California produced nearly 50% of its electricity from renewable sources according to the most recent data from the EIA in July 2022 (U.S. EIA 2022a) Solar, and to a lesser extent wind, continue to play a major role in utility-scale electricity generation. Kern County is increasingly playing a significant role in the solar and wind electricity generation projects in California. Figure 3 shows solar and onshore wind powerplants in California, with Kern County a major hub for both sources in the state.

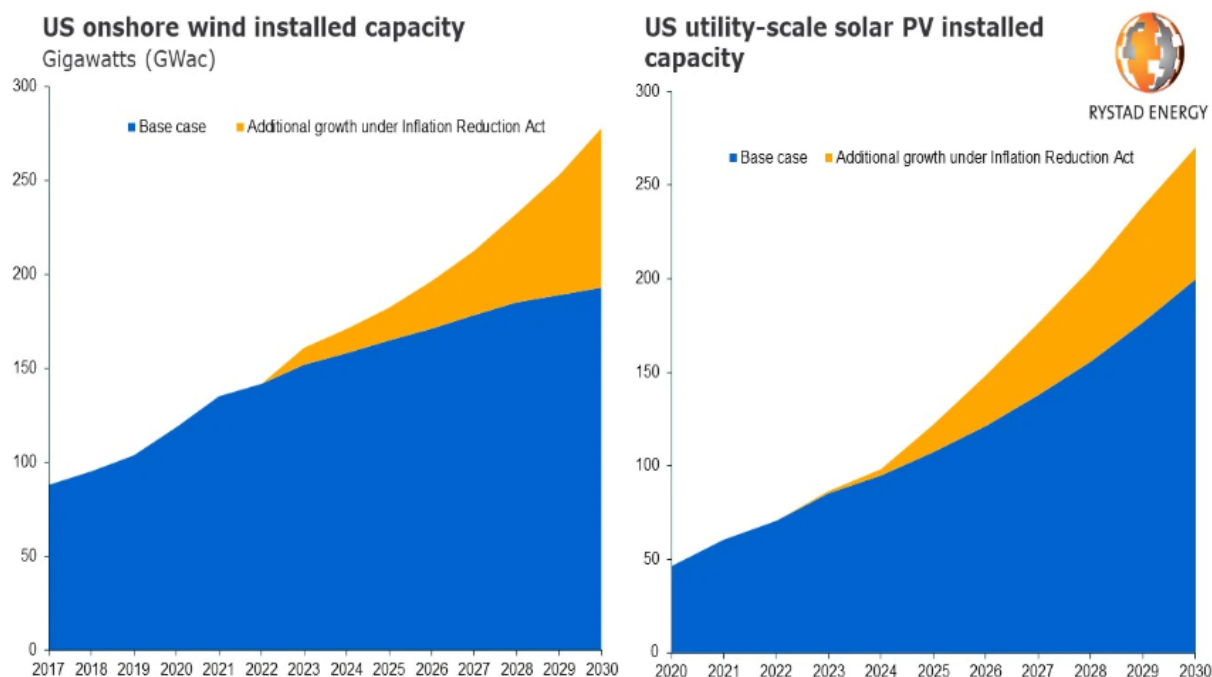


Figure 2. Impact of Inflation Reduction Act on wind and solar energy project in the United States. Source: Marcelo and Busby (2022).

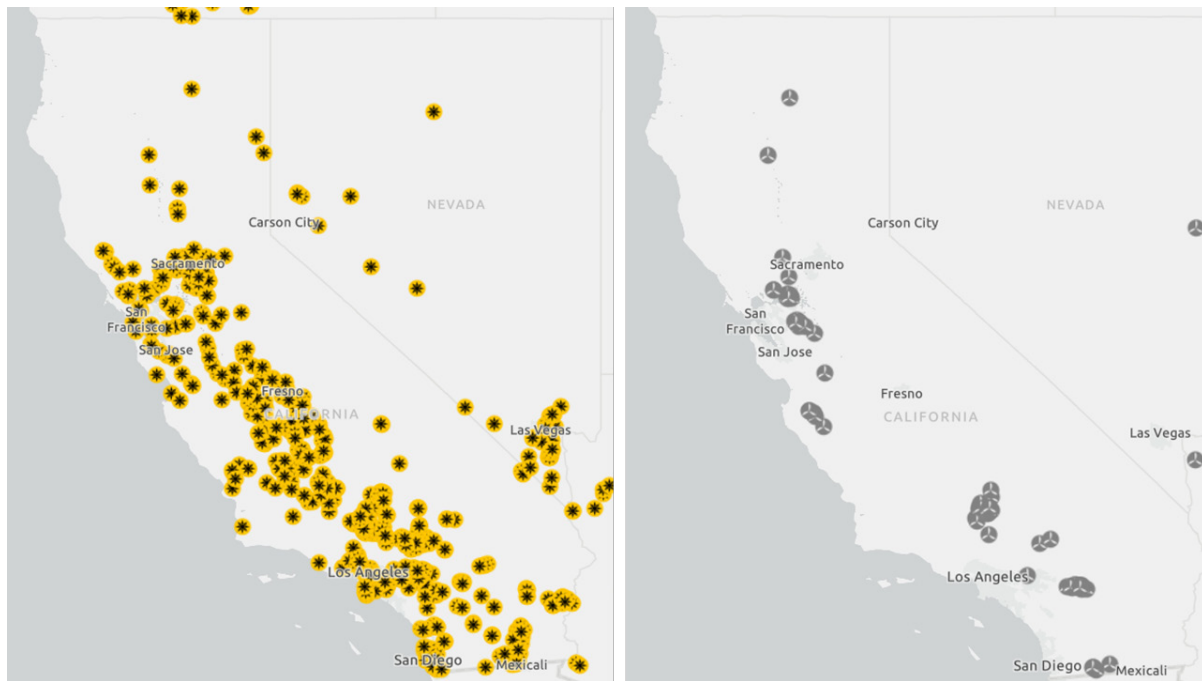


Figure 3. Utility-scale solar (left) and onshore wind powerplants (right) in California. Source: Energy Information Administration (U.S. EIA 2022c).

With all the investments in wind and solar, Kern County continues to attract some investments based on its geographic location and solar abundance. Kern's agricultural sector can also contribute to electricity production by producing power from the solar panels installed over the California canals (Nemo 2022). Although Kern can maintain its role in oil production, it continues to contribute to the changing landscape in renewable energy generation.

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KERN ECONOMIC JOURNAL is a quarterly publication of California State University, Bakersfield. Its purpose is to track local trends and analyze regional, national, and global issues that affect the well-being of Kern County. The journal provides useful information and data that can help the community make informed economic decisions. Please visit <https://bpa.csub.edu/menus/kern-economic-journal.html> for more information.