Volume 20, Issue 1

CSU Bakersfield

Kern Economic Journal

Winner of the Award for Merit from California Association for Local Economic Development

2018 Third Quarter

Featured Articles:

The Coal Industry in 2018

The Principles of Work Site Team Building

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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

Inside this Issue:

Economy at a Glance!

2018 Third Quarter
by Dr. Nyakundi M. Michieka and
Dr. Richard S. Gearhart III

National Economy [1]

The U.S. economy grew at an annual rate of 3.5 percent in the third quarter of 2018, compared to 4.2 percent in the second quarter. The Bureau of Economic Analysis (BEA) reported that the increase in GDP reflected positive contributions from personal consumption expenditures, private industry investment, government spending and nonresidential fixed investment. These gains were however offset by contributions from exports and residential fixed investment. Imports increased in the third quarter after decreasing in the second.

Current dollar personal income increased $180.4 billion in the third quarter compared with an increase of $180.7 billion in the second quarter. Real disposable personal income, which is adjusted for inflation and taxes, increased by 2.5 percent in the third quarter of 2018 – a similar increase to that of the second quarter. Personal saving was $999.6 billion in the third quarter compared to $1,054.3 billion in the second quarter. The BEA derives the personal saving rate by calculating personal saving as a percentage of disposable personal income. The personal saving rate in the third quarter was 6.4 percent, down from 6.8 percent in the second quarter.

The Conference Board's Index of Leading Economic Indicators – a measure of future economic activity – rose 0.7 percent in July, then dropped to 0.4 percent in August and up 0.5 percent in September 2018, ending at 111.8. This suggests that growth over the last few months has been restricted, possibly due to tight labor markets or capacity constraints. Nonetheless, the September numbers suggest that the business cycle is on a trajectory towards growth heading to 2019.

The University of Michigan's Consumer Sentiment Index increased from 98.2 in June of 2018 to 100.1 in September of 2018. The quarterly value for the third quarter of 2018 was 98.1 compared to 98.3 in the second quarter of 2018. This indicates that the growth in consumer sentiment continues to plateau despite the slight increase in September 2018.

State Economy [2]

In California, the unemployment rate fell again in the third quarter of 2018 to 4.17 percent, down from 4.20 percent in the second quarter of 2018. Among counties, San Francisco (2.2 percent), Santa Clara (2.4 percent), Orange (2.8 percent), San Luis Obispo (2.7 percent), San Diego (3.2 percent), Sacramento (3.6 percent), Los Angeles (4.8 percent), and Riverside (4.4 percent) had unemployment rates below the state average. In contrast, San Joaquin (5 percent), Fresno (5.9 percent), Kings (6 percent), and Kern (6.6 percent) had unemployment rates above the state average.

The state's civilian labor force gained 13,567 members, where 21,500 more employees had paying jobs (employed) and 7,967 fewer were left jobless (unemployed). While nonfarm industries hired 91,400 more workers, farming enterprises employed 567 more workers. The mining and logging, construction and manufacturing sectors hired 100, 3,267 and 7,533 less workers, respectively, while the service sector added 102,300 workers. Other sectors adding jobs include professional and business services (30,033) and leisure and hospitality (14,400).

Local Economy

The local economy saw a modest increase in the labor force, rising from 381,233 in the second quarter of 2018 to 386,500 in the third quarter of 2018. Though this increase in the labor force between the quarters is large, it is still half the increase witnessed over the second and third quarter of 2017. A large part of the increase, however, appears to be seasonal, as the number of farmworkers increased by 6,700. In the second quarter of 2018, a total of 63,667 workers were hired in the farming sector compared to the 70,367 hired in the third quarter.

In Bakersfield, much of the increase in nonfarm employment came from a few sectors: private service providing (1,667 workers), leisure and hospitality (1,067 workers), Accommodation & Food Services (1,000 workers), healthcare and social assistance (700 workers), educational and health services (700 workers), mining, logging and construction (400 workers). These increases were offset by declining

[1] U.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://www.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.

[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.

employment in the service providing sector (1,067 workers), retail trade (433 workers), trade, transport and utilities (200 workers).

Salaries and wages in Kern County dropped from 3,739,299 (thousand) in the fourth quarter of 2017 to 3,668,719 (or 1.89 percent) in the first quarter of 2018. Compared to four quarters ago, salaries were higher 183,863 (thousand dollars), or 5.28 percent. The growth magnitude in salaries in the first quarter of 2018 is similar to that in 2012.

The unemployment rate varied between 3.13 percent in Ridgecrest to 17.63 percent in Delano. All cities in Kern County showed a decrease in the unemployment rate, except Bakersfield and Ridgecrest. The biggest quarter to quarter increase in unemployment occurred in Delano going from 27 percent to 17 percent. In Bakersfield, the rate of unemployment was 5.73 percent, an increase of 0.57 percentage points from the second quarter of 2018.

In the third quarter of 2018, the median home price in Bakersfield was 245,000 compared to the 239,667 in the second quarter. This may indicates a temporary increase in housing demand due to anticipated interest rate increases in the future, meaning that this demand shock should dissipate over time. Home prices are $13,000 higher than four quarters ago. It could also indicate the type of houses that are being purchased being at the top-end of the market, pushing up median sales prices across the county.

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 after an increase in the second quarter of 2018 (falling by 6 percentage points from 124.1 to 116.6). The index is 3.5 percentage points lower than that what it was four quarters ago. Among the losers were Chevron (decrease of 2.7-percent quarter-over-quarter), Tejon Ranch (decrease of 10.7-percent quarter-over-quarter), Granite Construction (decrease of 16.5-percent quarter-over-quarter), and Wells Fargo (decrease of 2-percent quarter-over-quarter. The only winner was Sierra Bancorp (increase of 0.2-percent quarter-over-quarter).

The average retail price of gasoline increased by $0.13 to $3.64. This mild increase in gasoline prices stems from the increase in crude prices as a result of increased demand from consumers due to growing global economies. The unit price of California's Class III milk fell slightly from the third quarter of 2018, decreasing from $15.85 to $14.25. Noticeably, the price has been relatively stable from June 2018 to September 2018. The Index of Farm Price Parity fell back to 83 percent from 86 percent in the second quarter.

Tracking Kern's Economy[1]

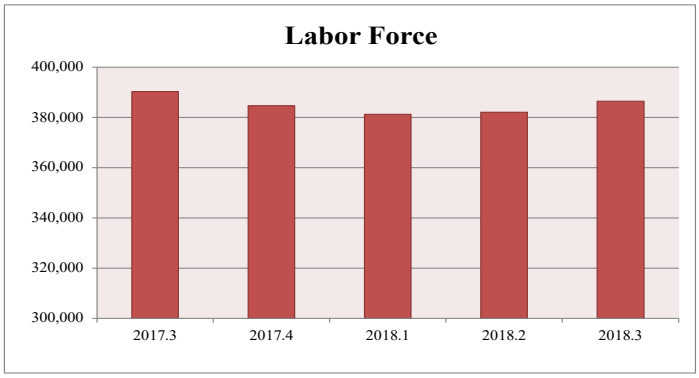
by Dr. Nyakundi M. Michieka and
Dr. Richard S. Gearhart III

Labor Market

We adjust published data in three ways. Firstly, we averaged monthly data to calculate quarterly data. Secondly, we recalculated 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 adjusted quarterly data for the effects of seasonal variations.

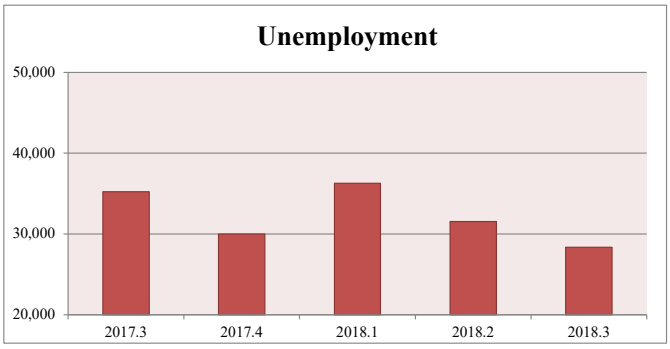
Labor Force -The civilian labor force increased by 4,433 members from 381,233 in the second quarter of 2018 to 386,500 in the third quarter of 2018. Though this increase in the labor force between the quarters is large, it is still half the increase witnessed over the second and third quarter of 2017. The growth numbers (between quarters) are very similar to those recorded in 2015. The changes can stem from the changes in the age composition of the population in Kern County and current education attainment levels.

A large part of the decrease, however, may be seasonal, as farmworkers tend to migrate outside the County during the fourth quarter as jobs become more scarce.

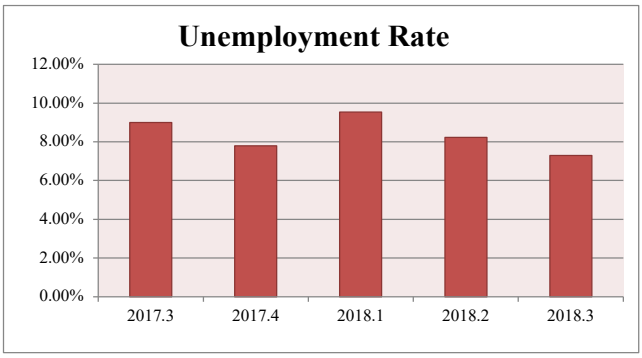


Employment – In the third quarter of 2018, Kern County hired 7,667 more workers as total employment increased from 350,500 in the second quarter to 358,167 in the third quarter. This is a 0.86 percent increase in employment compared to the third quarter of 2017. The growth is rate is similar to that which occurred between the second and third quarter of 2015, 2016 and 2017, where employment increased by an average of 7,600.

Unemployment –In the meantime, 3,167 fewer workers were unemployed, as the number of jobless workers decreased from 31,533 to 28,367. The number of unemployed workers dropped by 19.5 percent compared to three quarters ago. In the third quarter of 2017, there were 35,233 unemployed workers compared to 28,367 today. Today's numbers are similar to those witnessed in 2015 and 2014.



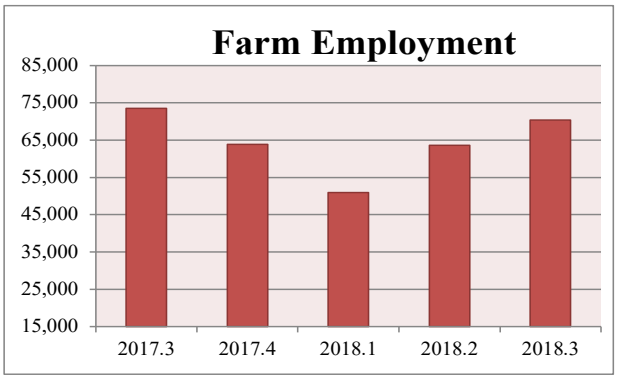
Unemployment Rate – Encouragingly, Kern County's unemployment rate fell by 0.93 percentage points. The average unemployment rate in the third quarter of 2018 was 7.33 percent, which was the lowest in ten years. The last time Kern County had similar rates was the first quarter of 2007. This paints a positive picture of the economy which once had an unemployment rate of 10.4 percent in the summer of 2014, when oil prices dropped. The current hiring in the oil and gas sector may be providing jobs to an already growing economy that has become accustomed to low oil prices.



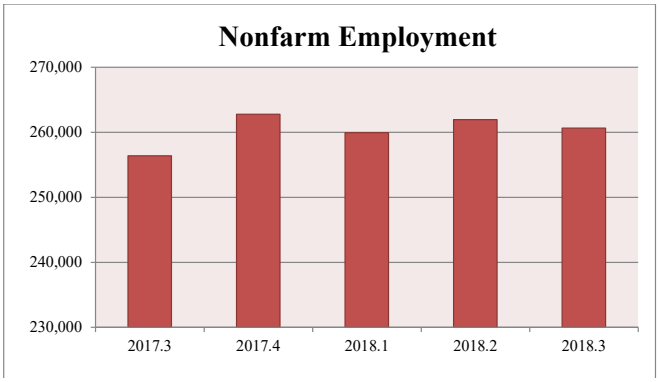
The rate of unemployment varied considerably across cities. Among the cities shown below, unemployment rate varied between 3.13 percent in Ridgecrest to 17.63 percent in Delano. All cities in Kern County showed a decrease in the unemployment rate, except Bakersfield and Ridgecrest. The biggest quarter to quarter increase in unemployment occurred in Delano going from 27 percent to 17 percent. In Bakersfield, the rate of unemployment was 5.73 percent, an increase of 0.57 percentage points from the second quarter of 2018.

Unemployment Rate of Cities			
Location	Unemployment Rate (%)	Location	Unemployment Rate (%)
KERN COUNTY	7.30	McFarland	11.03
Arvin	8.20	Mojave	12.23
Bakersfield	5.73	Oildale	8.97
California City	15.60	Ridgecrest	3.13
Delano	17.63	Rosamond	8.20
Edwards	6.57	Shafter	8.20
Frazier Park	5.63	Taft	3.50
Lake Isabella	5.67	Tehachapi	5.33
Lamont	5.67	Wasco	12.90
Note: City-level data are not adjusted for seasonality and "informal" market workers.			

Farm Employment –In the third quarter of 2018, Kern County hired an additional 6,700 farm workers. This helps to explain the gains in employment and labor force participation. As a result, farm employment increased from 63,667 in the second quarter to 70,367 in the third. Nonetheless, 3,167 less workers were hired in the farm sector compared to last year. The number of workers in the third quarter has been around the same since 2016, averaging 71,367 indicating that the number of workers has not changed much since the current administration took over.



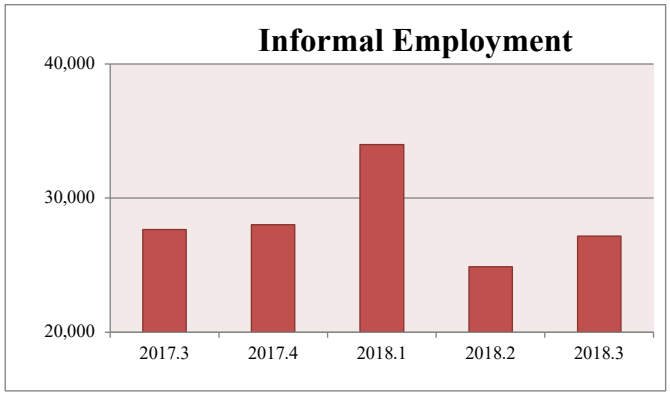
Nonfarm Employment –Local nonfarm industries employed 1,300 fewer workers this quarter. Hence, the number of nonfarm workers decreased from 261,933 to 260,633. Conversely, nonfarm industries hired 4,233 more workers than four quarters ago. This indicates that industries in Kern County not tied to resource or agricultural abundance are thriving with numbers similar to those reported in the third quarter of 2016.



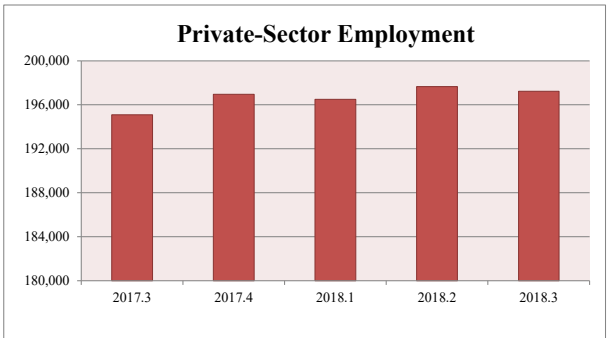
In Bakersfield, much of the increase in nonfarm employment came from a few sectors: private service providing (1,667 workers), leisure and hospitality (1,067 workers), Accommodation & Food Services (1,000 workers), healthcare and social assistance (700 workers), educational and health services (700 workers), mining, logging and construction (400 workers). These increases were offset by declining employment in the service providing sector (1,067 workers), retail trade (433 workers), trade, transport and utilities (200 workers).

Informal Employment - Informal employment is the difference between total employment and industry employment. It accounts for self-employed workers and workers employed outside their county of residence. In the third quarter of 2018, the number of informal workers increased by 2,267 workers (24,900 to 27,167).

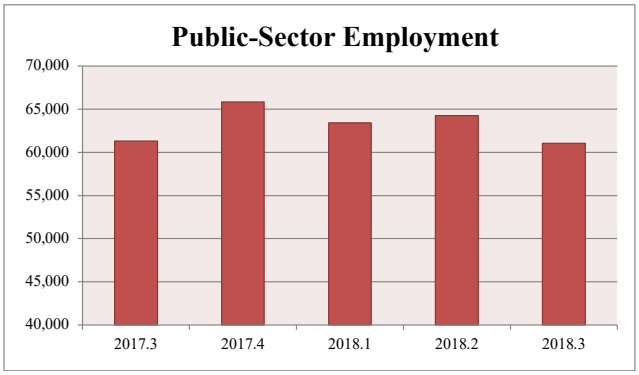
Compared to the third quarter of 2018, there are 500 more informal workers. This implies that there is increasing confidence in residents who have sought to create their own jobs. Although Kern County had 27,167 non-informal workers in the third quarter of 2018 when unemployment was 7.3 percent, the number is still below the 38,420 workers recorded in the first quarter of 2007 when unemployment was 7.66 percent.



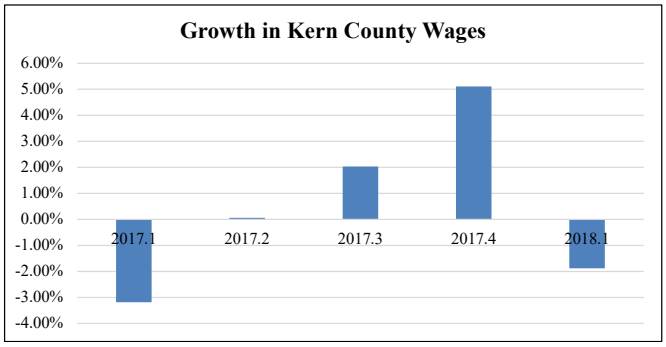
Private-Sector Employment - Nonfarm employment is comprised of private-sector employment and public-sector employment. In the third quarter of 2018, private companies hired 433 fewer workers as their employment decreased from 197,667 to 197,233. Conversely, the private sector employed 2,133 more workers this quarter than four quarters ago. The numbers are yet to hit the 200,000's witnessed in the third and fourth quarter of 2016.



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 third quarter of 2018, government agencies hired 3,200 fewer workers as their employment decreased from 64,267 to 61,067 – a 4.98 percent decrease after setting a record quarterly high for public-sector employment two quarters ago.

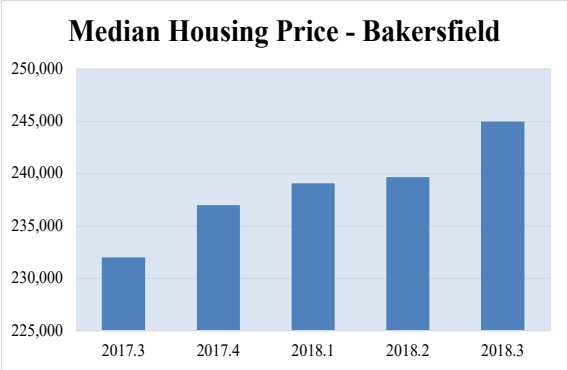


Growth in Salaries and Wages – Salaries and wages in Kern County dropped from 3,739,299 (thousand) in the fourth quarter of 2017 to 3,668,719 (or 1.89 percent) in the first quarter of 2018. Compared to four quarters ago, salaries were higher 183,863 (thousand dollars), or 5.28 percent. The negative growth in salaries in the first quarter of 2018 is similar to that in 2012. Between 2012 and 2018, first quarter growth rates have averaged -5.26 percent, implying that the -1.89 percent drop in salaries is not as extreme as that experienced in earlier years.

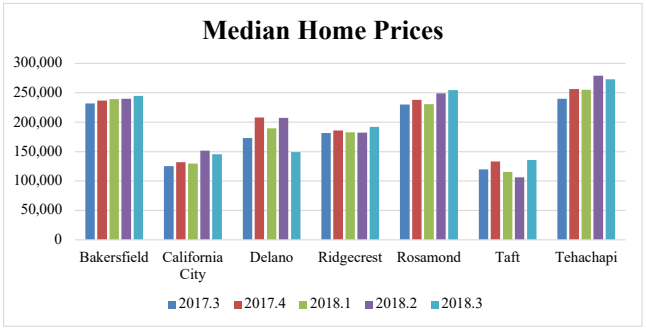


Housing Market

Housing Price - In the third quarter of 2018, Bakersfield's housing prices increased slightly by $5,333 (2.23 percent) compared to the second quarter. The median home price was 245,000 compared to the 239,667 in the second quarter. This may indicates a temporary increase in housing demand due to anticipated interest rate increases in the future, meaning that this demand shock should dissipate over time. Price are $13,000 higher than four quarters ago. It could also indicate the type of houses that are being purchased being at the top-end of the market, pushing up median sales prices across the county.



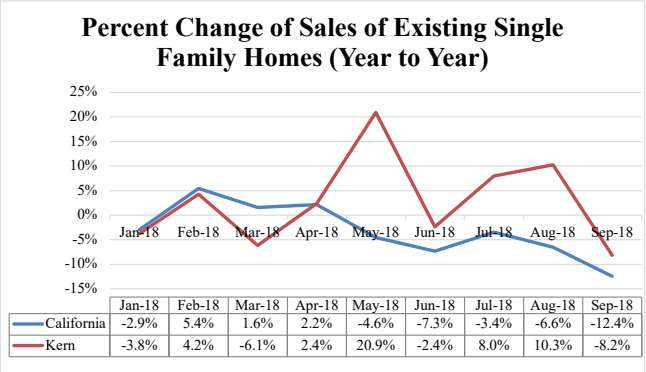
Regional Housing Prices – The housing demand increases felt in Bakersfield are likely to spread to the surrounding towns, as individuals who are on the margin of buying are likely not located in the Bakersfield MSA directly. Overall, median home prices were higher in Tehachapi compared to other cities. Prices increased in all cities except Delano city, where they fell by 13.89 percent from 207,167 to 148,967 between the second and third quarter of 2018.



Housing prices varied across the county. Within the previous four quarters (2017 third quarter to 2018 third quarter), the median sales price increased in all of the major cities of Kern County, except Delano. Most cities recorded double digit increases in prices, with California City witnessing the largest rise in prices. Over the last year, the median home price in California city (145,000) rose by 16.4 percent and is now similar to Delano (148,967), which saw prices fall by 13.89 percent.

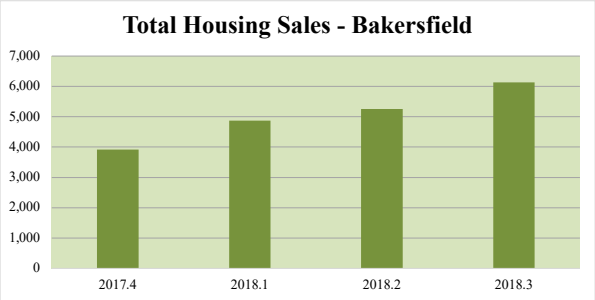
Location	Median Price	Median Price	Price Change ($)	% Price Change
	2017.3	2018.3	2017.3 – 2018.3	2017.3 – 2018.3
Bakersfield	232,000	245,000	13,000	5.60%
California City	125,000	145,500	20,500	16.40%
Delano	173,000	148,967	-24,033	-13.89%
Ridgecrest	181,500	192,000	10,500	5.79%
Rosamond	230,000	254,500	24,500	10.65%
Taft	120,000	135,833	15,833	13.19%
Tehachapi	240,000	273,000	33,000	13.75%

Growth in Housing Sales – We compare growth in sales of existing single family homes in Kern County with sales in California. Positive values indicate growth in sales, or more homes purchased this year compared to last year. In September 2018, sales of single family homes in Kern county was 8.2 percent less than the previous year, while sales were lower in California. Trends show that over the last nine months of 2018, home sales in Kern County were 2.8 percent higher than their 2017 levels, while those in California were 3.1 percent lower than 2017 levels. Overall, sales in Kern County averaged 5.9 percent points higher than California.

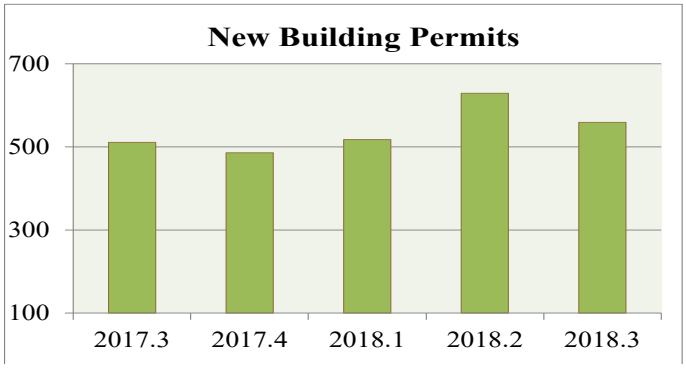


	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
California	-2.9%	5.4%	1.6%	2.2%	-4.6%	-7.3%	-3.4%	-6.6%	-12.4%
Kern	-3.8%	4.2%	-6.1%	2.4%	20.9%	-2.4%	8.0%	10.3%	-8.2%

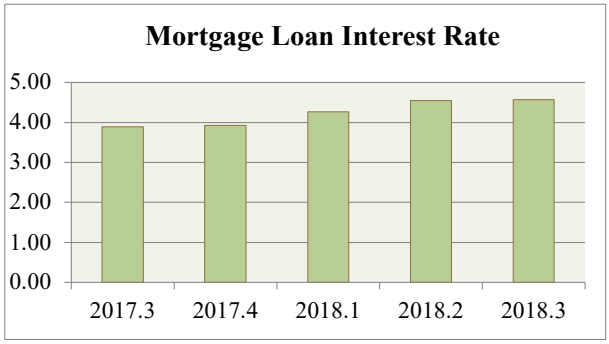
Housing Sales –In Bakersfield, sales of residential units increased substantially, by 882 units, from 5,251 in the second quarter of 2018 to 6,133 in the third quarter of 2018. Demand for housing is still increasing indicating increased confidence in consumers.



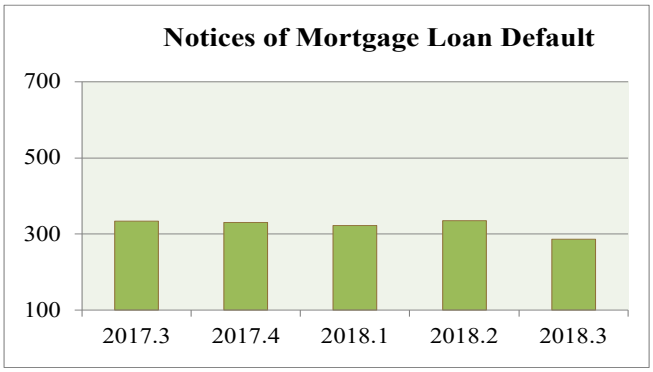
New Building Permits –In the third quarter of 2018, Kern County issued 70 less permits for construction of new privately-owned dwelling units compared to the third quarter of 2017. A total of 629 permits were issued this quarter compared to 511 in the third quarter of 2017. This reduction in permitting indicates a slowdown in construction plans in Kern County. Nonetheless, the number of permits that have been issued beginning late 2013 are much higher than those issued in the previous years, indicating that Kern County is still witnessing a high rate of growth in the recent years.



Mortgage Interest Rate – In the third quarter of 2018, the interest rate on thirty-year conventional mortgage loans increased from 4.54 percent to 4.57 percent. This suggests that home sales may fall, though not substantially. Should interest rates rise further, we may witness a decrease in demand for homes, pushing down construction costs which may influence demand for permits. Construction employment numbers may feel this effect.

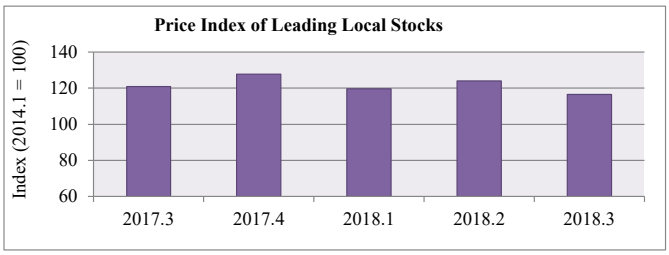


Housing Foreclosure Activity –Kern County saw a downtick in foreclosure activity, as the number of new foreclosures decreased by 48 foreclosures from the third quarter of 2018, to 287 new foreclosures (down from 335 in the second quarter of 2018) in the third quarter of 2018. This number is also 47 units lower than four quarters ago. The increase in demand for housing may have a role to play as houses can now be sold by at-risk homeowners. Coupled with the fact that permits for new construction is down, this suggests that the number of "distressed" properties is drying. It could also indicate that homeowners are on solid financial footing.

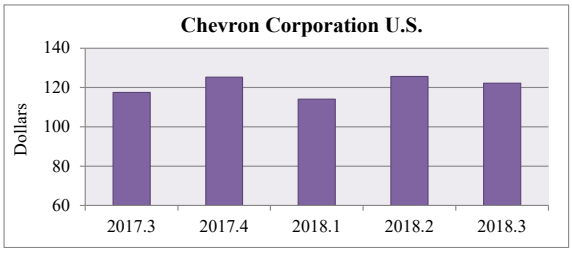


Stock Market

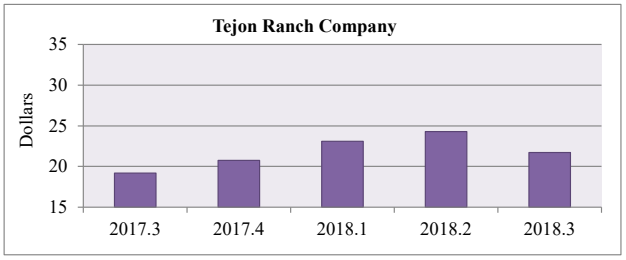
In the third quarter of 2018, the composite price index (2014.1=100) of the five publically traded companies doing business in Kern County decreased after an increase in the second quarter of 2018 (falling by 6 percentage points from 124.1 to 116.6). The index is 3.5 percentage points lower than that what 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.



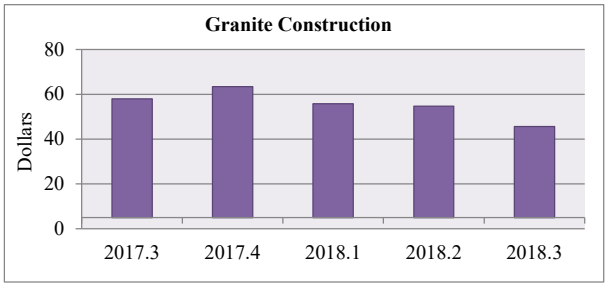
Chevron Corporation U.S.: Compared to the last quarter, CVX lost $3.38 (or 2.7 percent) per share as its price decreased from $125.66 to $122.28. Relative to the third quarter of 2018, CVX was up $4.78 (or 4.1 percent).



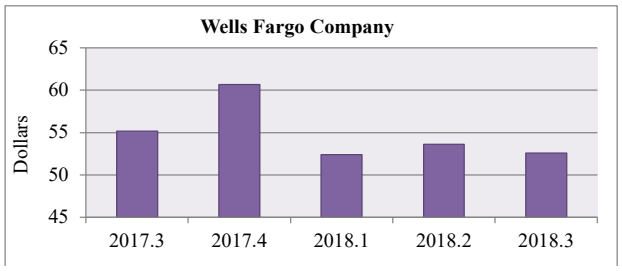
Tejon Ranch Company: TRC lost $2.59 (or 10.7 percent) per share as its stock price decreased from $24.30 to $21.71 between the second and third quarter of 2018. Compared to last year, the TRC stock price is up to $2.51 (or 13.1 percent increase).



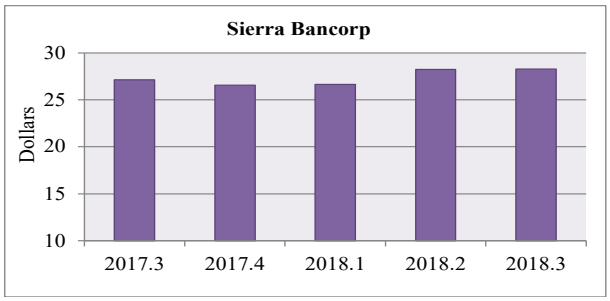
Granite Construction: GVA lost $9 (or 16.5 percent) per share as its stock price decreased from $54.70 to $45.70. Similarly, GVA lost $12.25 (or 21.1 percent) since the third quarter of 2018.



Wells Fargo Company: WFC lost $1.07 (or 2 percent) per share as its stock price decreased from $53.63 to $52.56. Relative to one year ago, WFC is down $2.59 (or 4.7 percent).

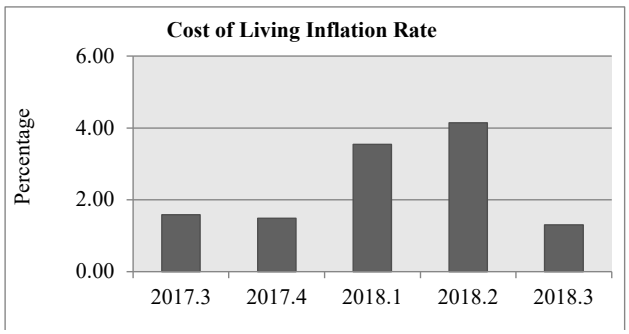


Sierra Bancorp: BSRR gained $0.05 (or 0.2 percent) per share as its price increased from $28.24 to $28.29. Similarly, BSRR has gained $1.14 (or 4.2 percent) since the third quarter of 2018.

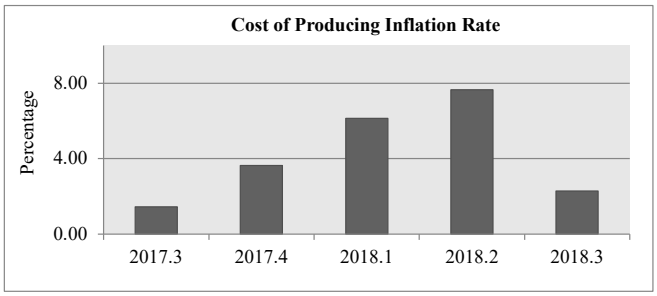


Inflation

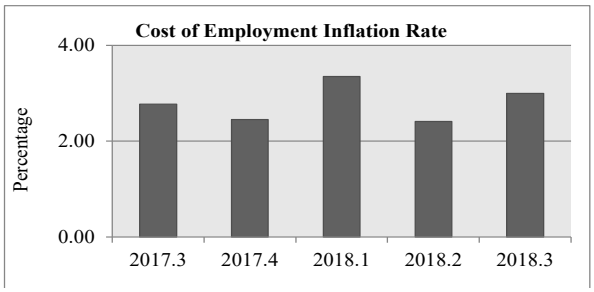
Cost of Living – In the third quarter of 2018, the Consumer Price Index for all urban areas (1982-84 = 100) increased from 251.38 to 252.20. As a result, inflation for the cost of living increased by 1.3 percent. Coupled with low unemployment numbers, this could be good for the economy going into the fourth quarter when consumer spending is usually high. An increase in demand in borrowing and other long term investments such as home sales may take place.



Cost of Production – The Producer Price Index for all commodities (1982 = 100) increased from 202.47 to 203.63. As a result, the cost of production increased at an annual rate of 2.3 percent. The cost of production inflation rate was 7.65 percent last quarter and 1.45 percent four quarters ago.

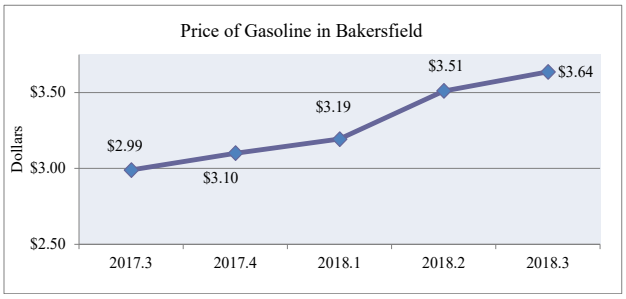


Cost of Employment - The Employment Cost Index (December 2005 = 100) for all civilian workers increased from 133.30 to 134.30. As a result, the cost of employment grew at an annual rate of 3 percent. The cost of employment inflation rate was 2.45 percent last quarter and 2.78 percent four quarters ago.

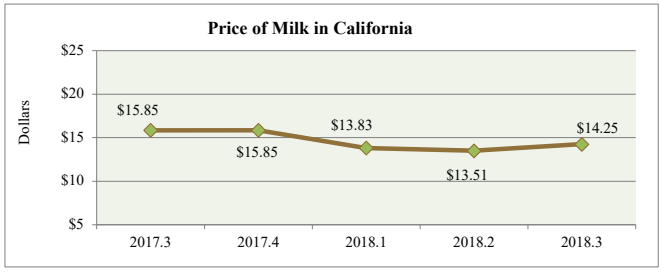


Commodity Prices

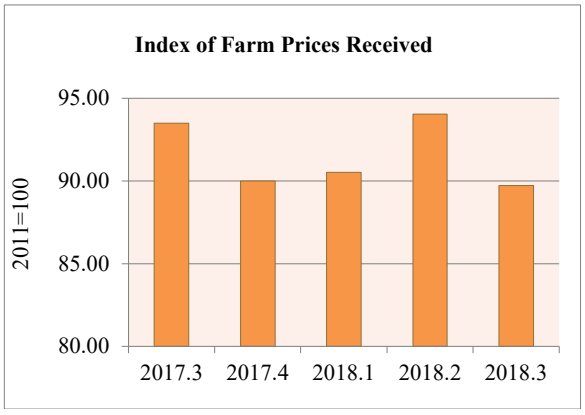
Price of Gasoline - In the Bakersfield metropolitan area, the average retail price of gasoline increased by $0.13 to $3.64. This mild increase in gasoline prices stems from the increase in crude prices as a result of increased demand from consumers due to growing global economies. Compared to four quarters ago, gasoline prices are 21.6 percent higher.



Price of Milk – The unit price of California's Class III milk fell slightly from the third quarter of 2018, decreasing from $15.85 to $14.25. Noticeably, the price has been relatively stable from June 2018 to September 2018. The price is still $1.60 less than what it was four quarters ago, indicating some issues that may be occurring in the dairy industry.

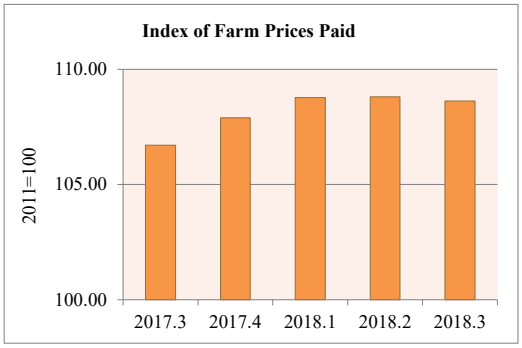


Farm Prices – In the third quarter of 2018, the National Index of Prices Received by Farmers for all farm products (2011 = 100) dropped by 3.8 points, to 89.73 compared to 93.50 recorded in the third quarter of 2017. This is a slight decrease from the 94.03 points recorded in the second quarter of this year.

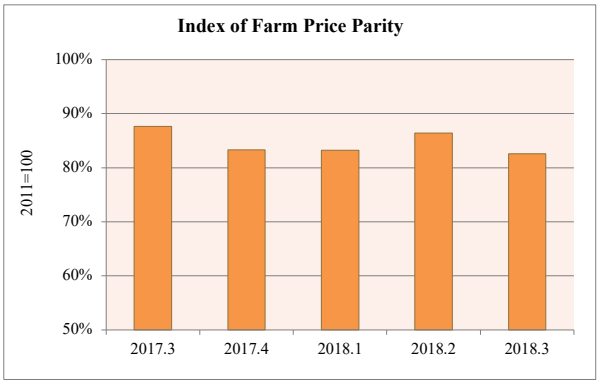


Meanwhile, the National Index of Prices Paid by Farmers for commodities, services, interest, taxes, wages, and rents decreased by 0.15 percent, dropping

0.2 points to reach 108.63, meaning that farmers are better off this quarter compared to last. The index was 106.7 four quarters ago.



We measure the Index of Farm Price Parity as the ratio Index of Prices Received to the Index of Prices Paid. In the third quarter of 2018, the gap between prices paid and prices received decreased slightly, as the Index of Farm Price Parity decreased to 83.2 percent. This returns parity levels to those witnessed in the last quarter of 2017 and first quarter of 2018. Farmer cost increases are outpacing farmer revenue increases. Four quarters ago, the price ratio was 88 percent, meaning that conditions for farmers are much worse than they were just a year ago.



[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; www.freddiemac.com; www.cdfa.gov; www.bls.gov

The Coal Industry in 2018

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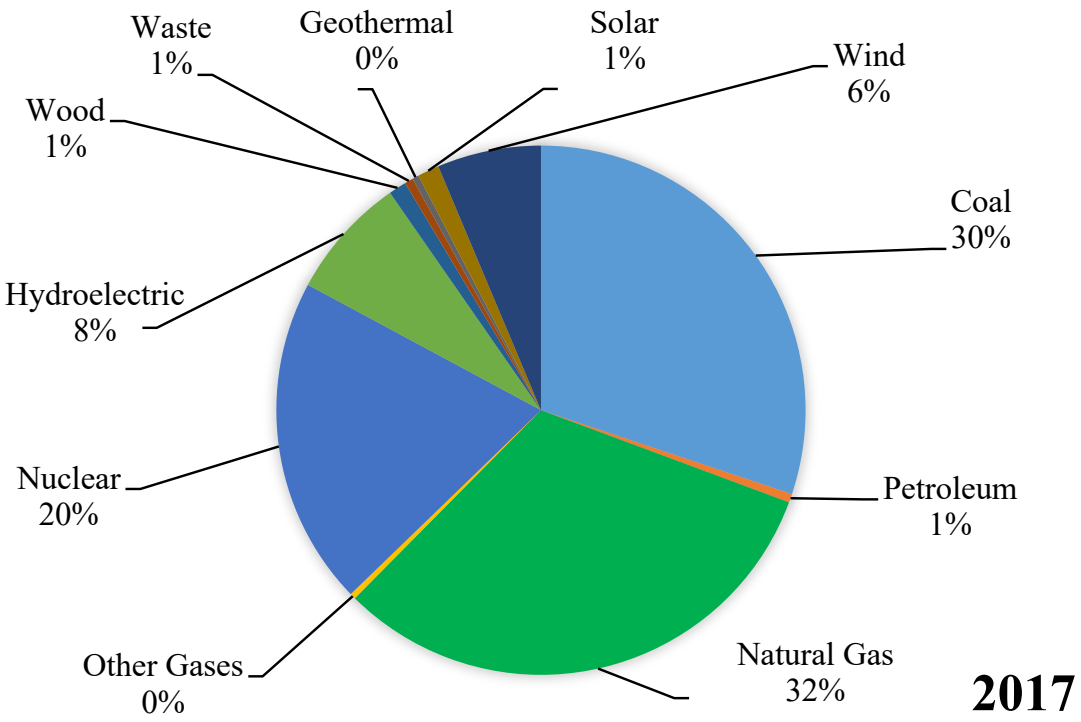
Coal: Production, Exports and Imports

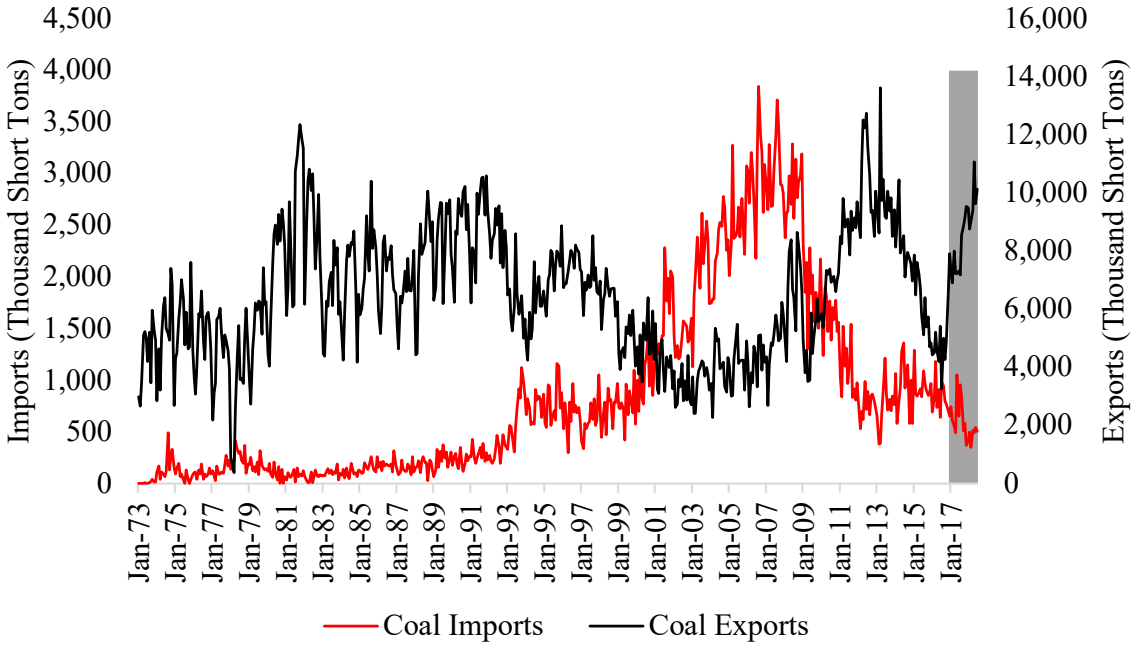
Coal is still the main source of power in the U.S., supplying 30 percent of electricity in 2017 compared to 48 percent in 2008. Natural gas, nuclear and hydroelectric sources contributed 32, 20 and 8 percent of electricity in 2017 as illustrated in Figure 1. In 2007, coal was the most used source of electric power in 28 states, but in 2017, the number dropped, and only 18 states reported coal as the largest contributor of electricity production (U.S. Energy Information Administration 2018a). Overall, the coal consumed in the electric power sector in 2017 was the lowest amount of coal consumed since 1983 (U.S. Energy Information Administration 2018b).

Figure 1: Electricity Generation by Source



In June 2018, the U.S. exported roughly 10,137 thousand short tons of coal and imported 508 (thousand short tons). Europe continues to be a major recipient of these exports, although in 2017 increase in demand driven by India, South Korea and Japan caused a 61 percent rise in exports. These countries which traditionally obtain their coal from Australia and Indonesia had their supply disrupted as a result of Tropical Cyclone Debbie. This ultimately increased demand for U.S. coal in the short run (U.S. Energy Information Administration 2018c). The U.S. continues to export more coal than it imports as illustrated in figure 2. This number has risen, especially over the period after November 2016.

Figure 2: U.S. Coal Imports and Exports between 1973 and 2018[1]

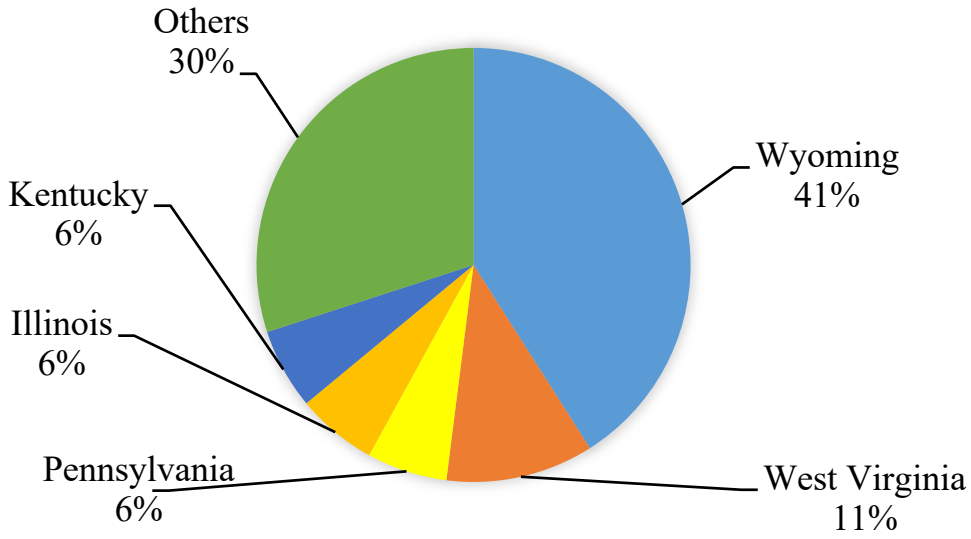


U.S. steam coal prices have been relatively flat at 63.98 dollars per short ton, while prices for metallurgical coal doubled from 76.25 dollars per short ton in the third quarter of 2016 to 152.96 dollars per short ton in the first quarter of 2017 (U.S. Energy Information Administration 2018f).

Coal Production and Employment

Wyoming produces the most coal in the U.S., followed by West Virginia, Pennsylvania, Illinois and Kentucky as illustrated in figure 3.

Figure 3: U.S. Coal production by State

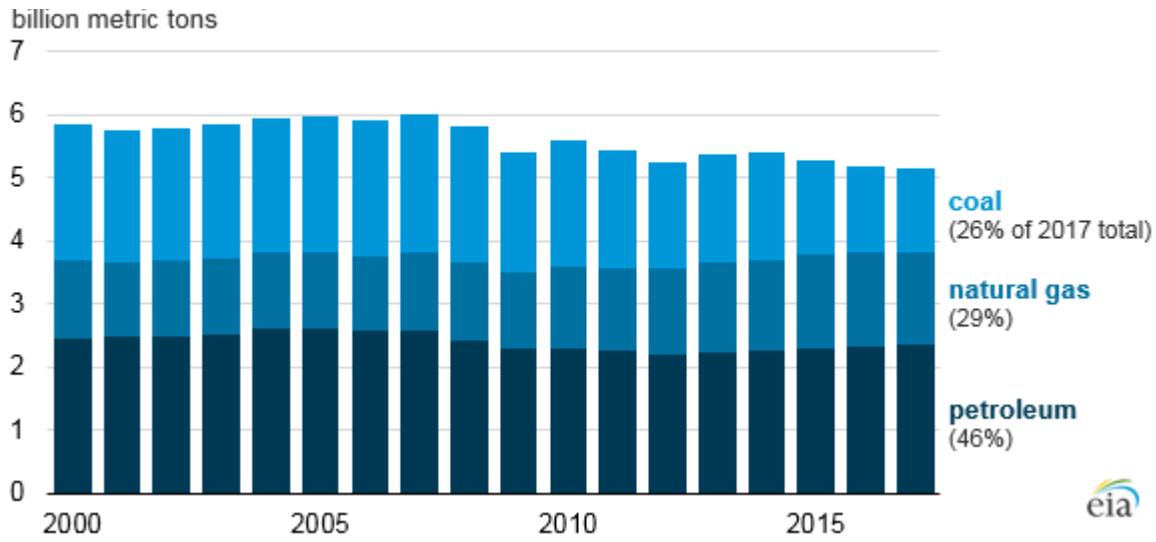


Nonetheless, the Appalachian region has the largest number of workers in the industry. In 2016, West Virginia employed 11,561 of the 51,696 workers in the coal mining industry, representing 22% of all workers in the U.S. Wyoming employed 5,756 workers in the industry, followed by Kentucky and Pennsylvania with 6,729 and 5,202 workers, respectively (U.S. energy Information Administration 2018d). Overall, the last six years has seen a decline in the total number of employees in the coal mining industry, falling from 90,000 in 2012 to 50,000 in 2018 (Bureau of Labor Statistics 2018). This number has dropped primarily due to the growing importance of natural gas in producing electricity. Mines have shut down due to increasing operation costs. For example, in early 2018, the 4 West Mine in Mt. Morris was shut down due to old age and poor geological costs making production expensive. This saw the facility let go of nearly 370 workers in Pennsylvania (Niedbala 2018).

Energy Related Emissions

In 2017, energy related emissions were 0.9% lower than their 2016 levels. A reduction in coal emissions were the primary driver for this - a trend that has been witnessed over the last decade.

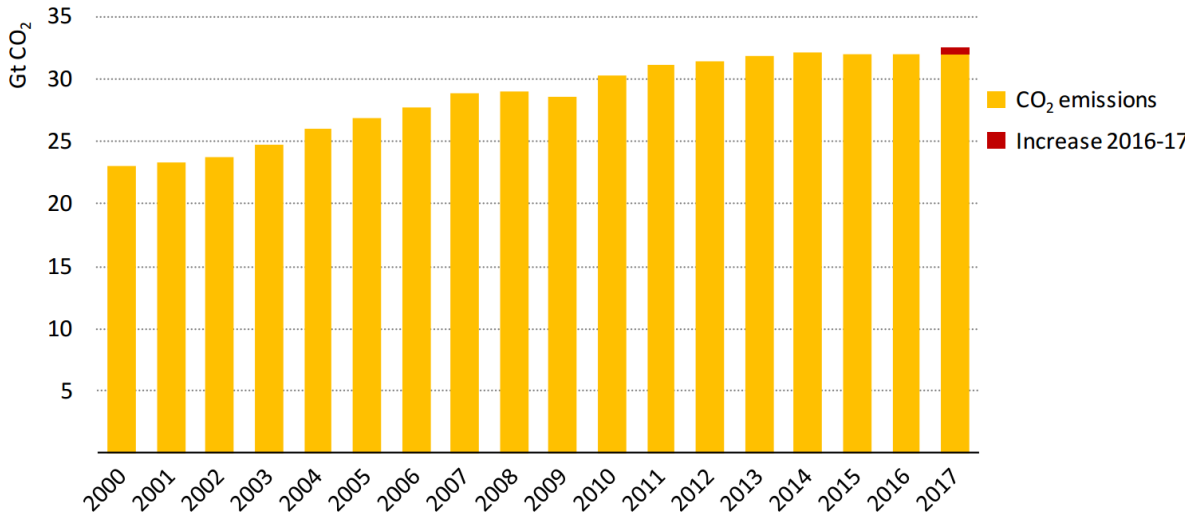
Figure 4: U.S Carbon Dioxide Emissions by Fuel (2000 – 2017)



Source: U.S. Energy Information Administration (2018e)

Meanwhile, energy related C02 emissions at the global level grew by 1.4 percent after remaining flat over the last three years. This increase, which is equivalent to emissions of additional 170 million cars was a result of global economic growth, lower fossil fuel prices and weaker energy efficiency efforts as reported by the International energy Agency (2018). The largest contributors of this global increase were Asian economies, especially China and India. Not all countries were contributors, the U.S., UK, Mexico and Japan witnessed a decline in CO2 emissions, primarily due to switching from coal to gas (International Energy Agency 2018)

Figure 5: Global Energy-Related CO2 Emissions (2000 – 2017)



Source: International Energy Agency (2018)

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The Principles of Work Site Team Building

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Many managers and leaders have either heard of or even experienced the concept of team building with work site employees and wondered if the concept, process and outcomes would be appropriate for their organization. Some have questioned if this is just a new age trend or a long term investment in organizational structure with positive payouts. If the concept is of interest - important questions to consider include, (1) what are work site teams, (2) why do these teams exist in some work sites, (3) what types of work teams are there, and (4) what work team skills can benefit the employee and organization?

The history of work site team building actually reaches back to the 1920's and the 1930's. Our first evidence of such a venture is found in the now famous Hawthorne Studies conducted by General Electric. You might recall that this organization created a series of research activities designed to examine the effects of worker productivity moving from individual output to that of a group. One of their primary discoveries was that groups, if properly recognized as a work site team yielded higher production and improved quality of work as well as positive employee attitude.

What are Work Site Teams?

When an organization decides to move to a work site team effort certain characteristics must be in play for the process to yield a positive result. It is not enough to indicate to a group of employees that they are now a team and to celebrate their new work design through an off work site lunch. At least six core features must be put into place. They include:

1. member identification as a work team: the work team members know that they have been selected for a specific work team and that a new name is now applied to the group for this special association,
2. a sense of companionship is created: the workers understand that they are now members of a group of other workers and their association is now organized with this new group. This is where set aside activities come into play, to build this sense of association,
3. the work team now focuses on common goals: the supervisor of the work team must articulate the goals of why the team has been gathered together in this special way. Is the focus on certain complex work assignments, a new direction for the organization, or special short term problem solving assignments?
4. group solidary is instilled into the new work team environment: this is a powerful and yet delicate task. The members of the work team now accept the commitment that their allegiance is to the group rather than operating as individuals.
5. problem solving becomes the primary assignment and skill set of the work team: the primary reason that work teams are created is to solve organizational problems that are associated with more complex work assignments, organizational changes needed and related issues. As a consequence, problem solving skills must be enhanced as a team skill set.
6. behavioral guidelines are created and accepted by the work team group members: the supervisor presents to the team the required guidelines for the team to work effectively. For some team members that may mean specific work assignments, remaining committed to the team work goals, following reporting lines of authority and the like.

One way to help employees think about the work team is the metaphor of a sports team. Sport teams have: (1) group identification: the name of their sports team, (2) a sense of companionship: they are pleased to have made the team and to associate with the other team members, (3) the sports team is clear on their goals: to win games, score more points, win a championship, (4) the sports team members rush to protect their other team members during a difficult game or a stressful part of the contest, (5) the sports team members learn the game book, the team strategies for winning and playing their positions properly, and (6) the team members follow the guidance of the coach, they play their assigned position and follow the rules of the game and their teams strategies to succeed.

Why do Work Teams Exist in the Work Site?

There could be any number of reasons why the organization has decided to move to a work team approach. Each organization is different of course, but some common reasons support the need for the work team model. They include:

1. the work tasks are very complex requiring a multitude of combined skill sets: it may be that the organization has been growing in their level of sophistication and no one employee now has the required skill set to complete the new level tasks. This could and should be true of most organizations.
2. the work load is high; more than one person can accomplish: again as the organization grows or becomes more complex the very work load may require a redistribution of effort calling upon a more team approach rather than individual effort.
3. the stress level associated with the work task is high: there may be times when time line demands, complexity and amount of work escalate to a level that employees feel overwhelmed and unhappy with their work.
4. multiple skill sets are required to complete the work assignments beyond that of just one person: similar to point one, the work tasks require skill sets from different employees to accomplish the work. It is not so much in this case that the work is too complex but it requires a greater array of skills.
5. time pressures may necessitate that work teams come together to accomplish the needed work load by an intense time frame requirement: it is possible that the work requirements of a new or continuous responsibility create the need for a team approach as the only reasonable way to achieve success.

Work teams exist generally because of work assignment: complexity, work load amount, stress levels, multiple skill set requirements or due to intense time pressures. A well- organized team should be able to respond to these types of pressures with efficiency and a sense of accomplishment.

What Kinds of Work Teams Are There?

Many types of work teams are possible but generally three models are most prevalent. These approaches emerge from the needs of the organization and so other types of structure may be needed. The typical teams are:

1. command based: the team is organized around a recognized leader within the organization such as the executive or manager or supervisor. The employees within the command structure of the organization become the members of the team. This model may seem the most obvious in that the pre-existing employer – employee structure is already in place. The team is built using the core features presented earlier and for the purposes identified. What is new here is that the employees are now engaged in a work group team effort rather than their individual assignments. This approach is viewed as long term. Example: the already existing accounting department is organized as a team to more effectively respond to a greater work or complexity of assignment load.
2. task based: the team is made up of employees from different departments from within the greater organization brought together to work on a specific needed task. An executive or other manager would bring leadership to the team but the expertise of each team member uniquely available to resolve the task is respected and honored. The task would be such that multiple skill sets are needed to respond to the pressure of the assignment. These types of teams are seen as short term, specific task oriented with intense work responsibilities. The team building criteria are still essential for success of the team effort. Example: a team of medical experts from differing disciplines come together to assess and respond to new demands made on the hospital organization.
3. common interest based: the team is brought together because the team members have a common interest, skill set, or contribution to be made to the organization. The work assignment may be short term or long range in need. One executive again brings leadership to the team but

the similar or common skills of the members are needed to assure the maximum of expertise to the work goal. Example: the first responders of the organization or greater community (police, fire, natural disaster, volunteer responder organizations, search and rescue, air transport and the like) are marshalled to focus on continuous and long term safety issues.

4. There are less intense types of teams that might bring value to the organization and their success needs. One type might be referred to as a social group were the purpose is to build a sense of organizational belonging and friendship opportunities. Another might be personal development oriented such as a reading club that highlights improved work skills.

What are the Basic Work Team Skills?

Some organizations indicate that they are committed to the team building approach but struggle in their effort to have long term significant change and meaning to the organization. The failure usually occurs in replacing social activities with the needed team building skills. There are a set of basic team building skills that each team member should have an opportunity to learn and implement. These include: (1) forming, (2) storming, (3) norming, (4) performing, and (5) adjourning. [also known as the Bruce Tuckman Model]. In order for the work site team to function effectively as a team, each team member should be schooled in these essential team building skills.

1. forming: When the members of the work site team first come together, individuals participate in a greeting process enabling them to become acquainted. This may be a less formal activity or something more elaborate and planned with different types of experiences. Of course depending on the type of work team the employees might already have had association with each other. During the forming stage the goals or purposes of the group are presented, discussed and agreed upon. Members are almost always participating in this stage of the process with their most professional and best behavior. They are working to gather information and clarity about the goals of the group and also making impressions about other team members, their personalities, dispositions and motivations. During the forming stage the supervisor's role is directive outlining the roles, responsibilities, work tasks and the eventual end products of the team.
2. storming: As the team continues to work together, group members begin to share ideas, thoughts, and perspectives concerning the goals of the team and about the group itself. This may be the first emergence of tension with some evaluation of the goals and team members and perhaps even conflict or competition concerning approaches that the team may use to proceed. The supervisor is to remain accessible and open to the team during this process, seeking feedback, suggesting decision making strategies and perhaps some intervention if necessary. In addition, the supervisor is to be alert to any break down potential as the team seeks creativity and pushes for excellence. Professionalism in worker behavior is essential so that the team does not stall over any conflict.
3. norming: Once some level of acceptable stability is achieved team members establish more clearly their roles, responsibilities and shared understanding of the work tasks and group goals. This is the point where the team is organizing to move forward with confidence in the importance of their task and how best to proceed. The supervisor should expect, receive and review the progress of the team on a regular basis providing meaningful feedback as needed and appropriate. This is usually where a team assignment sheet is created identifying individual team member assignments, due dates, feedback reviews and quality of assurance measures. Team members may decide to work together on some portions of the project or separately using their unique skill sets.
4. performing: If all goes as intended at this point the work team functions with some level of precision, working with less supervision, making important and relevant decisions, and establishing new and connected goals. The team members have established protocols for resolving conflicts and moving in new directions if necessary. The supervisor should remain involved by holding the team accountable, seeking evidence of deliverables, evaluating quality of work production and offering needed

feedback as required.

5. adjourning: Depending on the purpose and design of the work team an end point may come. This is particularly true for the task based and even the common interest based work teams. The team has achieved its purpose, accomplished the assigned goals and has resolved the outstanding issues. A transition process should be put into place to shift workers back to their original duties and work assignments. To just disband the team is not the best approach though it may seem logical to do so. At times some sort of celebration event is appropriate but at the least, the supervisor should meet with team members and provide detailed directions for their future work approach.

There has been an assumption made that the employees assigned to work efforts as a team already have pre-existing team member skill sets. This may not always be true. As a consequence, the supervisor as part of the work site team building experience should start with training courses focusing on essential and needed team member skills. What are some of those skills? Here is a short list that seems most appropriate.

Individual and group decision making	Use of power within a group setting
Goal setting techniques	Problem solving skills
Appropriate but difficult question asking skills	Building cohesion and group norms
Conflict resolution protocols	Effective short and long term communication
Handling controversy constructively	Situational Leadership

Team building may have powerful short term benefits to resolving difficult, complex and time sensitive work pressures. It may also offer long term employee relationship values. Important questions that a supervisor should ask when contemplating the work site team approach include: (1) does the work situation meet the criteria for building a work team, (2) if so, what type of team should be created, (3) what employees should be brought onto the team and why, and (4) what pre-team building skills need to be offered.

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